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The organisation and accessibility of technical information in the industrial environment

Scholes, Alfred Kenneth

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faced with increasing competition for available resources - all within the increasingly competitive economy in the Republic. Thus the manager of an information service who cannot account for expenditure with fair accuracy is likely to find himself continually on the defensive trying to justify the service provided. This is a totally unacceptable situation at a time when South African industry is beginning to appreciate the importance and value of efficient information services, perhaps for the first time.

8.2 AE&CI experience

AE&CI has enjoyed a long tradition of good library services, and, more recently, of comprehensive information services. The reason for providing well stocked libraries probably originated in the geographical isolation of South Africa in the early years of the twentieth century, in relatively slow communications and also in its industrially undeveloped state. Consequently it was difficult to obtain information quickly since there was no local 'invisible college' and very few good technical libraries from which material could be borrowed. Thus the Company was amongst the first two or three in the Republic to appreciate the potential value of technical information services, and particularly of IR systems to cover the information in internally produced documents.

The Company's management has provided the opportunity for widespread communication with the literature for many years and, in the case of the Research Department at least, the environment for creative thinking. As a result, the contribution which recorded information can make to optimum-decision-making has been well catered for, and the philosophy of Dr Skolnik[290] has been expressed in practice; both of these aspects were discussed in Section 8.1 above.

It is considered important to emphasise the foregoing for the following reasons:

1. A major reason for the successful development of technical information services within AE&CI has been that a succession of senior managers have understood the objectives, and have appreciated the need for the right environment and for continuing support, especially in times of economic difficulty.

2. A major reason, from the author's observations, for the lack of success in attempts to develop similar services within many other industrial concerns in the Republic has been due to inadequate understanding of the objectives on the part of senior management, coupled with the provision of inadequate or inconsistent funding. This lack of success has been compounded by inadequate organisation and indifferent supervision or management.

A major objective of this treatise is to assist the managements of other industrial concerns in the Republic, and it is believed that comment on the reasons for the apparent success or failure of information services as above should be helpful.

Chapter 9 SPECULATION ON THE FUTURE OF INFORMATION SERVICES

9.1 Research

Research in the field of Information Science has, during the 1960s and early 1970s, led to the publication of many thousands of papers and hundreds of books. The practical worker in the field is, in general, unhappy with, and confused by, the results since so many of the reported findings are vague and tentative, are apparently applicable to one unique situation only or are wrapped up in mathematical formulae applicable to model situations unrelated to his needs. If such research had led to obvious large-scale benefits, the workers in industry would have no reason for their unhappiness and confusion.

There have, of course, been benefits such as improvements in the understanding of the semantics of indexing which have led to improved levels of relevance in items retrieved from an IR system. However the total effort and expenditure appears not to have been fully justified by the results achieved. For several years the author has been questioning whether the lines taken by many researchers have been sound. Others have also been questioning the basis for much of the research and Rosenberg, University of California, has recently expressed his doubts(298), after these had evidently been initiated by Thomas Kuhn's ideas on the nature of science(299).

Kuhn suggests that what one age regards as scientific truth is, in fact, truth only within the world view prevailing at the time. Thus Newton's mechanistic view of scientific truth was not the same as Einstein's relativistic view.

Rosenberg states:

> "Kuhn argues that science does not proceed toward a unified truth, but rather that it is a process of explicating nature within the structure of the adherents to a given paradigm."

[Note: a paradigm can be regarded as a prime example of a conceptual framework that serves to define the legitimate problems and appropriate methods in a field of study - it is a system of guidance which determines the path to be followed in a field of study].

"I believe it is worthwhile to explore the basic premises of what we today call information science in the context of a paradigm. Whether or not Kuhn's notions of scientific paradigm and scientific revolution are true, they do serve as a useful metaphor for discussion of information science. What then are some of the characteristics of the scientific paradigm of information science?

Most of the research done to date in information science has been done in what we can broadly call the tradition of Newtonian mechanics. In this tradition the world and man are perceived to be essentially mechanistic. All phenomena are understood in the context of logical, and ultimately mechanical, processes. Central to this world view is the notion of causality. Although some phenomena must be viewed as probabalistic, there is an underlying fundamental logic. Both causal and probabalistic laws, or explanations, are derivable from observation. The most important element of this scientific tradition is the belief system based on the notion that behind every phenomenon there is an ultimately discoverable cause or explanation.

The method for discovering the mechanism or cause is to reduce all phenomena to their basic component parts, to dissect, to simplify. Also essential to the methodology is the notion of objectivity - the removal of the observer from that which is observed. This scientific tradition and its methods have demonstrated at least qualified success in most scientific disciplines.

The modern digital computer represents a high point in the development of deterministic electromechanical devices. In many ways it also represents the high point, at least to date, of the scientific tradition just described. In information science, as well as other disciplines, the computer has become more than a tool or machine, it is a way of looking at the world. .....

Although the world view derived from the computer is important in broad cultural terms, it is particularly

important in the field of information science. Because information science has been so closely linked to the computer, the device has thoroughly colored our view of what information is and how people use it. Broadly speaking, the computer has caused us to view human information processing as analogous to machine processing. The success of this approach is similar to the success that Kuhn describes with regard to obsolete paradigms (such as Newtonian mechanics). Historically, scientific paradigms have been successful and "true" for the period during which they prevailed. In a limited way the "obsolete" paradigms remain useful in describing certain phenomena. A paradigm becomes obsolete, however, when the number of questions that it cannot answer increases and, additionally, when phenomena are observed which the paradigm cannot explain.

There is no doubt that a large portion of human behavior associated with information is deterministic, even computer-like. Further, there is little doubt that human communication is, in fact, achieved by symbols which can be incorporated into a computer..... Much of the fundamental work in information science has been done using the tools of logic and mathematics. Most retrieval strategies currently use at least some form of Boolean logic or Boolean operators to compose queries for these information systems. Many efforts have been made, and still are being made, to explore the fundamental logical nature of the information retrieval process. ..... Beyond the logical components of the information retrieval process, or other processes involving man and information, there is the basically human element. The human and social side of information science has been explored using the techniques developed over the past century for the study of sociology and psychology."

The crux of Rosenberg's argument is:

"....., although I believe that much of man's intellectual and physical behavior is indeed mechanical,

I do not believe it is <u>essentially</u> mechanical. I believe that the notion of man as a mechanical device and the notion that human behavior can be perfectly replicated by computers are fundamentally wrong. Note that I said I <u>believe</u> it is fundamentally wrong. There is no adequate way of proving the assertion at this time. What is important here is not whether the idea is right or wrong, but what research and what social consequences flow from this idea and what alternatives might be possible. I believe that the essentially reductionist view of man which emerges from the "gestalt of the computer," is ultimately demeaning to man, is scientifically counter productive, and it is arrogant. Nevertheless, I am not suggesting that all the work that has been done in replicating human intellectual behavior using computers is of no practical value. ..... In the same way the Newtonian mechanics, although proven false as a scientific theory, still has enormous usefulness in everyday life, similarly the use of computers to process information has, and will continue to have, enormous value. However, as a basic principle for understanding, scientifically understanding, the nature of information and its use, the paradigm is of extremely limited value."

Finally he points out:

> "To criticize is not enough; one must attempt to develop an alternative. Kuhn states, "To reject one paradigm without simultaneously substituting another is to reject science itself. That act reflects not on the paradigm but on the man. Inevitably he will be seen by his colleagues as 'the carpenter who blames his tools'". The development of an alternative scientific paradigm is always an enormously difficult task. But then, that's the stuff that science is made of.
>
> A paradigm is never developed by one man, but rather by a community of scientists. All the critics of science seem to have one common failure, they cannot provide an alternative. I can only suggest a few avenues of research which might be productive.

> First, information science must abandon its deterministic approach and must recognize the computer as perhaps an historical accident rather than a scientific organizing principle. We must get out from behind the computer. A more holistic approach is needed. In this the field is perhaps most closely related to a field such as ecology. We must begin to look at the interrelationships between various parts of the information environment.
>
> We must begin to pay more attention to the social, cultural, and spiritual aspects of human communication. We must recognize that what a man says or writes is not simply the additive sum of the phenomes or the morphemes, the words or the sentences he utters. To deal effectively with the transcendent qualities of human communication we must admit as scientific evidence the intuitive, the subjective, and the experiential."

It may well be asked why Rosenberg's opinions and arguments have been quoted at such length. In the author's experience industrial managers who have, for one reason or another, had to consult the literature of Information Science have been disturbed by the apparent lack of major benefits from so much effort. This is as apparent in the United Kingdom, Netherlands and Germany as it is in South Africa. But when recognised academics, such as Rosenberg, come out with pleas for changes then it becomes probable for the first time that these will occur.

Study of the literature shows that a remarkably high percentage of research has been concerned with 'systems' for many years - to an extent that many authors could be accused of obsession with systems for their own sake and of indifference to the need to provide efficient service to users at acceptable cost levels. It is with a sense of relief to this author therefore that recent articles show that others besides Rosenberg are moving towards changes which should provide new benefits - benefits which industry in particular can apply. The author referred extensively in Chapter 2 to the needs of information users and pointed out that relatively little had been published on research in this field.

This situation continued for far too long in view of the fact that no information services, and IR systems in particular, would exist if there were no users. Recently however an increasing number of research findings have begun to be published, such as those by Professor H Schur, University of Sheffield[300], F L Scheffler, University of Dayton Research Institute[301] and R Rothwell, Science Policy Research Unit, University of Sussex[302]. Schur[300] emphasises the need for systems which should be easier for the information user to use, while Scheffler[301] stresses that more specific and less generic information is required from the study of 'User Needs':

> "....., the author believes that a major pitfall in a users' needs study is the tendency of the contractor to interview the entire population of potential users on a one-to-one basis, deriving therefrom a summation of all the needs of all the users. Generally, the user has been approached with the instruction to consider any and all needs which he would like to see met by the information system to be designed and implemented. Once the designer has determined all possible needs from all possible users, after as many recycles of the basic users' needs study as he has been able to finagle, he then proceeds to design a system from scratch, this system incorporating the capability of handling all these needs. .....
>
> The University of Dayton Research Institute has had considerable success in conducting users' needs studies in small group sessions. Generally two interviewers interact with a group of about six interviewees, each interviewee being at least somewhat similar in his subject interests to other members of the group; preferably different <u>levels</u> of management/engineer types will be represented in each group."

Rothwell[302], writing specifically of the field of scientific and technological innovation, refers to the importance of the 'gatekeeper concept' - see Footnote on p99 - in meeting the needs of information users:

> "Good communications are highly important to successful technological innovation; they are, it seems, a key factor in determining innovative success. The importance of individuals as agents of technology transfer cannot be over-stressed and the implications to management of identifying and encouraging 'technological gatekeepers' are obvious. Also, the international technological gatekeeper has an important role to play, particularly in developing countries, where lack of resources makes essential the avoidance of duplicating scientific and technical research which has previously been performed in the developed countries. [See author's note below]
>
> The fact that personal contact emerges as the most important channel for the transfer of information employed during innovation is not, perhaps surprising. Library and selective dissemination of information (SDI) systems will generally only be of help when the information seeker can closely define his information requirement: in 'idea generation', of course, and barring accidental retrieval, library and SDI systems will play a relatively minor role. Further, formal information retrieval channels merely present the data as requested, and offer no attempt at interpretation. In personal contact, during conversation, however, the reporter will spontaneously decode the information, having himself already digested and analysed it: his answers will be to the point, and he is immediately available to answer any subsequent questions. Thus, the refinement is much greater with informed information channels; there is virtually no delay in obtaining the first, and subsequent, bits of information, and the transfer contains in-built filtration and evaluation. In short, informal information retrieval is inherently more efficient than formal information systems."

Note: Rothwell's point on the importance of international technological gatekeepers to developing countries is well made. In South African industry the dependance of many concerns on overseas principals for technical 'know-how' is well known. The author has very frequently heard the point made that it is so much easier to obtain wanted information when the 'right man' - ie the gatekeeper - can be identified and contacted on a person-to-person basis.

It is concluded that the whole field of user needs could be the subject of worthwhile research in South Africa; this is probably particularly apposite currently at a time when strenuous efforts are being made to turn very large numbers of unskilled workers into skilled individuals with greatly increased productivity potential. The Republic's scientific and technological resources are limited and it is essential on economic grounds to ensure that information - whether available within documents or within individuals - is conveniently accessible to those who need it, when they need it.

9.2 Management, Organization and Staffing

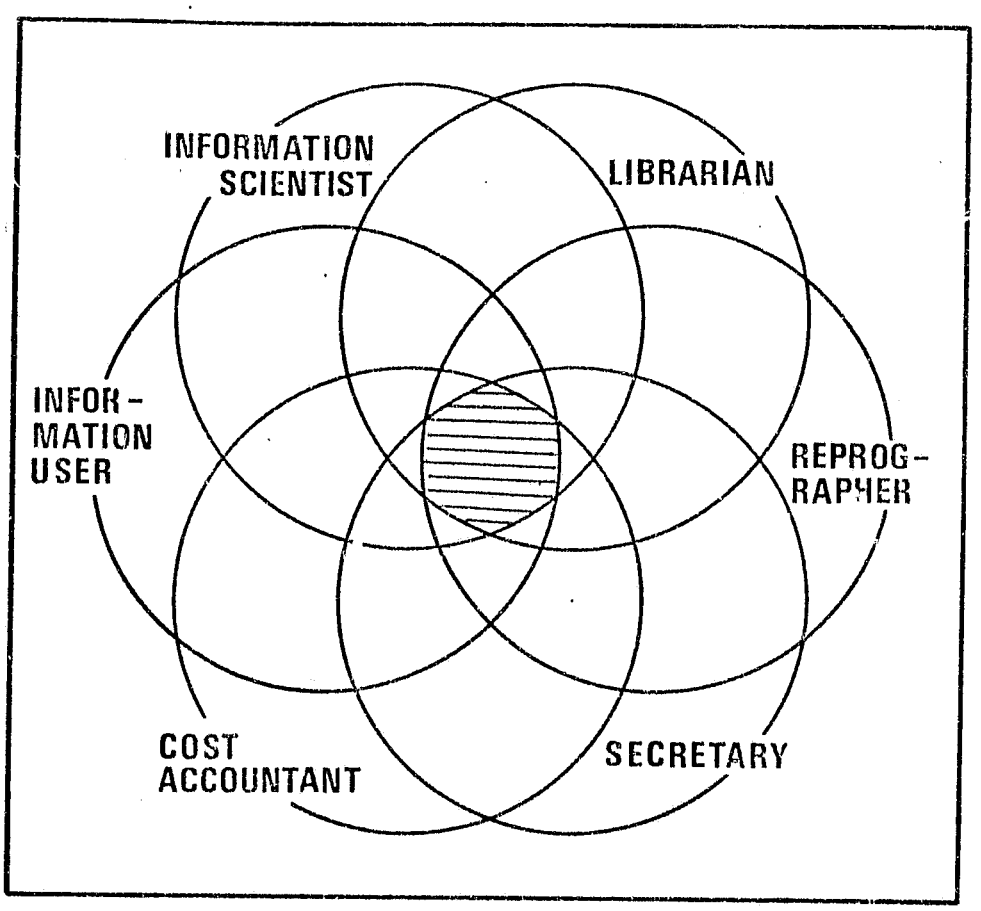
The management, organization and staffing of information services are subjects which are closely interlinked. They comprise a field which has received relatively little attention in this specific context of information services. There appears to be a growing realisation that in order to achieve the objective of providing efficient and effective service at an acceptable cost level a better understanding of these subjects is required.

Industry in general has traditionally operated with a hierarchical and pyramidal structure - with senior management at the apex, increasing numbers of individuals at intermediate levels as one progresses towards the base line and with the base line itself comprising the actual workmen. This structure has produced prodigious results in the coordination of resources and skills for the production of goods in ever increasing quantity and with, in general, increasing efficiency. Jobs have been created for an enormous work force, control has been maintained over world-wide activities and unprecedented power has been

concentrated in the hands of those at the top. In spite of short-comings which are well-known, the level of overall accomplishment appears to have justified the validity of this system of organisation, at least up to the middle of this century.

Today general questions about the functional effectiveness of these hierarchies, particularly in respect to their responsiveness to change, to human needs (those of the members of these hierarchies as well as society in general) and to sociological responsibilities are being questioned[303]. The stresses within the hierarchies are symptomatic of a wide variety of frustrations at many levels. Certainly in the very much more specific field of information services there does appear to be a need for staff who are more flexible in their outlook, who are less wedded to systems and set procedures (ie more responsive to the need to change) and who are more multi-discipline orientated in their approach to their work. It can be argued that any team of individuals are expected to, and frequently do, display similar outlook and aptitudes when drawn together to work on a special project. The point here however is that to organise and run an information service on a day-to-day basis indefinitely on this basis is not at all the same requirement as running a special project for a limited period.

What alternatives are there to the hierarchical pyramid? None appear to have been worked out fully in practice but one at least appears to be sufficiently practicable as to be worth researching. An organization which is inherently more cohesive and interactive (so that individuals do not work in isolated units as is so frequent in information and library work in the hierarchical pyramid) is perhaps best illustrated by the use, again, of the Venn diagram to form a rosette. As an example consider the management of IR systems:



The model includes six areas of activity but each circle could include more than one individual or, alternatively, some areas could be combined since, in any event, they would be part-time activities. The activities covered comprise:

1. The Librarian representing cataloguing and classification and for the abstracting and indexing of published information and documents.

2. The Information Scientist concerned with systems and with the abstracting and indexing of unpublished information (reports, correspondence, etc) and possibly with collections of specialised documents and the information in them (patents, standard specifications, etc).

3. The Secretary's concern is with format of presentation of information (card lay-out, punching, coding, computer programming, etc as appropriate to the systems in use).

4. The Reprographer's involvement is to ensure adequate standards, the necessary number of copies and their proper distribution, ease of access, etc of the presentation itself.

5. The Information User - the customer and raison d'être of any IR system - is needed to ensure that his actual and potential needs are met with efficiency and effectiveness. He is concerned with ease of use and access and with 'selling' the system(s) to other users.

6. The Cost Accountant is required to ensure that the most economic methods, compatible with needs, are adopted, maintained, modified, etc - ie that a realistic approach to planning, operation, salaries, etc is the environment in which the whole operates.

All the areas of activity within the rosette interact within this single organization through the exchange and the transmission of information, skills, resources, and (most important) enthusiasms. The environment could be said to be one of 'resonance'. Yet all are under the influence of an individual at the centre represented by the hatched area. In a hierarchical structure this individual would be called the 'manager', but possibly another title is needed since the management style involved would be rather different; he would 'lead the team' and 'co-ordinate' the various functions, yet neither 'team-leader' nor 'co-ordinator' appear to be really appropriate. A most important aspect of his responsibilities would be to develop easy relationships with other functions throughout the concern employing him. Thus the management style required could be described as 'supportive' as well as 'integrative' - for activities which involve service, whether this is service to research, production, marketing, etc, this is particularly important and apt. The complexity of modern industry necessitates the integration of activities wherever possible and economically sound, and this is the basic reason for the author's efforts to integrate the AE&CI IR systems as pointed out in Section 6.4 of Chapter 6; nowhere is this more true than for service activities.

The management style required is seldom produced by today's training and leadership selection methods, since these have developed to meet the needs of the hierarchical pyramid. Hence the sources of new leadership are unclear at this stage as are the details of a 'resonant' working situation. No doubt there

would be resistance in the early stages arising from such questions as accountability within the areas of overlap. Nevertheless an organisational system such as this could relieve some of the frustrations met with in hierarchical systems. It could enhance the effectiveness of the whole as well as providing a more appropriate environment for the enhancement of self, and thus improve the quality of life and work. From the author's experience in the field of information and library work, anything which can be done to break down the 'isolated cells' environment within which so many of us work year-in and year-out is likely to lead to greater personal job satisfaction as well as greater productivity to the organisation as a whole. Thus the practical implications of moving away from hierarchies to a configuration which is more cohesive and interactive are important.

Since the sociological aspects of industry are clearly changing rather quickly it appears to be appropriate to conclude this Section with an extract from an OECD report entitled 'Information for a changing society: some policy considerations'(303):

> "The wise man does not act without attempting to know the consequences of his actions. Contemporary societies must be more prudent in their actions if technology is to be a boon rather than a curse to mankind. Information is the key to the wise management of our future. Perhaps the most important event of the next decade will be the recognition of the true value of information - the right information, reliable and relevant to our needs, available in a useful form to all those who need it."

9.3 Services to industry

While the growth of national IR systems, operating at a rather generic level as far as technical subject matter is concerned, seems likely during the 1970s, the setting up of more services on a commercial basis or to serve the needs of particular industries appears to be inevitable and desirable. Many of these are likely to be international and some will be discipline orientated (as for instance Chemical Abstracts Service is) while others will be

subject orientated (ie cross-discipline, as is the Copper Development Association index at the Battelle Memorial Institute, Ohio). In addition, it seems certain that there will also be a growth of services to meet the technical information requirements of particular industries within a geographical area or economic unit (eg Southern Africa and the European Common Market respectively) or within countries - as a possible example of this the subject of diamond technology in the Republic can be cited, since a high proportion of this particular industry is in South Africa, while other aspects of it are controlled from South Africa. These services will form networks at international, national and industry-wide levels.

It is becoming clearer that many of the services referred to above will become increasingly aware of difficulties in the 'software' side of IR systems. All services will have to face up to the growing needs for better writing in the technical literature and better facilities for evaluating that literature. Industrial concerns with their own internal system and commercial services, such as ARAC (see Chapter7), will realise the need for low cost and simple straightforward procedures for culling out-dated, inaccurate or unwanted information from their systems.

The questions of better writing and of better facilities for evaluating the literature are considered below, but these are really just symptoms of a bigger problem. In fact, the vast quantity of information being published and the almost complete lack of control over its quality and over the extent to which much of it is duplication (whether plagiarism or not) point to the need for firm international control of the whole. Whether or not this can ever be achieved remains to be seen. There is certainly a growing need for ways of controlling what is published in the technical literature as regards quality, of ways of preventing material rejected by the referees of journals of standing being published elsewhere, and so on. At the same time it would also be necessary to ensure that material for publication is not rejected because few or no pundits could agree on the importance or validity of new information - otherwise the work of future Einsteins could well be lost. Some attempts at control have been

tried, particularly page charges, but they have had no significant effect whatsoever.

It is, of course, difficult to say just how detailed such control should be. As an example, consider the citation indexes which have been introduced in recent years: the greatest weakness of such indexes is that many authors do not cite only those whose reported work has contributed to their own thinking. Many citations appear to be barely relevant to the material or subject under discussion, so that the reader wonders why they were listed and is frequently unclear as to whether he has missed an important point or whether the particular author has misunderstood the material cited, or has taken a chance on the original not being referred to. This justifiable lack of user-confidence has undoubtedly adversely affected the potential benefits of citation indexes. Firm control over material published in the open literature which included a check of all citations would, in theory, improve the value of such indexes considerably - whether such a check is a practical possibility is, of course, another matter altogether.

It can be argued with some justification that industry does already exercise some of the firm control discussed above for its own internal publications, such as technical reports, within the limits of each company's expertise. In other words no company deliberately produces and distributes documents which it knows to be technically inferior, etc, or which it knows are duplications of its own earlier documents - it would be helpful if industry could take the lead in ensuring adequate standards for much of the published literature.

In the smaller countries, such as South Africa, there is currently and for the first time, a growing appreciation amongst many of the medium-to-large companies that they have a need for their own internal IR systems. This trend will grow so that the majority will have equipped themselves with some sort of system before the end of the 1970s. At the same time the more enterprising small industrial concerns will establish small-scale systems looked after part-time by one of their more senior staff members, or alternatively will co-operate with competitors in setting up systems to cater for the general interests of a whole industry.

9.4 Software

Strictly speaking the difficulties discussed in this section are already known. However their importance will undoubtedly become more obvious to many more individuals, and also become more important in the future on economic grounds.

One aspect of the software of information retrieval is not discussed in this section and that is the question of indexing techniques. There are obvious limits to the ways in which language can be manipulated for purposes of information retrieval. Whether or not new ideas will be conceived and applied successfully is difficult to say; currently there is no evidence that there is any great need for new ideas in this field, nor indication that any are being developed.

9.4.1 The need for better writing

That much of the present technical literature, whether published or produced as an internal report by an industrial concern for distribution within that organisation only, is poorly written is widely recognised. In a number of universities throughout the English speaking world, including the University of the Witwatersrand, some of the departments of science and technology have recognised that an ability to communicate thoughts clearly, concisely and logically in writing is an essential and basic tool for the qualified scientist and technologist. Students are being taught to appreciate that language is a tool which they can manipulate and this is in marked contrast to the approach taught in schools, which is essentially that of literary appreciation.

A few pioneers amongst university staffs have published their views on this subject and the problem has been well set out by F Peter Woodford, an affiliate of the Rockefeller University, New York, NY, in an article entitled 'Sounder thinking through clearer writing'[304]. He concludes:

> 'Bad scientific writing involves more than stylistic inelegance: it is often the outward and visible form of an inward confusion of thought. The scientific literature at its present standard distorts rather than forms the graduate student's view of scientific knowledge and thought, and corrupts his ability to write, to read, and to think.

> Strong educational measures are needed to effect reform. I advocate a course on scientific writing as an essential feature in every scientist's training. Such a course delves deep into the philosophy and method of science if it deals with logic, precision, and clarity on how these qualities can be achieved in writing; and on how such achievement strengthens the corresponding faculties in thinking.'

Experience has shown that a sound way of improving the standard of written communication in technical articles and reports is to provide instruction and practice in indexing and abstracting techniques. It has even been proposed that all technical graduates working in research should serve a short apprenticeship as technical information officers. The suggestion has much merit but has seldom been adopted in industry. This is partly because research workers generally have little natural liking for the paper work side of technical communication, and so resist efforts by management to insist on sufficient practice to ensure proficiency. It is also partly because management usually require full time attention to the laboratory side of research work ab initio and tend to assume that the worker has already acquired adequate proficiency in written communication techniques by some means or other.

It is believed that within the next decade almost all scientific and technical graduates will be taught to improve their standard of written communication. In the case of research work, for example, a description of an experiment will not only be accurate but will, when necessary, be sufficiently detailed to enable it to be repeated in other laboratories, which is frequently not the case now. In turn this will result in the writing of better summaries of articles, reports, etc and make the work of professional abstracters considerably easier.

Herman Skolnik and Lane F McBurney of Hercules, Inc have summed-up the objectives of technical reports in the research environment in much of industry well. They state(305):

'..... we take our technical reports seriously and invest supervisory and managerial energies to ensure that we get a fair return on the expenditure.

Hercules R & D management considers that a fair return is realized when technical reports do some or all of the following:

1 They ... ide the results and conclusions needed to reach ... ions for action.

2 They shorte... the time between the discovery and application of information and knowledge.

3 They coordinate responsibility and accountability of scientists assigned to various programs, and consequently are a particularly good mechanism for research management to exercise some guidance in a scientist's growth and advancement.

4 hey act as an effective communication channel among members of a program team whose assignments may range from research and development to patent, plant, marketing, and sales responsibilities.

5 They constitute an adequate and permanent record of the information, knowledge, and experience gained in the course of carrying out the program.

It is apparent that the objectives of research management for its technical report system include a fair share of recognition and rewards for the report writer.'

(Note: There is a belief in some circles that abstracts and the process of abstracting are obsolete and will soon cease to exist(306). However, there is no real evidence of truth in this contention and the continuing increase in abstracting services of all kinds appears to refute it. In fact, it would appear to be wishful-thinking and, like a premature report of his own death which Mark Twain saw, to be, as he remarked, 'a slight exaggeration').

9.4.2 The need for better facilities for evaluating the literature

One of the greatest difficulties which any user of an IR system encounters is evaluation of the information which he finds during a search. It is in fact very rare for him to find that the presentation in any two articles, or in abstracts of them, is such that a basis for valid and thorough comparison exists. As the total of information on all technical subjects continues to grow, the need for some basis for such comparison will probably become much more important. Many 'guides to authors' already stress the need for consistency in presentation as well as clarity and unambiguity - good examples are 1) the guide for the 'Journal of Chemical Engineering Data'[307] and the very brief, but comprehensive, guide on 'precision and accuracy' in analytical chemistry, published in the journal of 'Analytical Chemistry'[308]. W H Evans and D Garvin have made a number of useful suggestions for improvements in the contents of published papers, etc which would facilitate retrieval and evaluation[309]. In the instance of chemical experimental method they have listed the basic aspects which all published descriptions should include. They give these as being:

Description of apparatus with dimensions (either directly or by reference to earlier work).
Calibration of equipment, including a discussion of the magnitudes of possible systematic biases for which corrections were not made.
Experimental procedure.
Environmental conditions.
Identification of analytical methods used (and proof of them if novel).
Purity of materials and how determined.
Statement of sensitivity or resolution.
Explanation of the method used to reduce the data.
Assumptions made in deriving the results.
Auxiliary data used including explicit statement of their values.
Numerical factors that relate the units used in reporting the data to the fundamental units of measure.
Reports on negative results.

Clearly this sort of approach can be applied to many other fields and activities and if all journal editors, referees, etc were to insist on such minimum requirements, the resulting standardisation of presentation would improve the possibility of worthwhile comparisons considerably.

Over and above the actual content of journal articles, etc it becomes clear that similar standardisation in abstracts of these articles is also extremely desirable. Thus the criteria for acceptable abstracts, as suggested, for example, by Borko (310) and Chatman[111] will almost certainly become increasingly necessary (see Chapter 4).

9.4.3 The need for low cost procedures for culling IR systems

There is already a need for procedures for culling out-dated, inaccurate and unwanted information from the internal IR systems operated by industry, where the selection of input material is in any event usually highly subjective. This also applies to the commercial IR system specialising in particular subjects, or specific disciplines, since no customer is prepared to pay for information that he does not need or want.

These problems are very real and will become more acute with the increase in available information. As stated above, the IR system in an industrial concern usually has a very subjective input and has to accept that subjects of interest and importance to that concern are liable to change. The commercial IR system has of necessity an objective input whatever the subject field or discipline with which it is concerned and has to include all material which appears to be relevant. Thus both will tend to become more cluttered with the passage of time.

The review of all items in a large IR system at a given time for purposes of culling or 'weeding' unwanted information, etc is an expensive and time consuming job, and one which becomes more expensive as systems grow. To-date there do not appear to be any really satisfactory techniques for dealing with the problem and this is a field in which successful research can yield worthwhile practical benefits - benefits which will lead to increased IR systems efficiency, reduced operating costs and greater

user satisfaction. That such research is necessary will become increasingly obvious during the next decade.

9.5 Hardware

David Liston has pointed out[31] that for a long time to come IR systems will continue to be man/machine systems with man contributing most of the intellectual operations required. There will continue to be a quest for ways to mechanise or automate functions performed by people. These functions account for the major part of the cost of setting up and operating IR systems so that there is considerable economic inducement to replace humans with machines. For many years after the introduction of computers it appeared that the high capital costs or rentals would confine their application to very large scale IR systems only. The recent introduction of the mini-computer and the real prospect of even smaller and still less expensive machines becoming available is currently changing the outlook rapidly. Mini-computers will undoubtedly be used in the operation of relatively small IR systems, such as those in AE&CI for example and for even smaller ones, as well as being used for the selective dissemination of new information (SDI) and for various record keeping chores in information services (journal subscriptions, loans of documents and their recall on time, etc). After a long period of relative stability the possibilities for computer applications in South Africa have opened-up and predictions other than the above generalities would be rash. However, the very rapid acceptance of computer-output-microfilm (COM) in place of paper print-out (which has undoubtedly been hastened by rapidly increasing paper prices and volume of print-out) points clearly to the widespread use of this technique for the distribution of low-cost and up-datable sets of microfiche. These microfiche will carry abstracts of items in IR systems and numerous lists of documents and other items - current examples include spare parts catalogues issued by all the major motor vehicle assemblers in the Republic and the Unicat listing of book holdings in major South African libraries, which is compiled and distributed by the State Library, Pretoria. It is a safe prediction that use of this technique will escalate rapidly.

To replace humans in such tasks as indexing and abstracting it is obvious that machines are required which can recognise syntax. Of course this problem would be greatly simplified if, as David Liston points out[31], language could be redesigned so that there could be only one way to express any given idea. From the point of view of the information scientist there does not, unfortunately, appear to be the slightest prospect of any such language redesign, and no doubt much of humanity is grateful that it is so. But the possibility of such redesign raises many complex philosophical problems, not the least of which is that communication between the majority of mankind on the one hand and the scientist and technologist on the other would almost certainly become even more difficult than it is now.

In conclusion, it should be noted that efforts to convert a large percentage of unskilled workers in South Africa to skilled workers, with higher salaries and wages, within a short period will inevitably involve work such as information services eventually. Jobs which are currently done manually will undoubtedly disappear and the work will be done more economically by machines, many of which have still to be developed, such as syntax recognising machines for example.

9.6 Speculation on the future of AE&CI IR systems

It is a truism in the case of machinery of any type that when it is operating satisfactorily it is best left alone. The same applies to IR systems, and since the overall integrated APRECOD system (ie the Alphabetical Precoordinated Descriptor based TIRSS CORIS and LIBRIS systems) is operating satisfactorily at present there are no immediate plans to modify or supersede it. The greatest possibility for change within the next few years is the transfer of TIRSS to microfiche, as indicated in Appendix VI, although the use of COM will not be overlooked since the economics of this technique are improving rapidly.

Other probable developments include the designing of small-scale IR systems based on post-coordinate indexing and the Termatrex optical coincidence system. A number of these have already been developed, as stated in Chapter 6, for use in fields which are

highly-specific - eg the physical and chemical properties of industrial accidents, analytical methods, etc. Subscriptions to tape services for SDI purposes, partly through SASDI (the SDI service operated by the CSIR, Pretoria) and partly through business associates overseas are likely to increase, and possibly to replace much of this work currently done manually. Reference has already been made to possible applications for mini-computers and COM; the deciding factors will undoubtedly be the overall economics involved.

Beyond this brief discussion little purpose would be served by further speculation. In times such as are being experienced in the mid-1970s - times of rapid change, industrial development, inflation, and major plans for training a new and more skilled labour force in South Africa - it is as well to be reminded of Edmund Burke's contention, which is even truer now than when he made it, that one cannot plan the future entirely by past experience.

Chapter 10 GUIDANCE ON ESTABLISHING AN IR SYSTEM

In this chapter some of the major facets discussed in this dissertation are brought together. Of necessity much of what follows comprises repetition of points already made, but their presentation is less discursive and is reduced to essential practical aspects and to references back to earlier chapters.

The objective is to provide a short basic guide to establishing a system for the storage and retrieval of technical information, particularly in industry in countries which are at an intermediate stage of development, such as the Republic of South Africa. In such countries most concerns tend to be of from very small to small size by the standards of fully developed and industrialised countries. As a guide to establishing an IR system it is mainly intended to provide assistance to such small concerns which have to rely mainly on their own resources.

The bigger companies, many of which have access to 'know-how' from large overseas associates, have a more complex design problem in most instances. It is often necessary for them to design an IR system which will above all else be compatible with an existing management information system. When a company first feels the need for some sort of information service this need will almost certainly be for an IR system (as opposed to, say, an information dissemination system or other activity within the scope of technical information services - see Chapter 1, Section 1.2). Once management have decided that an IR system is necessary, but before any work is done on working out detailed requirements or on the design of a system to meet these requirements, it is essential to determine the objectives:

WHAT IS THE SYSTEM EXPECTED TO ACHIEVE?

When the objectives are known it is recommended that procedure such as is set out in Sections 10.1 to 10.4 below should be followed.

It is appreciated that the system designer invariably has to meet various constraints. The most common one is probably that of costs, which is discussed in Section 10.5. But when system requirements and design are being investigated the constraints

which the investigator expects to be faced with should not become the overriding consideration. If this is allowed to happen, then there is a real danger that 'the tail will wag the dog' so that the system eventually adopted will not achieve what is expected of it.

10.1 Quantify the project

Having defined the objectives of a proposed IR system the next step is to determine the potential input to it:

10.1.1 What subject fields are to be included?

10.1.2 How many documents will be involved per unit of time (per week, month or year)?

10.1.3 What types of documents will be involved? (eg correspondence, internal reports, journal articles, patent specifications, etc).

10.1.4 What is the average number of items of useful information that will probably need to be added to the system for each type of document?

10.1.5 Decide whether any existing backlog of information is to be included in the system in addition to newly acquired information. (The main advantages of including backlog are the accessibility of information often known to be in current files and improved user confidence in the system at an early date. The main disadvantage is increased costs in establishing the system. Thus it is necessary to evaluate the information already on file and to decide how far back in time to go, and whether all subject fields need to be treated in the same way, if it is decided to include backlog information).

10.2 Specify requirements

There is one basic requirement for all situations, which is that the simplest system that will serve the purpose and meet the particular specified requirements - see below - will invariably be the most efficient and most widely used. The author, during visits to companies in North America and Europe, has been told

of numerous complex and expensive mechanised systems which were installed during the 1960s and proved to be failures. Such failures are rarely, if ever, reported in the open literature and, unfortunately, these instances have done considerable damage (even if only for a relatively short period) to the image of IR systems and to individuals concerned with their design and operation within industry at least. Thus maximum SIMPLICITY in the context of specified requirements can be said to be a golden rule.

10.2.1 What are the potential user requirements?

This subject has been covered in Section 2 of Chapter 2 but the following points should be borne in mind:

1. Users of IR systems frequently have a greater need for a reduction of irrelevant information than a critical need for more relevant information to assist them in decision making.

2. A user does not have to know how an IR system works, only how to use it. If he does not know how to use it, he will not be in control of it.

10.2.2 Will one system meet requirements for all types of documents which are to be included? See Chapter 3, Section 3.1 where this aspect has been dealt with.

10.2.3 What is the expected growth rate? The information collected under Section 10.1 above will assist to some extent to determine the probable growth rate, by providing a realistic base line from which to consider the future.

10.2.4 Is the system to provide wide subject coverage or possibly very detailed coverage in a few narrow subject areas or data fields? The answer frequently determines whether a pre- or a post-coordinate system should be selected:

10.2.4.1 If wide subject coverage is required serious consideration should be given to a pre-coordinate indexing system (See sub-section 4.1.4.2 in Chapter 4).

10.2.4.2 If narrow subject areas or data fields are to be covered then a post-coordinate indexing system may well be more suitable (See sub-section 4.1.4.1 in Chapter 4).

10.2.5 Is thorough indexing control by means of a thesaurus of preferred or agreed terms to be introduced ab initio? (See sub-section 4.1.6 on 'Thesaurus control' and 4.1.6.1 on 'Constructing a thesaurus' as well as 4.1.4.1 and 4.1.4.2 referred to above, all in Chapter 4). It is emphasised that small scale operation is not a sound reason for not establishing adequate indexing control; the prevalence of synonyms and near synonyms in all sciences and technologies is too great).

[Note: It would be interesting and instructive to know how many tests, measurements, etc are needlessly repeated in industry because either the author of an earlier document has buried useful information in his manuscript by not having the patience to tabulate it well (inadequate presentation) or the indexer of an IR system has not understood the significance of the same information (inadequate indexing)].

10.2.6 Are abstracts to be included or not? See sub-sections 4.1.2 and 4.1.3, Chapter 4. Note that for small IR systems the use of amplified document titles, which are really indicative abstracts, may well meet requirements.

10.2.7 What are the minimum of bibliographic data necessary to identify each document or other source of information unambiguously (author, title, date, document number, etc)? This is the opposite of what is usually the practice in many libraries for their catalogues. Until recently at any rate, the emphasis has been on the inclusion of the maximum amount of bibliographic information of potential use to library staff; for an IR system this is unnecessary and merely creates additional work which serves no purpose. [Note: It is of interest to record that some libraries have adopted a similar approach - eg Randse Afrikaanse Universitiet].

[Note: The use by publishers of International Standard Book Numbers (ISBNs) is currently being adopted widely. Since each book is

allocated a unique number, this may well have useful application for an IR system containing information obtained mainly from books].

10.3 Fit into the existing organisational structure

Whether a company is large or small it is quite clear that a service such as an IR system should fit into the existing organisational structure so as to result in the minimal change consistent with the specified requirements as set out in Section 10.2. If a library already exists then it is reasonable to establish the IR system within the Library organisation or parallel to it and under the same supervision, depending on circumstances. Obviously consideration should be given to the subject content of the system so that its place in the organisation is at least logical. In an industrial company in South Africa legal libraries and IR systems are invariably attached to legal or secretarial departments. All too often technical libraries and IR systems are found to be administered by a company's secretarial function, even when well defined technical departments, including research departments, exist. This practice is particularly prevalent in the local mining industry; it is illogical and frequently leads to inadequate service to information users, to inefficiency and to personnel problems - particularly job dissatisfaction - amongst those required to operate the services and facilities provided.

10.4 Design the system

Once answers to the questions posed in Sections 10.1 and 10.2 have been obtained, then Sections 5.1 of Chapter 5 and the conclusions reached on criteria for and factors affecting the performance of IR systems, as set out in sub-sections 3.1.6, Chapter 3, and 4.1.8, Chapter 4, should be read. The system itself can then be selected and designed.

Systems have been described very thoroughly in the literature[94, 198-201] so that repetition in this dissertation would serve no useful purpose. Under the conditions obtaining in South African industry, as well as in other countries at a similar level of development, it is emphasized again that no company will establish a highly sophisticated and computerized system initially. Consequently this dissertation has deliberately avoided detailed

discussion of such systems, and it is recommended that the system designer should consider primarily those of a simpler but often completely adequate type. Such systems are described in the references listed above. In particular consideration should be given to card-based systems, such as pre-coordinate systems (as exemplified by TIRSS) or post-coordinate systems (as exemplified by Uniterm), or to coincidence systems - all post-coordinate - based on optical or mechanical principles. The final decision must be based on the requirements of the particular company involved in each instance, but it is emphasised that where more than one system is required they should be compatible as well as being integrated as much as possible in order to minimise costs.

Finally the necessary hardware and format of presentation can be specified (see sub-sections 3.1.4 and 4.1.7 of Chapters 3 and 4 respectively). It is axiomatic that the mechanical or other equipment, lay-out of cards and other stationery, etc should be the simplest that will meet current and foreseeable requirements.

10.5 . Staff the system

In a very small concern the operation of the agreed IR system may well have to be undertaken as a part-time activity by management personally, as pointed out in Chapter 8. One advantage of such initial personal involvement is that the levels of technical and clerical competence required to operate the system become clear to management. Delegation of both the technical and clerical aspects to one or more individuals can then be effected with confidence when necessary.

In bigger concerns the system may require a full-time or part-time employee from its establishment, particularly if backlog is to be included, together with clerical assistance. In these instances it is recommended that the system designer should ensure his own proficiency in the techniques and procedures which he has selected since he will probably have to train the appropriate staff himself. In addition he will acquire a clear idea of the time required to process items of information into the system.

In general it can be stated categorically that the more technically complex the information which is to constitute the input

to the system, the more necessary does it become for the system operator to possess technical expertise, probably in the relevant field, and sound knowledge of the particular company's technical and business interests. Subject experience and 'know-how' may well be of greater importance than any technical qualifications, except in the case of complex theoretical and mathematical material.

10.6 Cost the system

As indicated in Chapter 7 the realistic evaluation of the cost effectiveness of IR systems is extremely difficult, and, in any case, can only be considered after a system has been operative for some time - probably for some years.

In costing IR systems, therefore, consideration should be limited to capital cost and operating cost. Capital cost is, generally, made up of expenditure incurred in acquiri g assets for the purpose of operating the IR system. This expenditure is usually heaviest when a system is being established, since it comprises items which are not consumed or added to routinely and which only require replacement very occasionally. They include office furniture such as card filing cabinets and the mechanical, optical or electro-mechanical equipment needed for viewing, sorting, punching, etc the cards involved. Operating costs on the other hand are made up of several components, viz 'Prime Costs', comprising labour (salaries) and materials (stationery, etc), 'Overheads' (eg share of rent, taxes, management, maintenance, etc) and 'Indirect Expenses' (eg cost of supervising the labour, cost of using the system, etc). The size of the particular company and the actual costing system used will determine what costs are allocated to overheads and whether indirect costs are determined or not. Thus for the IR system designer the main concerns are 1) prime costs and 2) to ensure that his operating budget is soundly established and can be met when the system is operating as intended.

10.7 Plan the start-up

For optimum efficiency the system designer should estimate realistic dates by which the system can be set up and be operating with the staff properly trained. The following steps are suggested

once the designer has worked out the system and has received management's permission to establish it. Each step requires one or more target dates, as appropriate, and steps may be concurrent or consecutive:

1) Determine the office space required and ensure that it is available.

2) Order the items required under the heading 'capital expenditure'.

3) Order the items required under 'materials' and ascertain routine availability, so that initial maximum and minimum stock-levels can be laid down. [Note: these can of course be altered later in the light of experience if necessary].

4) Lay down in writing the procedures to be followed by both technical and clerical staff, in the form of a manual or guide.

5) Select or recruit staff.

6) Train staff.

7) Initiate the laid-down procedures - ie start up the system.

8) Explain the system to all potential users (encourage feed-back).

9) Introduce any modifications which appear to be desirable or necessary (preferably within three months of start-up).

If a plan such as that set out above is developed and adhered to, then whatever the form or scale of operation, any IR system should become operational with a minimum of difficulties and a maximum of efficiency.

In conclusion, a systematic approach to establishing an IR system should ensure that the assistance which it can provide in optimising decision-making will be maximised, as discussed in Chapter 8.

APPENDIX I

EJC ROLE INDICATORS

The best known system of role indicators is probably that published by the Engineers Joint Council in the USA. This list derives from one drawn up by B E Holm for the Engineering Department of E I du Pont de Nemours & Co, which was handed over initially to the American Institute of Chemical Engineers in 1961. This was passed on by the AIChE to the EJC in 1962 and greatly expanded to make meanings clearer. This EJC list comprises 11 roles, the meanings of which are as follows:

1 Input; raw material; material of construction; reactant; base metal (for alloys); components to be combined; constituents to be combined; ingredients to be combined; material to be shaped; material to be formed; ore to be refined; sub-assemblies to be assembled; energy input (only in an energy conversion); data and types of data (only when inputs to mathematical processings); a material being corroded.

2 Output; product, by-product, co-product; outcome, resultant; intermediate product; alloy produced; resulting material; resulting mixture or formulation; material manufactured; mixture manufactured; device shaped or formed; metal or substance refined; device, equipment, or apparatus made, assembled, built, fabricated, constructed, created; energy output (only in an energy conversion); data and types of data (only as mathematical processing outputs).

3 Undesirable component; waste; scrap; rejects (manufactured devices); contaminant; impurity, pollutant, adulterant, or poison in inputs, environments, and materials passively receiving action; undesirable material present; unnecessary material present; undesirable product, by-product, co-product.

4 Indicated, possible, intended present or later uses or applications. The use or application to which the term has been, is now, or will later be put. To be used as, in, on, for, or with; for use as, in, for, or with; used as, in, on, for, or with; for later use as, in, on, for, or with.

5 Environment; medium; atmosphere; solvent; carrier (material); support (in a process or operation); vehicle (material); host; absorbent, adsorbent.

6 Cause; independent or controlled variable; influencing factor; "X" as a factor affecting or influencing "Y"; the "X" in "Y" is a function of "X".

7 Effects; dependent variable; influenced factor; "Y" as a factor affected or influenced by "X"; the "Y" in "Y" as a function of "X".

8 The primary topic of consideration is; the principal subject of discussion is; the subject reported is; the major topic under discussion is; there is a description of.

9 Passively receiving an operation or process with no change in identity composition, configuration, molecular structure, physical state, or physical form; possession such as when preceded by preposition of, in or on meaning possession; location such as when preceded by the prepositions in, on, at, to, or from meaning location; used with months and years when they locate information (not bibliographic data) on a time continuum.

10 Means to accomplish the primary topic of consideration or other objective.

11 Bibliographic data, personal names of authors, corporate authors and sources, types of documents, dates of publication, names of journals and other publications, other source-identifying data, and adjectives.

APPENDIX II

Extracts from AE&CI's Thesaurus Building Guide

1. THE THESAURUS

A complete record of the index terms is kept in a thesaurus, which is a word authority list. Control of the index terms selected is essential. There are many synonymous words used in scientific language and a great number of terms would be generated if these were not cross-referred.

eg BLOWN PLASTICS)
CELLULAR PLASTICS)
EXPANDED PLASTICS) See PLASTICS (EXPANDED)
FOAMED PLASTICS)

ie One term is selected, and cross-references, known as "see" entries are made to it from the others.

Cross-references are also made for terms which are obsolete, unscientific, or the author's own naming.

eg CAUSTIC SODA See SODIUM HYDROXIDE
PLASTER OF PARIS See CALCIUM SULPHATE HEMIHYDRATE
SODA ASH See SODIUM CARBONATE

Another function of the thesaurus is to direct the searcher's attention to related terms which may be of interest to him. This is done by the use of "See also" entries.

eg CONTROL SYSTEM (PNEUMATIC) See also FLUIDICS
FLUIDICS See also CONTROL SYSTEM (PNEUMATIC)

It is obvious, therefore, that before the subject index is referred to, the thesaurus should first be consulted, in case the terms mentally selected by the searcher are not the terms filed in the subject index.

NOTE: The TIRSS files are divided into four main sections :
1) Document number index
2) Author index
3) Subject index (Index terms are filed here)
4) Master file

1.1 New Index Terms

Every term that is used as an index term is checked against the thesaurus. If a new term is suggested where a similar term exists it is usually possible to alter the new term selected to conform with terms already in the thesaurus.

eg The terms REFRIGERATION PLANT - CLEANING
and REFRIGERATION PLANT - OPERATION
are suggested new terms, but a series exists under REFRIGERATION SYSTEMS. The two new terms are thus changed to conform with the existing terms and become new terms:
REFRIGERATION SYSTEMS - CLEANING
and REFRIGERATION SYSTEMS - OPERATION

NOTE: The naming and indexing of chemical compounds is explained in the introduction to the subject index in Volumes 56 and 66 of Chemical Abstracts.

2. THE INDEX TERM

2.1 Selection of the index terms

After the abstract has been prepared suitable index terms are selected. This is not an easy task as the indexer must bear in mind the requirements of the user; ie try to imagine what approach he would take in his search for the information concerned.

Scan the document carefully and at the same time note down words that appear best to lead to each item of information. As terms are written down their roles should be assigned as these two phases of indexing are inseparable.

One of the more important objectives of the present indexing system is to bring together all pieces of information relating to a subject or aspect of a subject. This may necessitate the use of certain uniterms; ie a repetition of the second part of an index term.

eg The terms : FERTILIZERS - MILLING
INSECTICIDES - MILLING
ORES - MILLING
will each lead the searcher to a specific aspect of milling, whereas the uniterm, "MILLING", brings together all the information on the milling of these and other materials, which could be very useful, as in a survey on milling.

As the Company's interests are of prime importance the selection of index terms, particularly the selection of uniterms, will naturally have a bias.

When the index terms have been selected each one must be checked against the thesaurus entries. In order to restrict the addition of "new" terms to the thesaurus the indexer must search the thesaurus for existing terms which may possibly cover the same concept as the proposed "new" index term.

After the index terms have been checked they are to be clearly written in alphabetical order below the abstract on the work-sheet. Each existing index term is ticked off on the left and "new" terms are marked, NT (in red), also on the left.

Any new cross-references which the indexer considers necessary are printed in ink at the top of ISO A6 pink cards in capital letters and attached to the relevant work-sheet.

RATE OF SOLUTION See SOLUTION RATE	SHOCK WAVES See also DETONATION WAVES

The use of abbreviations should be avoided and a cross-reference given to the full term wherever possible.

eg NMR SPECTRA
See NUCLEAR MAGNETIC RESONANCE SPECTRA

Some exceptions : The name of some countries

eg SA GOVERNMENT REGULATIONS
USA DEPARTMENT OF DEFENCE PUBLICATIONS

The name of some companies

eg AE&CI PRODUCTS
NOBEL DIVISION, ICI

Miscellaneous

eg ASAT - A mixture of lead azide, lead styphnate, aluminium and tetryl.
ADC EXPLOSIVES - TEST
- Ardeer double cartridge sensitivity test.

As index terms these would be too cumbersome.

2.2 Notes on the choice of index terms

2.2.1 Choose the most relevant term that will lead the searcher to an item of information given in the document. Avoid jargon, slipshod or foreign phraseology, particularly when indexing patents, translations and American publications. The index term chosen should be scientific and unambiguous.

eg POTASSIUM NITRATE and not NITRE or SALTPETRE
SODIUM HYDROXIDE and not CAUSTIC SODA
PLASTICS - OPTICAL PROPERTIES and not PLASTICS - CLARITY
or PLASTICS - HAZE

2.2.2. A new index term in its final form should, where possible start with a noun, but the use of verb forms, usually as participles, is often necessary for operations and processes.

eg HARDENING AGENTS

2.2.3 If it is thought that a searcher may look under a different word from the one finally chosen for the index term a cross-reference should be made to guide the searcher to the term chosen.

eg ACRYLITE*, ALTUGLAS*, LUCITE*, ORCGLAS*, PERSPEX*, PLEXIGLAS*, PLEXIGUM*, RESARTGLAS*, RESARTIT*, RHOAGLAS* and VEDRIL* are all trade names for

METHACRYLIC ACID, METHYL ESTER POLYMERS

These should be referred to the scientific term with a "see" card if they are products of non-associated companies and with a "see also" card if they are products of AE&CI and Associated Companies.

2.2.4 If the contents of the document are considered to be of particular importance to AE&CI the index term chosen should be specific.

eg POLYETHYLENE - MELT FLOW INDEX
and not the general terms
(PLASTICS - MELT FLOW INDEX
(PLASTICS - PROPERTIES
(POLYETHYLENE - PROPERTIES
(POLYMERS - MELT FLOW INDEX

General terms of the type exemplified above should be used only when general information covering a wide field is indexed. If the abstractor considers that the contents of a document are not of current interest to AE&CI new index terms that have to be added are kept to a minimum.

eg ANTIBIOTICS -2
PHARMACEUTICALS - PATENT LAWS -9
PHARMACEUTICALS - PROPERTIES -9
NT SALICIL, 5,5'-DIBROMO -2

This set of terms indicates that the new term (NT) is an antibiotic and falls under the general heading of pharmaceuticals thus obviating the introduction of new terms, such as :

SALICIL, 5,5'-DIBROMO-, PATENT LAWS
SALICIL, 5,5'-DIBROMO-, PROPERTIES

If the abstractor considers the contents of a document to be of no permanent value to AE&CI Format 4 is used.

2.2.5 When new terms are introduced they should not be clumsy or involved.

eg Index thus : POLYMERS (GRANULAR)
POLYMERS PRODUCTION
and not : POLYMERS (GRANULAR) - PRODUCTION

It is permissible to use the adjectival descriptor as the first word of an index term, provided that there is no existing series in the thesaurus in which it appears as the second word.

eg ATMOSPHERIC POLL TION - CONTROL
FERTILIZER GRANULES - PLASTICITY
PLATE GLASS - WASHING
SOIL STERILANTS - EVALUATION

2.2.6 Index terms of the form x (in y) should not be used unless they are already in the thesaurus.

eg NT MOISTURE (IN RESINS) should be changed to
RESINS - MOISTURE CONTENT or if not of interest to the company simply SUBJECT - PROPERTIES
The same applies to index terms of the form x (in y) - DETERMINATION

eg NT MOISTURE (IN RESINS) - DETERMINATION should be changed to MOISTURE DETERMINATION and
RESINS - MOISTURE CONTENT

2.2.7 All trade names (ie registered trade marks) are indicated with an asterisk.

eg SAAIFOS*

Trade names are used once as index terms if they are the names of proprietary products of AE&CI, CIL, ICI, ICI Australia and other companies associated with AE&CI.

eg ANFEX*

a) These trade names are always followed by a "see also" reference which indicates what ANFEX* is. When indexing a report on eg ANFEX*, one or two of the descriptors on the reference card should be used on the work-sheet.
eg AMMONIUM NITRATE BLASTING AGENTS
AMMONIUM NITRATE/FUEL OIL
ANFEX*
Thus when a trade name is introduced as an index term for the first time a "see also" reference must be given.

b) Trade names for proprietary products of non-associated companies are not used as index terms, but are included in the thesaurus with references.
eg Index term: FIBRES (SYNTHETIC)
References: ARDEIN*
See FIBRES (SYNTHETIC)
ARDIL*
See FIBRES (SYNTHETIC)

c) If a trade name given to a product of a non-associated company has to be used, a scope note, giving the name of the company must be added to the "see" reference
eg MONEL*
MONEL* (The Trade Mark of Henry Wiggin & Co. Ltd)
See also ALLOYS (COPPER)
ALLOYS (NICKEL)

2.2.8 Generic or common names

If a generic name is used for a chemical compound it must be referred to the preferred name, according to Chemical Abstracts, and also to its indicated use. (The same applies to trade names).

eg Index terms : HERBICIDES
UREA,1,1-DIMETHYL-3-PHENYL-
References : FENURON
See HERBICIDES
UREA,1,1-DIMETHYL-3-PHENYL-

PDU
See HERBICIDES
UREA,1,1-DIMETHYL-3-PHENYL-

PHENURON
See HERBICIDES
UREA,1,1-DEMETHYL-3-PHENYL-

2.2.9 All chemicals, inorganic and organic, should normally be indexed according to Chemical Abstracts. The following exceptions to this rule should be noted.

a) (CYANURIC ACID 1957-1961 Chemical Abstracts nomenclature followed.
(ISOCYANURIC ACID
From 1962 on Chemical Abstracts refer these respectively to :

sym-TRIAZINE,2,4,6-TRIOL
sym-TRIAZINE,2,5,6(1H,3H,5H)-TRIONE

We refer these later entries back to cyanuric acid and isocyanuric acid.

b) The common names of some explosives :

eg DINITROTOLUENE
LEAD STYPHNATE
NITROTOLUENE
RDX
TRINITROTOLUENE, etc.

c) The common names of some plastics :

eg POLYETHYLENE
POLYPROPYLENE
POLYURETHANE
POLYVINYL CHLORIDE, etc.

d) The common names of some solvents :

eg PERCHLOROETHYLENE
TRICHLOROETHYLENE, etc.

Cross-references are made from the name preferred by Chemical Abstracts to the abovementioned terms.

e) Inorganic compounds
Chemical Abstracts index specific compounds under the simplest general names, ie those based on the constituents of compounds and preferably on the structure, but do not always indicate the oxidation state of simple groups, or cations, or the stoichiometric composition. Formulae are used for specific compounds under these group headings.

	Chemical Abstracts	TIRSS
eg group heading:	NITROGEN OXIDE	No group heading
	(NO	NITRIC OXIDE
	(NO_2	NITROGEN DIOXIDE
Specific entries :	(N_2O	NITROUS OXIDE
	(N_2O_5	NITROGEN PENTOXIDE

As it is impossible to use chemical formulae as index terms we deviate from Chemical Abstracts and index the above specific entries as indicated.

2.2.10 Uniterms

Some examples of uniterms which appear in the thesaurus and which are considered useful.

BIBLIOGRAPHY (Use Role O)
COMPUTER PROGRAMS
COMPUTER PROGRAMMING
CONFERENCES (Use Role O)
MANUALS (Use Role O)
MILLING
PROJECT (Use Role O. Use only for AE&CI projects)
SAMPLING
STANDARDS (Use Role O)
SURVEY (Use Role O)
SYMPOSIA (Use Role O)

2.2.11 In general, fungicides, herbicides, insecticides, miticides, molluscicides, pesticides, etc should be indexed once under the name given by Chemical Abstracts and the descriptors follow the general terms.

eg CARBAMIC ACID, ESTERS
INSECTICIDES - HANDLING
INSECTICIDES - TOXICITY

2.2.12 Fungi, Bacteria and pests

When these are indexed the genus or generic name should appear once with the descriptors following a general term.

eg ALTERNIA SPP
FUNGI - CONTROL
BACTERIA - VIABILITY

2.3 Indexing Rules

2.3.1 Periodical Reports

a) Periodical reports are divided into two categories. The first comprises reports which are numbered consecutively in a series retained exclusively for them:

eg Q5.5000/1, Q5.5000/2 ..... etc
or KRI.1, KRI.2 ..... etc

The second comprises reports which are scattered throughout a series:

eg RI.3147, RI.4021 ..... etc
SRI.21, SRI.34 ..... etc

b) These reports are indexed by TIRSS clerical staff, and not by abstractors.

c) Solvay reports, which are strictly confidential, have the word "SOLVAY" incorporated in the numbers before the classification letter "C".

eg MD.257/7/1964/SOLVAY/C

As Solvay reports are not filed separately, an additional index term is given for reports on mercury cells.

ie SOLVAY REPORTS -O
NB This index term is not to be used for reports on plastics.

NOTE: All documents from the ICI family on mercury cells must have

MERCURY CELL REPORTS -O

as an index term.

2.3.2 Reports on visits

a) Visit reports are indexed in the usual manner as to subject content, not to any great depth, unless the subject matter warrants it, but all visit reports written by members of AE&CI, must be indexed in depth.

b) The term, "VISIT" is restricted to the following :
(i) any visit paid by staff of AE&CI
(ii) any visit to AE&CI and/or subsidiary companies.

c) Under the lead-in term "VISIT", at least two entries are made

VISIT - (COMPANY) and/or (COUNTRY)
ie the company visited
eg VISIT - CANADIAN INDUSTRIES LIMITED

VISIT - (INTEREST)
eg VISIT - PLASTICS

d) In order to restrict the number of terms put into the thesaurus, a selection should be made from the following list of terms for the "INTEREST" :

AGRICULTURE (includes soil cultivation; use for livestock when the visit covers both
ANALYTICAL METHODS
ANIMAL HUSBANDRY (use for visit about livestock only)
CHEMICALS (excluding plastics)
COMPUTERS
ENGINEERING
EXPLOSIVES (including detonators, accessories, munitions, etc)

FABRICS
FERTILIZERS
INFORMATION SERVICES
INSTRUMENTS
MINERAL DEPOSITS (including phosphates, ores, clays, etc)
MISCELLANEOUS
ORGANIZATION (including management, office organization etc)
PAINTS
PLANNING
PLANT PROTECTION
PLASTICS
SAFETY
SALES
UNIVERSITIES
WORK STUDY

e) Do not reverse the terms under the lead-in word "VISIT"
eg do not use FERTILIZERS - VISIT
UNITED STATES - VISIT

f) Where a factory, division, or company has been visited for general interest index as follows :
eg VISIT - IMPERIAL CHEMICAL INDUSTRIES, LIMITED
VISIT - MISCELLANEOUS

g) Use only the following names of companies after the lead-in word "VISIT"
AE&CI Limited
Canadian Industries Limited
Danbritkem A/S
Imperial Chemical Industries Limited
ICI Australia
Indian Explosives Limited

h) Where an AE&CI factory has been visited, ie Midlands Modderfontein, Rodia, Somerset West or Umbogintwini, index under AE&CI, "interest" and "place".
eg MODDERFONTEIN FACTORY
VISIT - AE&CI LIMITED
VISIT - EXPLOSIVES

i) Where visits have been paid to other firms in South Africa, index under the name of the place, not under the name of the firm.
eg VISIT - CAPETOWN
not VISIT - NATIONAL CHEMICAL PRODUCTS LIMITED

j) Where more than one country was visited it is not necessary to index each one, provided that there is an index term which embraces all the countries visited.
eg Index VISIT - EUROPE
Instead of VISIT - FRANCE
VISIT - HOLLAND
VISIT - SWITZERLAND, etc

k) Where more than one subject has been studied, index under each of the appropriate "interest" terms.
eg VISIT - AGRICULTURE
VISIT - FERTILIZERS
VISIT - PLANT PROTECTION

l) Do not index under the term "INTERFACTORY VISIT" or "OVERSEAS VISIT". Use the above rules as a guide.

m) Terms which include the word "VISIT" are assigned Role O.

2.3.3 Reports on explosions, fires, or unusual occurrences

When documents dealing with investigations into explosions, fires, or unusual occurrences are indexed, entries should be made as indicated below if these events occurred in AE&CI or associated companies. Note that index terms for event - place and place - event should not be used when other companies are concerned, and that the names of countries should not be used as index terms - the country and the company concerned should be mentioned in the abstract and/or title.

a) Index under the event together with the place where the event occurred:
eg EXPLOSION (ACCIDENTAL) - SOMERSET WEST FACTORY
FIRES - MODDERFONTEIN FACTORY
UNUSUAL OCCURRENCES - UMBOGINTWINI FACTORY
NB For ICI and AE&CI reports, be as specific as possible as to the location of the explosion, fire or unusual occurrence ie use the name of the factory or plant rather than the division or company. For ICIANZ and CIL reports, use the name of the company for these terms, and the name of the factory or plant on its own:
eg BROWNSBURG WORKS - CANADIAN INDUSTRIES LIMITED
CANADIAN INDUSTRIES LIMITED - EXPLOSION (ACCIDENTAL)
EXPLOSION (ACCIDENTAL) - CANADIAN INDUSTRIES LIMITED

b) Reverse the terms selected under 2.3.3 (a). This will bring together under the name of the factory or place, all explosions, all fires, and all unusual occurrences.
eg MODDERFONTEIN FACTORY - EXPLOSION (ACCIDENTAL)
MODDERFONTEIN FACTORY - FIRES
MODDERFONTEIN FACTORY - UNUSUAL OCCURRENCES

c) Index under the type of explosive, piece of equipment, explosive house or material that exploded or caught fire:
eg ACETYLENE - EXPLOSION (ACCIDENTAL)
BLACKPOWDER - EXPLOSION (ACCIDENTAL)
CRIMPING MACHINES - EXPLOSION (ACCIDENTAL)
DYNAMITE CARTRIDGING HOUSE - FIRES
NITROCOTTON DRYING HOUSE - FIRES
Do not reverse the above terms.

d) Where a document deals with both an explosion and a fire, index under both headings :
eg EXPLOSION (ACCIDENTAL) - SOMERSET WEST FACTORY
FIRES - SOMERSET WEST FACTORY
NITROCOTTON DRYING HOUSE - FIRES
SOMERSET WEST FACTORY - EXPLOSION (ACCIDENTAL)
SOMERSET WEST FACTORY - FIRES

e) Terms directly related to explosions, fires and unusual occurrences should be indexed under Role O.

f) Neither a fire nor an explosion should be recorded as an unusual occurrence, so that the term "UNUSUAL OCCURRENCES" must not be used in conjunction with either of these two.

2.3.4 Surveys and bibliographies

a) Surveys and bibliographies are indexed in the normal manner as to subject content.

b) The following terms must be used for surveys.

SUBJECT -9
SURVEY (TYPE) -O (ie specified)
eg BILHARZIASIS
SURVEY (LITERATURE)

PHOSPHATE ROCK
SURVEY (GEOLOGICAL)

PLASTICS
SURVEY (MARKET)

c) The following terms must be used for "land" surveys.
AREA -O
SURVEY (TYPE) -O

eg SOUTH AFRICA
SURVEY (AGRICULTURAL)

AGRICULTURAL RESEARCH STATION (FRANKENWALD)
SURVEY (BOTANICAL)

SURVEY (GEOLOGICAL)
TUGELA BASIN

d) Patent surveys are indexed as follows:
SUBJECT
SURVEY (PATENTS)

e) Use "SURVEY" on its own only for surveys other than those which are specified in the thesaurus. A survey indexed under one of the latter is not also indexed under "SURVEY".

f) Use "BIBLIOGRAPHY" when the document is primarily a bibliography. Do not use for a document that has a limited list of references at the end.

g) The following terms must be used for bibliographies:
BIBLIOGRAPHY -O
SUBJECT

eg BIBLIOGRAPHY
EXPLOSIONS (DUST)

h) Terms directly related to bibliographies and surveys should be indexed under Role O.

2.3.5 Work Study reports

Work study reports include those on work specifications, incentive bonus schemes, investigations and those of a general nature that deal with various aspects of the subject of work study itself.

a) Index reports of a general nature under appropriate headings
eg BONUS EARNINGS
INCENTIVE BONUS SCHEMES
WORK STUDY

b) Index reports on incentive bonus schemes under the headings:
SUBJECT -4
INCENTIVE BONUS SCHEMES -O
eg INCENTIVE BONUS SCHEMES -O
POLYVINYL CHLORIDE PRODUCTION

c) Index reports on work specifications under the headings:
SUBJECT -4
WORK SPECIFICATIONS -O
eg PHOSPHATE ROCK MILLING
WORK SPECIFICATIONS

d) Index reports on work study investigations under the heading:
SUBJECT -4
WORK STUDY INVESTIGATION
eg POLYVINYL CHLORIDE PRODUCTION
WORK STUDY INVESTIGATION

e) The above subjects should be indexed under the operation performed or studied, and not under the name of the plant.

f) Use Role O as shown in the examples above.

2.3.6 Computer Programs

a) Index reports on computer programs under the headings:
COMPUTER PROGRAMS
SUBJECT
eg COMPUTER PROGRAMS
PROBABILITY DISTRIBUTION

b) Use the term COMPUTER PROGRAMMING to index techniques and methods of programming, and for methods of calculating by means of a computer -
ie for detailed instructions for programmers.

g) The following terms must be used for bibliographies:
BIBLIOGRAPHY -O
SUBJECT

eg BIBLIOGRAPHY
EXPLOSIONS (DUST)

h) Terms directly related to bibliographies and surveys should be indexed under Role O.

2.3.5 Work Study reports

Work study reports include those on work specifications, incentive bonus schemes, investigations and those of a general nature that deal with various aspects of the subject of work study itself.

a) Index reports of a general nature under appropriate headings
eg BONUS EARNINGS
INCENTIVE BONUS SCHEMES
WORK STUDY

b) Index reports on incentive bonus schemes under the headings:
SUBJECT -4
INCENTIVE BONUS SCHEMES -O
eg INCENTIVE BONUS SCHEMES -O
POLYVINYL CHLORIDE PRODUCTION

c) Index reports on work specifications under the headings:
SUBJECT -4
WORK SPECIFICATIONS -O
eg PHOSPHATE ROCK MILLING
WORK SPECIFICATIONS

d) Index reports on work study investigations under the heading:
SUBJECT -4
WORK STUDY INVESTIGATION
eg POLYVINYL CHLORIDE PRODUCTION
WORK STUDY INVESTIGATION

e) The above subjects should be indexed under the operation performed or studied, and not under the name of the plant.

f) Use Role O as shown in the examples above.

2.3.6 Computer Programs

a) Index reports on computer programs under the headings:
COMPUTER PROGRAMS
SUBJECT
eg COMPUTER PROGRAMS
PROBABILITY DISTRIBUTION

b) Use the term COMPUTER PROGRAMMING to index techniques and methods of programming, and for methods of calculating by means of a computer -
ie for detailed instructions for programmers.

2.5 AE&CI Factories

Index the name of an AE&CI factory when a document deals with one specific factory. Documents for which these locator terms must be used are as follows: manuals, commissioning reports, project reports, etc.

eg FERTILIZERS PRODUCTION - PROJECT
MODDERFONTEIN FACTORY

MIDLAND FACTORY
POLYETHYLENE PLANT COMMISSIONING

PROCESS MANUALS
RODIA FACTORY

The index terms relating to the factories are assigned Role O.

eg MIDLAND FACTORY -O

2.6 Analytical methods

If documents have a full description of an analytical method then either "ANALYTICAL METHODS" or the specific method must be used as one of the index terms.

eg ANALYTICAL METHODS
or VOLUMETRIC METHODS

NOTE (i) If there is no information on a particular subject in a document do not use an index term to indicate that there is, unless it is a locator term.

eg MODDERFONTEIN FACTORY -O
POLYETHYLENE PLANT -9

NOTE (ii) Do not use an index term that is not a retrieval term for the particular document concerned, and do not use a term that does not appear either in the title or in the abstract. (An exception is where an indicative abstract is written for a lengthy document and it is necessary to deep index the document).

2.7 AEM Reports

The index term
PRODUCTION INSTRUCTIONS -O

must be used for all these reports.

2.8 Documents concerning a thesaurus

If a document is a thesaurus, index under the headings:

SUBJECT -9
THESAURUS -O
eg PLASMA PHYSICS
THESAURUS

If a document is about the construction of a thesaurus index under one heading only:

THESAURUS -9

If a document has a section on thesaurus construction and a section which is a thesaurus, index under the headings:

SUBJECT -9
THESAURUS -9
eg ENGINEERING
THESAURUS

APPENDIX III

TYPES OF THESAURI

CONTENTS

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APPENDIX III

EXAMPLE OF UNSTRUCTURED POST-COORDINATE THESAURUS

BRITTLE FAILURES

BRITTLENESS

BRONZE

BRUSHES

BUBBLES

BUBBLING PRESSURES

BUCKETS
  BUCKETS/FLIP/USE FLIP BUCKETS

BUCKLING

BUDGETS
  BUDGETS/FEDERAL/USE FEDERAL BUDGETS

BUFFERS/CHEMISTRY/
  BUFFERS/DAM/USE CUSHIONING

BUFFERS/INDUSTRIAL EQUIP/

BUILDING CODES

BUILDING MATERIALS

BUILDINGS

BULK

BULKHEADS
  BULKHEADS/ANCHORED/USE ANCHORED BULKHEADS

BULKING

BULLDOZERS

BUNDLED CONDUCTORS

BUOYANCY

BUOYS

BURIED MEMBRANES

BURNING

BURROWING ANIMALS

BUS/ELECTRICAL/

BUSHINGS

BUTT JOINTS

BUTTERFLY VALVES

BUTTRESS DAMS

BUTTRESSES

BYPASS CHANNELS

APPENDIX III

EXAMPLE OF UNSTRUCTURED PRE-COORDINATE THESAURUS

BEARINGS - ALIGNMENT

BEARINGS - DESIGN

BEARINGS - EVALUATION

BEARINGS - MAINTENANCE

BEARINGS - MOUNTING

BEARINGS - PERFORMANCE

BEESWAX

BENEFICIATION
SEE ALSO MAGNETIC SEPARATION

BENEFICIATION - BIBLIOGRAPHY

BENZENE, DEHYDRO
SEE 1,3-CYCLOHEXADIEN-5-YNE

BENZENEDIAZONIUM COMPOUNDS

BENZENE, 1,2-DIHYDROXY-
SEE PYROCATECHOL

BENZENE, META-DIISOPROPYL-

PARA-BENZENEDIOL
SEE HYDROQUINONE

BENZIMIDAZOLE, 2-(4-THIAZOLYL)-

BENZOFURAN, DERIVATIVES - NUCLEAR MAGNETIC
RESONANCE SPECTRA

BENZOFURAN, DERIVATIVES - PREPARATION

BENZO(G)PTERDINE-2,4(3H,10H)-DIONE
INDEX AS ISOALLOXAZINE

APPENDIX III

EXAMPLE OF STRUCTURED POST-COORDINATE THESAURUS

PLY BONDING
   USE PLY ADHESION

PLYWOOD (3)
   RT WOOD

PMA
   USE POLYMETHYL ACRYLATE

PMMA
   USE POLYMETHYL METHACRYLATE

POLLUTANTS
   USE CONTAMINANTS

POLLUTION (1)
   NT AIR POLLUTION
       STREAM POLLUTION
       WATER POLLUTION
   RT CONTAMINATION
       INDUSTRIAL WASTES
       MERCAPTANS
       MICROORGANISMS
       ODOUR CONTROL
       QUALITY
       SPENT LIQUORS
       WASTE DISPOSAL
       WASTES

POLYACRYLATES
   USE ACRYLIC RESINS

POLYACRYLONITRILE (1)
   UF ACRILAN *
       DYNEL *
       NITRILE RUBBER
       ORLON *
   BT ACRYLIC RESINS
       ADDITION RESINS
       CYANIDES
       NITRILES
       PLASTICS
       POLYMERS
       SYNTHETIC RESINS
       THERMOPLASTIC RESINS
       VINYL RESINS
   RT ACRYLONITRILE
       POLYALKYL METHACRYLATES
       POLYMETHYL METHACRYLATE
       SYNTHETIC RUBBER
       VINYON*

BT = Broader Term
NT = Narrower Term
RT = Related Term
UF = Use For
 * = Trade Name

EXAMPLE OF STRUCTURED POST-COORDINATE THESAURUS

PLY BONDING
   USE PLY ADHESION

PLYWOOD (3)
   RT WOOD

PMA
   USE POLYMETHYL ACRYLATE

PMMA
   USE POLYMETHYL METHACRYLATE

POLLUTANTS
   USE CONTAMINANTS

POLLUTION (1)
   NT AIR POLLUTION
       STREAM POLLUTION
       WATER POLLUTION
   RT CONTAMINATION
       INDUSTRIAL WASTES
       MERCAPTANS
       MICROORGANISMS
       ODOUR CONTROL
       QUALITY
       SPENT LIQUORS
       WASTE DISPOSAL
       WASTES

POLYACRYLATES
   USE ACRYLIC RESINS

POLYACRYLONITRILE (1)
   UF ACRILAN *
       DYNEL *
       NITRILE RUBBER
       ORLON *
   BT ACRYLIC RESINS
       ADDITION RESINS
       CYANIDES
       NITRILES
       PLASTICS
       POLYMERS
       SYNTHETIC RESINS
       THERMOPLASTIC RESINS
       VINYL RESINS
   RT ACRYLONITRILE
       POLYALKYL METHACRYLATES
       POLYMETHYL METHACRYLATE
       SYNTHETIC RUBBER
       VINYON*

BT = Broader Term
NT = Narrower Term
RT = Related Term
UF = Use For
 * = Trade Name

APPENDIX III

EXAMPLE OF STRUCTURED PRE-COORDINATE THESAURUS

SPECIFIC LEVEL

HEADS

Nitroglycerin Explosives

- NT Powder Explosives
  - NT Dynamites
  - NT Ammon Dynamites
  - NT Treflo
- NT Semigelatinous Explosives
  - NT Dynagels
- NT Gelatinous Explosives
  - NT Blasting Gelatin
  - NT HV Slabs
  - NT Permitted Explosives
  - NT Gelignites
  - NT Ammon Gelignites

TAILS

Properties

- NT Chemical Properties
- NT Mechanical Properties
- NT Electrical Properties
- NT Magnetic Properties
- NT Physical Properties
  - NT Burning Properties
    - NT Burning Speed
    - NT Burning Time
  - NT Deflagration Properties
  - NT Initiation Properties
    - NT Initiation Efficiency
  - NT Firing Properties

APPENDIX III

EXAMPLE OF STRUCTURED PRE-COORDINATE THESAURUS

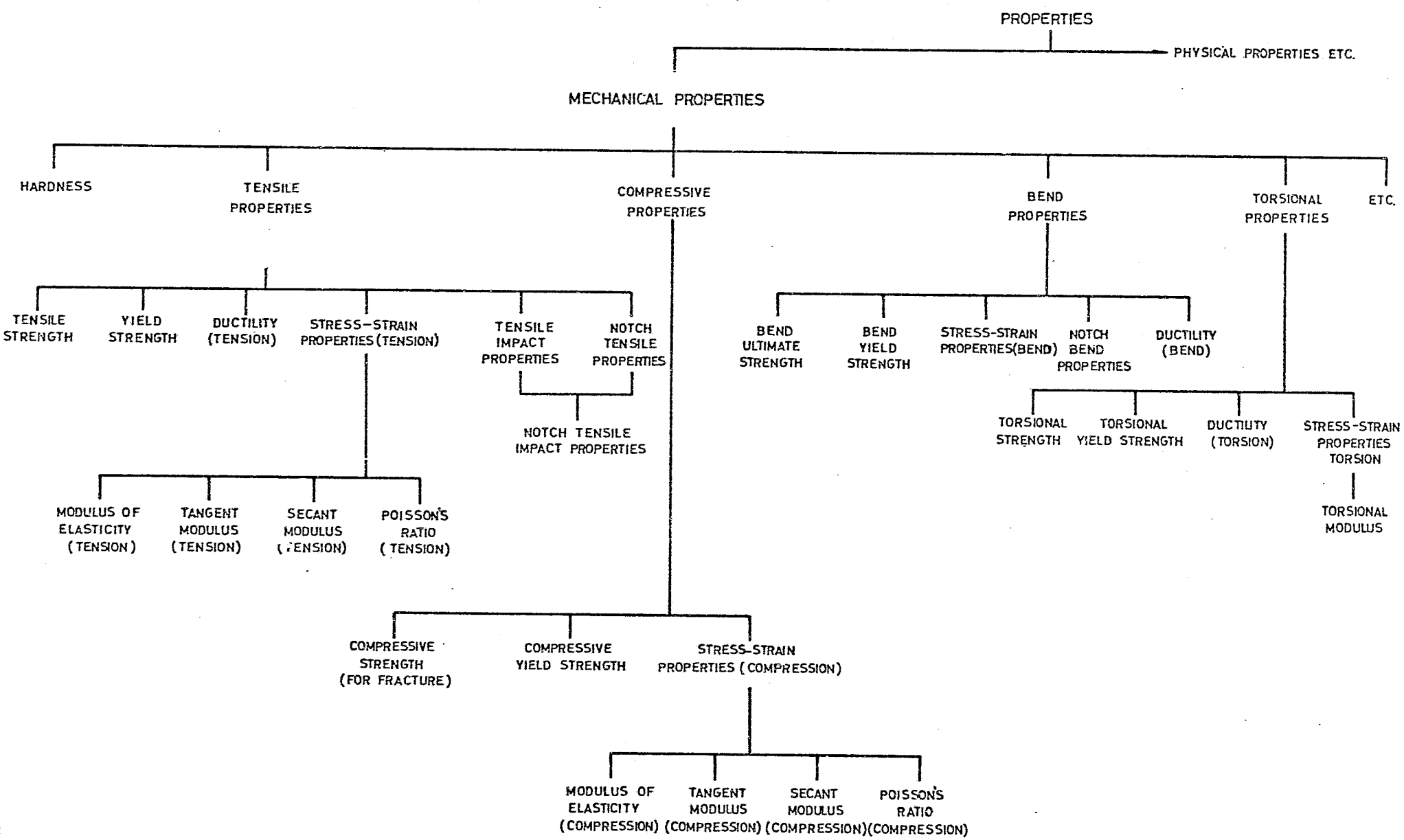
GENERIC LEVEL

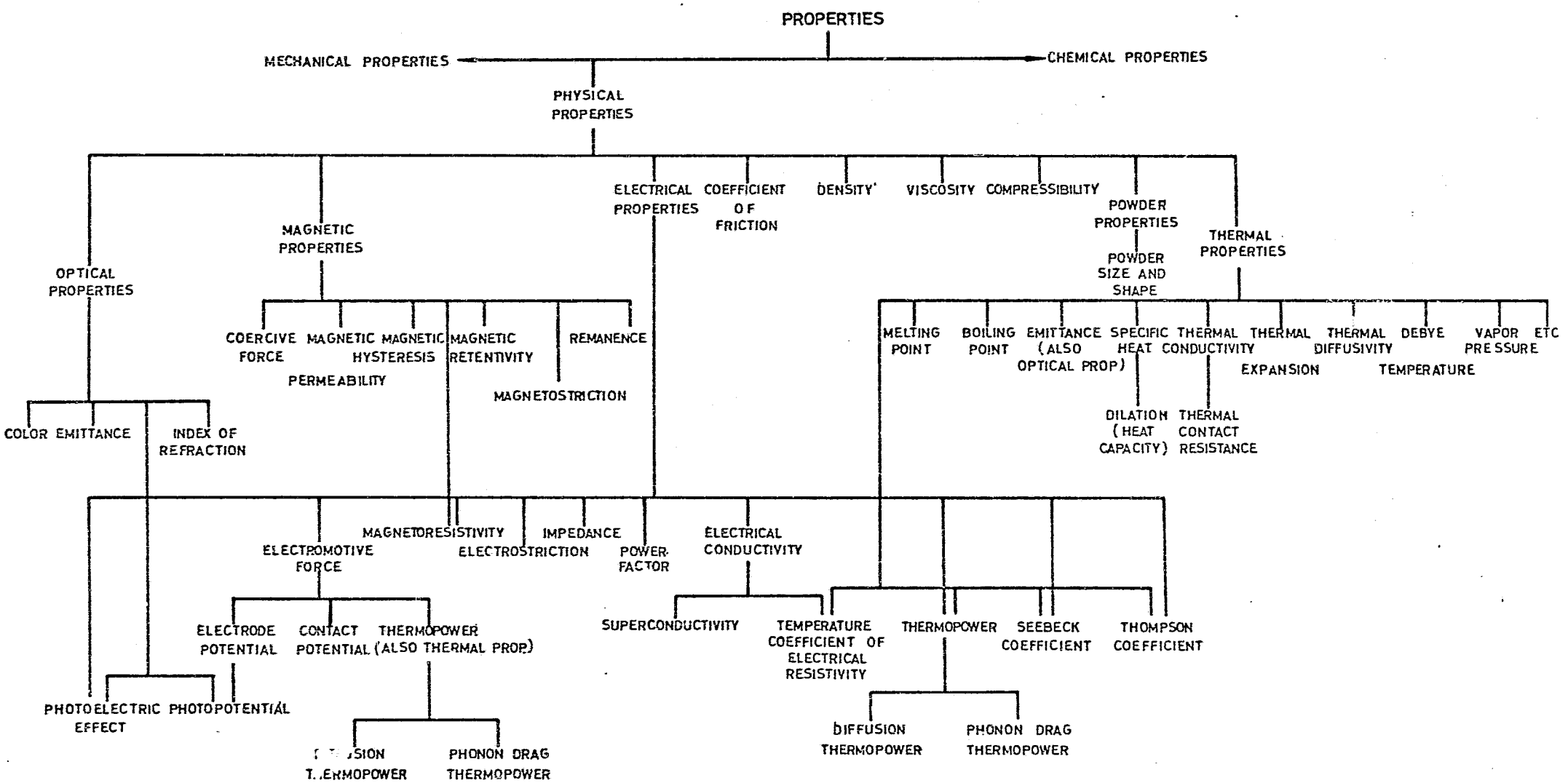
HEADS

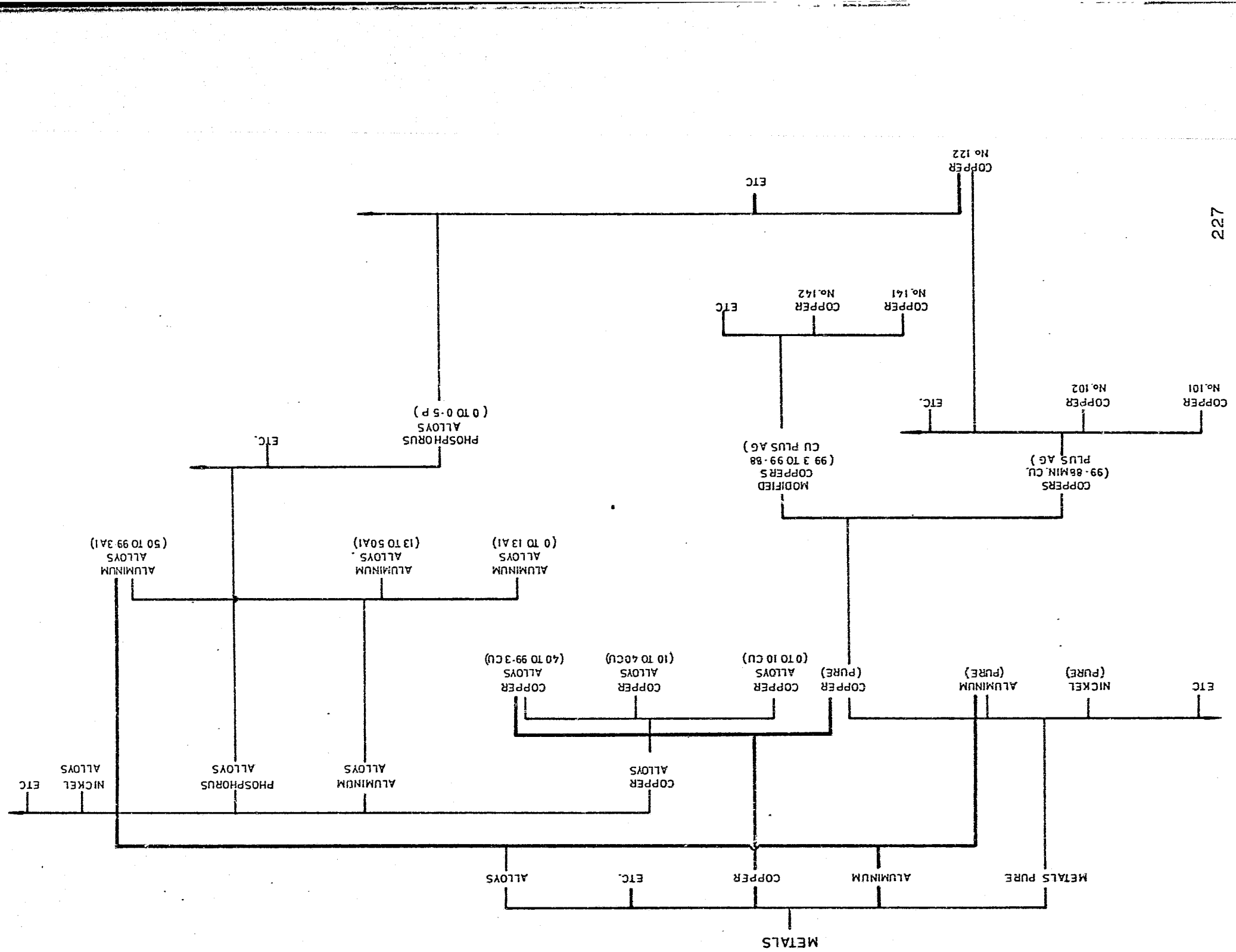
Explosives
- NT Blasting Explosives
  - NT Underground Blasting Explosives
    - NT Nitroglycerin Explosives
    - NT Ammonium Nitrate Explosives
  - NT Opencast Explosives
    - UF Quarrying Explosives
  - NT Plaster Shooting Explosives
  - NT Underwater Blasting Explosives
  - NT Oilwell Blasting Explosives
    - NT Jet Piercing Explosives
    - NT Borehole Clearing Explosives

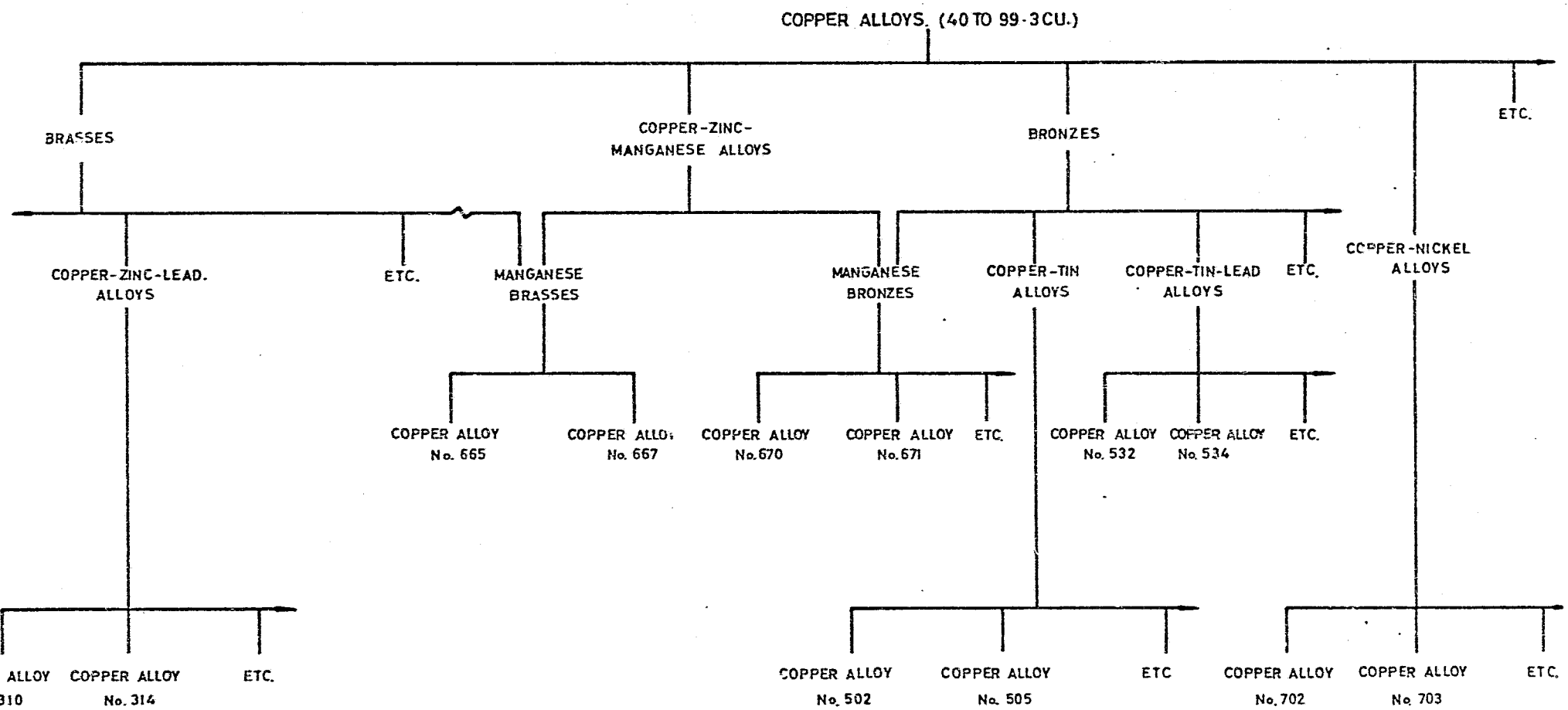
TAILS

Initiation Properties
- NT Initiation Efficiency
- NT Initiation Energy
- NT Initiation Power
- NT Initiation Sensitivity
  - NT Compression Sensitivity
  - NT Friction Sensitivity
    - NT Torpedo Friction Sensitivity
  - NT Gap Sensitivity
    - NT ADC Sensitivity
  - NT Impact Sensitivity
  - NT Spark Sensitivity
    - NT Electrostatic Spark Sensitivity
    - NT Pyrotechnic Spark Sensitivity


PROPERTIES
PHYSICAL PROPERTIES ETC.
MECHANICAL PROPERTIES
HARDNESS
TENSILE PROPERTIES
COMPRESSIVE PROPERTIES
BEND PROPERTIES
TORSIONAL PROPERTIES
ETC.
TENSILE STRENGTH
YIELD STRENGTH
DUCTILITY (TENSION)
STRESS-STRAIN PROPERTIES (TENSION)
TENSILE IMPACT PROPERTIES
NOTCH TENSILE PROPERTIES
NOTCH TENSILE IMPACT PROPERTIES
MODULUS OF ELASTICITY (TENSION)
TANGENT MODULUS (TENSION)
SECANT MODULUS (TENSION)
POISSON'S RATIO (TENSION)
BEND ULTIMATE STRENGTH
BEND YIELD STRENGTH
STRESS-STRAIN PROPERTIES (BEND)
NOTCH BEND PROPERTIES
DUCTILITY (BEND)
TORSIONAL STRENGTH
TORSIONAL YIELD STRENGTH
DUCTILITY (TORSION)
STRESS-STRAIN PROPERTIES TORSION
TORSIONAL MODULUS
COMPRESSIVE STRENGTH (FOR FRACTURE)
COMPRESSIVE YIELD STRENGTH
STRESS-STRAIN PROPERTIES (COMPRESSION)
MODULUS OF ELASTICITY (COMPRESSION)
TANGENT MODULUS (COMPRESSION)
SECANT MODULUS (COMPRESSION)
POISSON'S RATIO (COMPRESSION)


PROPERTIES
MECHANICAL PROPERTIES
CHEMICAL PROPERTIES
PHYSICAL PROPERTIES
OPTICAL PROPERTIES
MAGNETIC PROPERTIES
ELECTRICAL PROPERTIES
COEFFICIENT OF FRICTION
DENSITY
VISCOSITY
COMPRESSIBILITY
POWDER PROPERTIES
POWDER SIZE AND SHAPE
THERMAL PROPERTIES
COLOR EMITTANCE
INDEX OF REFRACTION
COERCIVE FORCE
MAGNETIC HYSTERESIS
PERMEABILITY
MAGNETIC RETENTIVITY
REMANENCE
MAGNETOSTRICTION
MELTING POINT
BOILING POINT
EMITTANCE (ALSO OPTICAL PROP)
SPECIFIC HEAT
THERMAL CONDUCTIVITY
THERMAL EXPANSION
THERMAL DIFFUSIVITY
DEBYE TEMPERATURE
VAPOR PRESSURE
ETC
DILATION (HEAT CAPACITY)
THERMAL CONTACT RESISTANCE
MAGNETORESISTIVITY
ELECTROSTRICTION
IMPEDANCE
POWER FACTOR
ELECTRICAL CONDUCTIVITY
ELECTROMOTIVE FORCE
ELECTRODE POTENTIAL
CONTACT POTENTIAL
THERMOPOWER (ALSO THERMAL PROP)
SUPERCONDUCTIVITY
TEMPERATURE COEFFICIENT OF ELECTRICAL RESISTIVITY
THERMOPOWER
SEEBECK COEFFICIENT
THOMPSON COEFFICIENT
PHOTOELECTRIC EFFECT
PHOTOPOTENTIAL
DIFFUSION THERMOPOWER
PHONON DRAG THERMOPOWER
DIFFUSION THERMOPOWER
PHONON DRAG THERMOPOWER


METALS
METALS PURE
ALUMINUM
COPPER
ETC.
ALLOYS
COPPER (PURE)
ALUMINUM (PURE)
NICKEL (PURE)
ETC
COPPER ALLOYS (0 TO 10 CU)
COPPER ALLOYS (10 TO 40 CU)
COPPER ALLOYS (40 TO 99·3 CU)
COPPER ALLOYS
ALUMINUM ALLOYS
PHOSPHORUS ALLOYS
NICKEL ALLOYS
ETC
ALUMINUM ALLOYS (0 TO 13 AL)
ALUMINUM ALLOYS (13 TO 50 AL)
ALUMINUM ALLOYS (50 TO 99·3 AL)
ETC.
PHOSPHORUS ALLOYS (0 TO 0·5 P)
MODIFIED COPPERS (99·3 TO 99·88 CU PLUS AG)
COPPERS (99·88 MIN. CU. PLUS AG)
COPPER No. 101
COPPER No. 102
ETC.
COPPER No. 141
COPPER No. 142
ETC
COPPER No. 122
ETC


COPPER ALLOYS (40 TO 99-3 CU.)
BRASSES
COPPER-ZINC-MANGANESE ALLOYS
BRONZES
ETC.
COPPER-ZINC-LEAD. ALLOYS
ETC.
MANGANESE BRASSES
MANGANESE BRONZES
COPPER-TIN ALLOYS
COPPER-TIN-LEAD ALLOYS
ETC.
COPPER-NICKEL ALLOYS
COPPER ALLOY No. 665
COPPER ALLOY No. 667
COPPER ALLOY No. 670
COPPER ALLOY No. 671
ETC.
COPPER ALLOY No. 532
COPPER ALLOY No. 534
ETC.
COPPER ALLOY No. 310
COPPER ALLOY No. 314
ETC.
COPPER ALLOY No. 502
COPPER ALLOY No. 505
ETC
COPPER ALLOY No. 702
COPPER ALLOY No. 703
ETC.

EXAMPLES OF STRUCTURED TERMS (TOGETHER WITH A SCOPE NOTE)

ALIPHATIC POLYENE HYDROCARBONS

*(Hydrocarbons with two or more ethylenic bonds)

BT Aliphatic acyclic hydrocarbons
Aliphatic hydrocarbons
Aliphatic polyene compounds
Alkene compounds
Alkene hydrocarbons
Hydrocarbons
Unsaturated hydrocarbons

NT Allene
Butadienes
-Cyclopolyene hydrocarbons
Isoprene
Squalene

RT-Dienes
Unsaturated organic compounds

ALIZARIN

BT Anthraquinones
Aromatic ketones
Ketones
Quinones

RT-Dyes

ALKALINE ELECTROLYTES

BT [illegible]ic conductors
[illegible]lectrolytes

RT Battery electrolytes
Fuel cell electrolytes

ALKALINE PHOSPHATASES

BT Enzymes
Esterases
Hydrolases
Phosphatases

ALKALINE ROCKS

USE Basic rocks

ALKALINITY

UF Basicity
Causticity

BT Chemical properties

RT Acidity
Buffers (*chemistry)
pH

ALKALINITY CONTROL

USE pH control

ALKALI RESISTANCE TESTS

BT Corrosion tests
RT Acid resistance tests

* = scope note
BT = broader term
NT = narrower term
RT = related term
UF = use for

APPENDIX V

DESCRIPTION OF TIRSS

CONTENTS

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1 Types of documents included in TIRSS

The following indicates the wide range of documents included in the system:

Document type	Comment
Analytical methods	Methods for both chemical and physical analysis.
Government and Provincial Gazette and Regulations	All regulations, such as for fertilizer analysis, etc are included.
Journal articles	Included on request only and preferably limited to review type articles.
Letters and minutes	Only when of a technically informative nature and of permanent value.
Memoranda	- ditto -
Minutes of meetings	- ditto -
Pamphlets	Only pamphlets that contain particularly valuable technical information are included.
Patents	Now discontinued - South African chemical patents were included until Chemical Abstracts Service agreed to abstract them.
Periodical reports	All reports that are issued at regular intervals sequentially (monthly, quarterly, etc). These are not abstracted but are included for cross-reference purposes.
Subject reports	Internal reports dealing with one or more subjects and produced by AE&CI and associated companies. These make up 80% of TIRSS.
Test notes	The results of testing raw materials, products, competitive products, etc, are included when of permanent value.
Translations	All technical material translated from foreign languages at AE&CI's expense is included to ensure maximum return on the investment.

2 The physical preparation of TIRSS cards

Several examples of TIRSS cards are included in Section 2.7 of this Appendix to show the slightly differing treatment for different types of documents. The presentation has been standardised so that bibliographic information heads each card. This is followed by the abstract, or extract if more appropriate, and all the index terms appropriate to each document. The abstractor/indexer prepares a draft of information required for the three sections of each card, using a so-called 'work sheet'.

2.1 Bibliographic information

This is limited to the minimum that will serve to identify each document unambiguously and to indicate its physical whereabouts. To save abstractors' time it is only necessary to write out the information unique to each document and a 'format' number so that the typist can complete the lay-out.

Example 1 : a memorandum

The abstractor would write the following information:

Format 1C
CE/MEN/27/67/REL
6.3.67
R.E. Leyman, Eng. Dept.
A.J.P. Tucker, Eng. Dept.
Examination of pipe bend on ARCTON 'cold' line, heat-treated in-situ
CE 136
Tech. file T 17/10, Eng. Dept., AE&CI

The typist would present this information as follows on the TIRSS card:

MEMORANDUM	:	CE/MEN/27/67/REL DATE : 6.3.1967
FROM	:	R.E. LEYMAN, Engineering Department, AE&CI
TO	:	A.J.P. TUCKER, Engineering Department, AE&CI
SUBJECT	:	EXAMINATION OF PIPE BEND ON ARCTON "COLD" LINE, HEAT-TREATED "IN-SITU". PROJECT CE.136
AVAILABLE	:	Technical file, T.17/10, Engineering Department, AE&CI

Example 2 : a pamphlet

FORMAT 3 A (shown only as typed on the TIRSS card)

PAMPHLET NO.:		P.M.14.263 DATE : 23.5.1966
SOURCE	:	U.S.Naval Research Laboratory, Washington, USA
AUTHORS	:	S.S. STIMLER and R.E. KAGARISSE
TITLE	:	INFRARED SPECTRA OF PLASTICS AND RESINS PART 2 - MATERIALS DEVELOPED SINCE 1954
AVAILABLE	:	Library, Research Department, AE&CI

Example 3 : a report

FORMAT 5A (shown only as typed on the TIRSS card)

REPORT NO. : AER.312/A DATE : 23.10.1961
AUTHOR : J. HAWES & N. MUNRO, Research Department, AE&CI
TITLE : THE DEVELOPMENT OF A PLASTIC IGNITERCORD CONNECTOR
AVAILABLE : Central Report files, Research Department, AE&CI

2.2 Abstracts

Whenever possible, and it is appreciated that it is not always possible, an existing summary is used or an informative type abstract is provided. Alternatively, in the case of letters, minutes, memoranda and minutes of meetings, extracts which contain the valuable pieces of information may be all that it is necessary to provide. If time can be saved by making photocopies and marking them using conventional proof-readers' symbols as appropriate, this is always to be preferred.

Guidance is given by the abstractor on the preferred style to be used and on how to set about preparing an abstract. As far as possible the Chemical Abstracts Service 'Directions for abstractors' are followed closely (see below for reference). In the case of an investigational report, for example, the abstractor should consider the scope and purpose, methods and procedures used in making the investigation, significant new results, the conclusions drawn and the recommendations made. Information which, for one reason or another, must be excluded is detailed - this may include 'classified' information (ie information which is relevant to national security) and information where the need for commercial security is paramount - eg information on the details of the formulation of products, cost data, market estimates, etc.

Generally speaking the abstractor is referred to the following publications as regards the length of abstracts, permitted abbreviations and units, etc.

1 Chemical Abstracts Service : Directions for abstractors, Columbus, Ohio, Chemical Abstracts Service of the American Chemical Society, 1967.

2 British Standards Institute : Proof correction and copy preparation. London, BSI, BS 1219, 1958.

3 British Standards Institute : Letter symbols, signs and abbreviations. London, BSI. General, BS 1991, Part 1, 1967, Chemical Engineering, Nuclear Science and Applied Chemistry, BS 1991, Part 2, 1961.

4 South African Bureau of Standards : Basic guide to the metric system in South Africa. Pretoria, SABS, 1968.

The formal training of abstractors takes from two to four weeks, depending on aptitude, technical ability, etc, and each is provided with an aide memoire as follows:

DO:

Scan the document
State what was found
State why the work was done
State how the work was done
Place general statements last
Separate relatively independent subjects
Differentiate experiment from hypothesis
Be exact, concise, and unambiguous
Use short, complete sentences
Avoid unnecessary words
Use generic expressions where possible
Use direct statements (active voice)
Describe conclusions in the present tense
Use standard abbreviations

DO NOT:

Change the meaning of the original
Comment on or interpret the document
Mention earlier work
Include detailed experimental results
Describe details of apparatus
Mention future work
Use involved phraseology or jargon
Waste words by stating the obvious
Say the same thing in two ways
Use a choppy, telegraphic style

4 South African Bureau of Standards : Basic guide to the metric system in South Africa. Pretoria, SABS, 1968.

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Use direct statements (active voice)
Describe conclusions in the present tense
Use standard abbreviations

DO NOT:

Change the meaning of the original
Comment on or interpret the document
Mention earlier work
Include detailed experimental results
Describe details of apparatus
Mention future work
Use involved phraseology or jargon
Waste words by stating the obvious
Say the same thing in two ways
Use a choppy, telegraphic style

Initially the newcomer works from model abstracts, an example of which is set out below:

'PM 2.36 A MULTI-TON HIGH EXPLOSIVE AIR BLAST SIMULATOR

The design principles, construction, and performance of a stepped cylindrical blast tunnel are described. With this, spherical blasts from multi-ton explosions can be simulated at less capital cost than is required for a fully conical tunnel. The stepped tunnel consists of four sections: about 35 ft of 9-in. tube (the breech and barrel of a 9.2-in. gun, in which the charge is exploded); about 25 ft of 18-in. steel tube; about 35 ft of 36-in. steel tube; and about 100 ft of 72-in. tube, initially steel but continued as concrete. The sections are linked by conical joints and fitted with piezo-electric blast gauges, foil strain gauges, and other types of gauges as required, the outputs being fed into a recorder. The charge consists of 1-lb cylinders of RDX/TNT, electrically detonated, and the maximum with the present design (imposed by the concrete section) is 8 lb, equivalent to a free-air mass of about 23 tons.

Examples of hydrostatic pressure-time records obtained during running-up tests are given and compared with records from multi-ton high-explosive charges and from nuclear explosives tests. It is concluded that the performance agrees reasonably well with that predicted from theory and that the simulator largely eliminates the need for multi-ton H.E. firings. Suggested uses are for studies in the following fields: transient hydrostatic loading of panels, beams, and columns; effects of earth cover and other protection of structural members; blast loading of various target shapes; reflection, diffraction, and drag (including dusty flow); behaviour of drag targets.'

It is essential for the training given to be thorough if a high standard is to be reached and maintained. As an example consider the following case history:

The document which is the subject of the above model abstract was given for test purposes to a new abstractor as her initial attempt on her first day of learning. This individual holds an honours degree in chemistry and she had, at that time, no experience of working in industry or of writing abstracts. The following shows her abstract as corrected for language and arrangement (the purpose of the circled numerals is made clear below):

The simulator is ~~This report describes a new type of facility~~ (1) a stepped cylindrical blast tunnel, and (2) The principle ~~of this simulator~~ is similar to that of the conical shock tube. The ~~blast~~ (3) tunnel is described and illustrated in detail. The ~~explosive~~ charge is exploded (4) ~~contained~~ at the end of a 9 in. diameter thick wall (5) (6) tube. On detonation an air shock wave of several thousands ~~of~~ psi overpressure travels down the tube. It ~~then~~ expands through a short conical section into an 18 in. diameter tube, where the ~~giving a~~ shock overpressure is ~~of~~ several hundred psi. Two further expansions take place via conical sections into 36 in. and 72 in. diameter tubes; in the latter (7) where the maximum blast overpressure is (8) ~~would be~~ about 50 psi. (9) ~~Various~~ Pressure gauges and strain gauges are situated in the (10) ~~various~~ tubes. To permit high speed cine photography of targets, glass ports are (11) ~~have been~~ provided. Experimental results are given and compared with predicted results on the basis of (12) a true conical tube. Examples of the hydrostatic pressure-time records obtained during the running up tests are given and compared with those from multi-ton high explosive charges and from ~~British and American~~ (13) nuclear tests.

The original version comprises 189 words, and after editing this has been reduced to 169. The instructor's comments and advice comprised the following, which were discussed orally with the learner, and her attention was drawn to a factual content comparison between the model abstract and her own abstract:

Discussion with learner

Content

More details of construction, operation, and uses are needed. Only 13 of the 40 facts in the model are included, plus overpressure figures not in the model. That the shock wave expands along the tunnel would be known to the prospective reader.

Facts not made clear: (5) this is a 9.2-in. gun barrel. (7) in which tube is the overpressure 50 psi?

Redundant facts: (1) 'a new type of facility'. (3) already said it is described. (9) no need (in this and preceding two sentences) to say that shock wave expands in tubes. (13) country of tests immaterial.

Arrangement

Construction should precede, not accompany, description of what happens when charge is exploded.

Language

(2) 'this simulator' could be used in the first sentence of the abstract, but not here, when a tunnel has just been referred to. (4) 'explosive charge is contained' is loose language; 'the charge is exploded at' would be better. (8) why 'would be'? This should read 'is' to conform with earlier sentences.. (10) Neither word 'various' is doing any work; omit both. (11) 'are' should replace 'have been' to preserve style. (12) 'on the basis of a true conical tube' is wrongly attached to 'compared'; the phrase should read 'and compared with results predicted on the basis'.

Factual content comparison between the model abstract and the learner's abstract of the same document

Facts in model abstract	Maximum score	Learner's score and remarks
Topic sentences		
stepped cylindrical blast tunnel	(1)	1
design principles, construction, performance given	(3)	1
simulates multi-ton explosions	(1)	
cheaper to build than conical tunnel	(1)	
Construction		
breech and barrel of 9.2-in. gun; length	(2)	referred to as a 'tube'
charge exploded in above	(1)	1
18-in. section; length; material	(3)	1
36-in. section; length; material	(3)	1
72-in. section; length; material	(3)	1
joined by conical sections	(1)	1
instrumentation (blast gauges, strain gauges, provision for others, output to recorder)	(4)	3
Operation and performance		
charge 1-lb cylinders of RDX/TNT	(2)	
electrically detonated	(1)	
maximum charge 8 lb	(1)	details of over-pressures given
equivalent to 23 tons in free air	(2)	
reasons for maximum	(1)	
Results		
sample records given	(1)	
compared with HE & nuclear expl. results	(2)	2
performance agrees with theory	(1)	1
Conclusions		
need for multi-ton firing largely eliminated	(1)	
5 suggested uses (hydrostatic loading, protection, blast loading, flow etc, targets)	(5)	
	40	13

The above procedure is followed for the first twelve practice abstracts, working from a model in each instance. Thereafter, practice abstracts are discussed briefly only until the instructor is satisfied that the learner can consistently produce abstracts that are acceptable for TIRSS.

2.3 Indexing

A complete record of all the indexing terms in use, together with cross-references, is maintained. This is the AE&CI thesaurus. A sample page is illustrated in Appendix II, page 159.

The indexer selects from the thesaurus the terms which he considers to be appropriate to each document, including cross-references. He also suggests new terms whenever he believes this to be necessary. The whole process of indexing is not an easy task and it is essential for the indexer to bear in mind the requirements of the user at all times. Thus it is not infrequently necessary for the indexers to consult potential users who possess expertise in the appropriate technical field.

One of the more important objectives of the TIRSS system is to bring together all available pieces of information relating to a subject. This may necessitate the repetitive use of a uniterm as the 'tail' of several pre-coordinated terms, as well as the use of the same uniterm in its own right:

eg: The terms FERTILIZERS - MILLING
INSECTICIDES - MILLING
ORES - MILLING will each lead the TIRSS user to a specific aspect of milling whereas the term MILLING brings together all the information in the system on milling these as well as other materials.

However, there are numerous uniterms which should not, for one reason or another, be introduced into a pre-coordinate system such as TIRSS and guidance to the indexers includes lists of such terms, as well as a few which may be so used:

Examples of uniterms excluded from TIRSS are:

COMMISSIONING
CONTROL
DECOMPOSITION
DESIGN
DETERMINATION
ECONOMICS (Unless economics itself is the object of the study)
EVALUATION
FLOW SHEETS
FORMULATION
INVESTIGATION
MATERIALS
PREPARATION
PRODUCTION
PROPERTIES (May be used if defined and when they relate to numerous compounds, eg
PHYSICAL PROPERTIES
THERMAL PROPERTIES, etc
PURIFICATION
RECOVERY
REMOVAL
SPECIFICATIONS
TESTING
TREATMENT
TRIALS
VISIT

Some uniterms do however serve a useful purpose in a pre-coordinated system and the following are examples of such terms included in TIRSS:

BIBLIOGRAPHY
COMPUTER PROGRAMMES
COMPUTER PROGRAMMING
CONFERENCES -Role 0
MANUALS -Role 0 (Use either this or PROCESS MANUAL -0 for what is obviously a manual even if not so called on the title page)
MILLING
PROJECT -Role 0 (Use only for AE&CI projects)
SAMPLING
STANDARDS
SURVEY
SYMPOSIA -Role 0

The use of uniterms in their own right and as the tails of pre-coordinated terms, together with role indicators, is illustrated by the following examples:

BIBLIOGRAPHY -0
EXPLOSIVES PRODUCTION - BIBLIOGRAPHY -0
COMPUTER PROGRAMMES -4
FLOW SHEETS - COMPUTER PROGRAMMES -4
INSECTICIDES - SURVEY -0
SURVEY (MARKET) -0

As illustrated above, TIRSS includes the use of role indicators primarily as a means of ensuring indexing consistency (see Chapter 4, sub-section 4.4.2), and these are defined for the benefit of indexers as follows - some rules for their application are also included. (Note: this list is derived from the EJC roles set out in Appendix I. It is simpler and less detailed and quicker to learn and to use):

ROLE 1 : An input, ie a raw material, or ingredient, which is thus subjected to a process. As index terms should serve the purpose of retrieval this role must be used sparingly, particularly as role 1 terms are usually uniterms. If the following terms are applicable:

(a) ETHYLENE -1

(b) POLYETHYLENE -2

(c) ETHYLENE POLYMERIZATION -4

omit the first term (a) as it serves no useful purpose. Every term with role 1 must have a corresponding term for the output, which must be assigned role 2 if the means of production are not discussed or role 4, with POLYMERIZATION, PREPARATION or PRODUCTION or other similar descriptor, if they are, ie either (b) or (c) above.

ROLE 2 : An output, ie the product or result of one or more inputs (role 1). Not every term with role 2 need have a corresponding term with role 1.

ROLE 3 : Undesirable, such as contaminants, pollutants, diseases, pests or properties.

ROLE 4 : Means of production and the use of equipment when described. If these are merely discussed role 9 is assigned.

ROLE 5 : An environment or medium, such as a catalyst carrier, solvent or vacuum.

ROLE 6 : That which affects. Every term, with role 6 should generate a corresponding term with role 7, and vice versa. If, however, the term with role 6 (or 7) is not a useful retrieval term, omit it.

ROLE 7 : That which is affected by a term with role 6 (q.v.)

ROLE 8 : For the theoretical treatment of a subject.

ROLE 9 : The passive recipient - that which is treated or discussed, economics, properties, etc. EVALUATION -

eg RESINS - EVALUATION -9

ROLE 10 : When the subsequent possible applications of a meterial are given.

ROLE 0 : Locator terms, bibliographies, companies (eg IMPERIAL CHEMICAL INDUSTRIES, LIMITED), complaints, conferences, data sheets, explosions factories, fires, flow sheets, manuals, place names, projects, specifications, standards, statistics, surveys, symposia, visits, work study reports.

N.B. If an index term is used with more than one role number then it is repeated each time in full, ie

PIGMENT DISPERSION -8
PIGMENT DISPERSION -9

(Note: When the name of a chemical plant is used as an index term, the role numbers must be either 0 or 9, eg CHLORINE PLANT -0 as a locator term when only its equipment is described or CHLORINE PLANT -9 when the plant or process, or both, is discussed or described.)

Roles are usually assigned to indexing terms at the same time as indexing terms are selected, since it normally becomes obvious during the preparation of an abstract whether, for example, a chemical compound is a raw material, a product, or a contaminant, etc. Their value is well illustrated by an example:

A document was indexed as follows:

CONTAINERS (PLASTIC) -9
LINING MATERIALS -4
POLYPROPYLENE -4
POLYVINYL CHLORIDE -9

From the role indicators it can be seen that polyvinyl chloride containers are lined with polypropylene.

Without role indicators the containers can either be made from polypropylene or polyvinyl chloride and the same ambiguity applies to the lining materials.

Finally, it is every industrial concern's experience that certain words are regularly misunderstood or misused by technical staff. Others require definition because of double meanings, or different local and overseas usage, or special limitations or requirements within the particular concern, or because their meaning is usually known only to specialists working in a narrow field. Thus it is most desirable to compile a glossary of all words which cause difficulties or which require explanation.

The following is an extract from the TIRSS indexers' glossary which has been built up since 1963:

PRIMERS	A blasting cartridge into which the detonator of a capped fuse, electric detonator or electric delay action detonator has been inserted.
PROCESS EVALUATION	This index term is restricted to a report the objective of which is the evaluation of a process: it is not used for reports in which process evaluation does not form the major part.
PRODUCTION STATISTICS	Use (SUBJECT) - STATISTICS STATISTICS (PRODUCTION)
PROJECT	Use for AE&CI projects only (Role 0)
REFORMING	The use of controlled heat and pressure (with or without catalysis) to cause cracking and isomerization of the hydrocarbon molecules in low octane petroleum fractions.
REGULATIONS	Do not use as a uniterm. When regulations are specifically given in a document use REGULATIONS as a "tail" Role 0 eg PACKAGING REGULATIONS EXPLOSIVES PRODUCTION - REGULATIONS When regulations are paraphrased or discussed, use as above -Role 9.
REVIEW	Use SURVEY
RF VALUE	In chromatography: the ratio of the distance travelled by the zone, to the distance travelled by the liquid front.
RHEOLOGICAL PROPERTIES	These embrace a wide range of flow properties eg granular flow, melt flow, powder flow, etc. (q.v. MELT FLOW PROPERTIES).
RIGISOLS	Weak strength plastisols (25-40 parts filler/ 100 parts polyvinyl chloride). For use in surfaces and semi-rigid moulding compounds.
ROPE	Use for ropes or cables that carry loads eg stays, mooring ropes, etc.

It will be appreciated from the foregoing that the process of indexing is more difficult to master than abstracting, for example. At the same time it is essential to lay down numerous rules and to provide guidance on many details. Thus considerable constraints are placed on the indexer, which can be summarised by use of the word 'discipline'. Experience has shown that after an abstractor has had about one week of training in abstracting, he/she can then start learning to index as well. However, while a competent abstractor can be trained in two-to-four weeks as already indicated, it takes from two-to-three months for the same individual to become a competent indexer as well. The training given is less formal than for abstracting and involves discussion between the learner and the instructor of each set of terms selected.

Experience has shown that complete consistency between any two indexers is never achieved. But for practical purposes, provided that control of the terms in the thesaurus is tight (so that near-synonyms, etc do not creep in) this is not of great importance in the TIRSS system. The presentation of all the indexing terms selected for each document on each TIRSS card has been found to provide adequate access; after six and a half years of operation almost no evidence has been found that important information in the system has been missed when required because of inadequate or inconsistent indexing.

2.4 Editing and quality control

When the trained abstractor/indexer has completed the three sections of a TIRSS card, as set out above in Section 2.3 of this Appendix, the draft is passed to a colleague together with the original document. The colleague is then required to edit the language used in the abstract and to check the acceptability of the indexing terms selected. Clearly discussion and disagreement can arise at this stage and the Head of the Section is expected to make all necessary decisions on language, phraseology, word selection, etc. Experience has shown that the work of each abstractor/indexer should be checked by one colleague for a short period only, and that it should then be passed to another colleague. In this way each one's work is checked over a period by all his colleagues, and the net effect is greater overall consistency, or less divergence by any one abstractor/indexer.

Finally, the bibliographic information is checked by the staff responsible for maintaining the thesaurus, ie for adding and deleting terms and for up-dating the print-out. It should be noted that all the thesaurus terms and cross-references have been punched onto tabulating cards and transferred to magnetic tape. At each up-dating all changes are incorporated into the main list of terms stored on tape and the new tape is then run through a computer printer; print-out is direct onto offset-litho paper masters, sprocket-punched so as to fit the printer, and perforated for subsequent separation of each page.

2.5 Reprographic and clerical work

The draft abstract and index terms, written out on a 'work sheet' and edited and checked on a routine basis, are passed to a typist for production of the 'master' from which the requisite number of copies will be made. All typing is done onto offset-litho paper masters supplied as perforated continuous stationery, so that A5 sized masters (105 x 148 mm) can be detached in succession. Electric typewriters are used to ensure uniformity of impression and are fitted with a small typeface (Charter) - see examples in Section 2.7 of this Appendix - in order to obtain the maximum density of print compatible with clarity. The offset-litho masters are preprinted with a rectangular block in the top right-hand corner and a so-called 'master number' is typed into this block. Master numbers represent the sequence in which documents have been processed into TIRSS and one card is run-off for the sequential filing of each abstract; these cards are filed some miles away as security against destruction of the main body of TIRSS.

After each offset-master has been typed it is checked for typing errors and also to ensure that the correct format has been used - see Section 2.1 of this Appendix. Thereafter the requisite number of copies are run-off on cards (size A5 and weight two-sheet) as follows:

One card for the master number file.
One card for the document number file.
One card for filing under the name of each author, patentee, etc.
One card for filing under each index term used.

The average total is ten cards per document processed. Approximately five percent of the documents in TIRSS require the use of more than one card in order to accommodate all the bibliographic information, abstract and index terms. These cards are secured together by a high quality masking tape which will stand up to extensive flexing as the cards are taken out of the file, opened and then refolded. In the bottom left-hand corner of each card an indication is typed to the total number of cards secured together in this way for each document processed, thus:

Card 1/1 means that there is only one card for the particular item,
Card 1/2 means that this is the first of two cards for the particular item,
Card 2/2 means that this is the second of two cards for the particular item,
and so on - see example 2, Fertilizer Society Proceedings No. 76, in Section 2.7 of this Appendix - second, etc cards are known as continuation cards.

Once the requisite number of cards have been produced each is rubber-stamped with an arrow to show where it is to be filed - see examples in Section 2.7 of this Appendix. The eafter the cards are filed. In the case of document numbers all filing is sequential but in the case of index terms they are filed alphabetically and sub-filed from role 0 to role 10. All items in the same sub-file are in random order since experience has shown that date sequence, etc is of little value when a search for information is carried out. The only exception to this is when information is sought for use in patent matters, when a date may be important. However, since most of the contents of TIRSS comprises unpublished documents (ie unpublished in the legal sense) these cannot be used as citations in patent matters.

2.6 Instructions to TIRSS users

No IR system can establish itself successfully without undertaking a certain amount of 'selling' activity to its customers, actual and potential. Some customers prefer personal instruction and others prefer to receive a descriptive written guide as a hand-out. The guide to TIRSS includes a very short description of the underlying principles and brief reference to the information set out in detail in the foregoing Sections of this Appendix. This is followed by an explanatory section entitled 'How to use TIRSS', which is reproduced verbatim below:

2.6.1 'How to use TIRSS'

In order to use TIRSS most expeditiously, a well-defined routine should be adhered to. Briefly the steps to be taken in this routine are as follows:

1 Define the problem
2 Decide on possible index terms
3 Consult the thesaurus
4 Determine the role
5 Consult the index cards
6 Select the required cards
7 Have copies made
8 Return cards to index

The following example is given to assist searchers in using the steps outlined above.

Example:

A chemical engineer wants to know whether there is any information in TIRSS on the production of aluminium sulphate.

Step 1 (Define the problem)

Usually it is necessary to clarify a problem so that the in' - terms decided on may lead to the required information. In the abo ample further discussion reduced the scope of the problem, which ultimately became : what information is available in TIRSS on methods of production of aluminium sulphate using bauxite as a raw material?

Step 2 (Decide on possible index terms)

Possible index terms which may lead to information are:

1 ALUMINIUM SULPHATE PRODUCTION
2 BAUXITE
3 RAW MATERIALS
4 PRODUCTION - ALUMINIUM SULPHATE

Terms 3 and 4 cover too wide a field to be of much value - "RAW MATERIALS" could cover almost any substance, and "PRODUCTION" as a generic word is not of great value, and is not used in this inverted form.in the TIRSS thesaurus.

Term 1 is the term that would normally come to mind, but a little further thought will show that this term would cover all methods of aluminium sulphate production from all possibl raw materials, whereas what is required are methods in which bauxite only, is used as a raw material. This suggests

another line of approach namely, term 2, ie BAUXITE as a raw material.

Step 3 (Consult the thesaurus)

On consulting the thesaurus, it will be seen that amongst other terms dealing with bauxite, there is one headed simply "BAUXITE".

The searcher is immediately aware that there is at least some information available on bauxite in the subject index, but not necessarily on the aspect in which he is interested.

Step 4 (Determine the role)

The next step, before proceeding to the subject index cards, is to determine what role BAUXITE is playing in the problem. On consulting the role guide, it may be seen that inputs, ingredients, raw materials, etc, are indexed under Role 1, so that BAUXITE-1 is the term to seek amongst the subject index cards.

Step 5 (Consult the index cards)

The index cards are then searched until the guide card "BAUXITE" is found. Behind this guide card are the role indicator guide cards from, in this instance, BAUXITE-1 to BAUXITE-9.

All the index cards filed behind the role indicator guide card "Role 1" should then be removed for examination. All these cards should give BAUXITE-1, ie bauxite used as a raw material in any process, as one of the terms.

Step 6 (Select the required cards)

In order to select the relevant cards from those found under BAUXITE-1, all that is necessary is to find those which cover methods of production of aluminium sulphate as well, ie those which contain the index term ALUMINIUM SULPHATE-PRODUCTION. Referring again to the role guide, it may be seen that methods, devices for accomplishing something, etc, are indexed under Role 4, so that all cards which contain both terms (ie BAUXITE-1 and ALUMINIUM SULPHATE-PRODUCTION-4) are the ones required.

Step 7 (Have copies made)

A copying machine is available for making copies of cards to take away. The searcher is expected to use this facility when appropriate (operating instructions are displayed beside the machine) and not to copy out any cards manually. Copying by hand is time consuming and far more expensive than photocopying.

Finally, the index cards should be returned to the index. There should be no difficulty about this, as the index cards are filed in random order behind each role indicator guide card. It is strictly forbidden to remove any cards from the index room.

2.7 Examples of TIRSS cards

Several examples of TIRSS cards for different types of documents are set out below. These are all actual cards in the system - note the small typeface and that the arrows indicate where each card is filed:

Example 1 Although this is a published report, internal Company reports are laid out in exactly the same way.

REPORT NO	: ERA 5030	DATE: 1964	020850
AUTHOR	: P. VON KAEHNE, Electrical Research Association, UK		
TITLE	: SHAFT VOLTAGES AND BEARING CURRENTS - A SURVEY OF PUBLISHED WORK		
AVAILABLE	: Library files, Research Department, AEGCI		

ABSTRACT

The survey summarizes the knowledge of the different kinds of shaft voltages and bearing currents, of their sizes and their origins, of the damage they produce and the remedies usually taken. The chapter on the origins of shaft voltages contains some evaluations of a new thesis, leading to a new understanding of the influence of alternating homopolar fields on bearing currents, mainly in two-pole machines, and in machines with fractional slot windings, connected with eccentricity and tooth saturation. The survey mentions and criticizes the commonly known rules for avoiding bearing currents. It refers then to the different qualitive approaches made by different authors and evaluates the latest contribution, which, it is claimed, allows the calculation of bearing currents using only design sheet data. Furthermore the most comprehensive bibliography ever published on this subject is added, compiled from American, English, French, German, Russian and other sources.

INDEX TERMS

BEARINGS -9
CURRENT (INDUCED) -9
CURRENT (STRAY) -9
ELECTROSTATIC CHARGES -9
MACHINES (ELECTRICAL) -9
MACHINES (ROTATING) -9
MACHINES - SURVEY -0
SHAFT VOLTAGE -9
SURVEY (LITRATURE) -0

Card 1/1

Example 2 This example shows the lay-out adopted for the five percent of documents which result in more than one card being needed.

FERTILIZER SOCIETY PROCEEDINGS NO. 76 DATE: 28TH FEBRUARY, 1963 | 001923 |

AUTHOR : F. J. HARRIS, Research Manager, Scottish Agricultural Industries, Limited

TITLE : POTASSIUM METAPHOSPHATE : A NOVEL METHOD OF MANUFACTURE AND A SUMMARY OF ITS BEHAVIOUR AS A FERTILIZER

AVAILABLE : Library, Research Department, AE&CI

ABSTRACT

The novel method of making potassium metaphosphate described here is a direct result of a decision in the mid-1950's to examine the reaction of potassium chloride with phosphoric acid to find out which of the possible products of this reaction could be easily made. The trend towards fertilizers of ever-increasing concentration was well under way, and one method of increasing the concentration was to exclude the chloride ion of the KCl. A further advantage which might accrue would be the use of such a non-chloride fertilizer for crops which were known to respond favourably to non-chloride containing fertilizers. Finally, the high concentration in terms of plant food of such fertilizer would inevitably reduce handling, bagging and transport costs and thus make it a very acceptable commodity - not only for use within the country of origin, but also for export; this last point, it was realised, was likely to be particularly attractive in those countries which export fertilizers over long distances. Before SAI's work on potassium metaphosphate started, a large number of tests had been done in various parts of the world on its acceptability as a fertilizer. These had already demonstrated that the material was in general terms comparable with a mixture of superphosphate and potassium chloride. Subsequent work, again under a wide variety of conditions, confirms these findings.

INDEX TERMS

CROP RESPONSE -9
FIELD TRIALS - POTASSIUM METAPHOSPHATE -9
FLORIDE PHOSPHATE -9
HYDROGEN CHLORIDE -2
IRON PHOSPHATE -3
MAGNESIUM PHOSPHATE -3
MOROCCO PHOSPHATE -9
NAURU PHOSPHATE -9

Card 1/2

POTASSIUM METAPHOSPHATE : A NOVEL METHOD OF MANUFACTURE AND A SUMMARY OF ITS BEHAVIOUR AS A FERTILIZER | 001923 |

INDEX TERMS

PHOSPHORIC ACID -1
POT EXPERIMENTS - POTASSIUM METAPHOSPHATE -9
POTASSIUM CHLORIDE -1
POTASSIUM METAPHOSPHATE -2
POTASSIUM METAPHOSPHATE - FERTILIZER -9
POTASSIUM METAPHOSPHATE - GRANULATION -4
POTASSIUM METAPHOSPHATE - PRODUCTION -4
POTASSIUM METAPHOSPHATE - SOLUBILITY -9
POTASSIUM PYROPHOSPHATE -2
ROTARY KILN -9
SODIUM CHLORIDE SOLUTION -5
SODIUM NITRATE SOLUTION -5

Card 2/2

Example 3 Proposed regulations published in a South African Government Gazette.

GOVERNMENT GAZETTE EXTRAORDINARY DATE: 25th May, 1963 003178
NO. 509 VOLUME 8.
TITLE : PROPOSED REGULATIONS IN CONNECTION WITH THE SALE OF FERTILIZERS
AVAILABLE : Library, Research Department. File A/10/3. Development Department

ABSTRACT

These proposed regulations cover the registration of fertilizers and the provision for appeals; marking of fertilizer containers; composition or minimum quality of single, compound or natural and artifically mixed fertilizers; sterilization of imported fertilizers; advertising; sampling and analysis of fertilizers; and offences and penalties.

INDEX TERMS

AMMONIATED SUPERPHOSPHATE -9
AMMONIUM NITRATE -9
AMMONIUM SULPHATE -9
BASIC SLAG -9
BLOODMEAL -9
BONE MEAL -9
CALCIUM CYANAMIDE -9
CALCIUM NITRATE -9
DETERMINATION - NITROGEN (IN FERTILIZERS) -4
DETERMINATION - PHOSPHATE (IN FERTILIZER) -4
DETERMINATION - POTASSIUM (IN FERTILIZER) -4
FERTILIZERS - ANALYSIS -4
FERTILIZERS - NITROGEN DETERMINATION -4
FERTILIZERS - PHOSPHORUS DETERMINATION -4
FERTILIZERS - POTASSIUM DETERMINATION -4
FERTILIZERS - REGULATIONS -9
FERTILIZERS - SAMPLING -4
FISHMEAL -9
GUANO -9
HOOF AND HORN MEAL -9
LIMESTONE AMMONIUM NITRATE -9
MEAT MEAL -9
NITROGEN (IN FERTILIZERS) - DETERMINATION -4
PHOSPHATE ROCK -9
PHOSPHATE (IN FERTILIZER) - DETERMINATION -4
POTASSIUM CHLORIDE -9
POTASSIUM (IN FERTILIZERS) - DETERMINATION -4
POTASSIUM PHOSPHATE -9
POTASSIUM SULPHATE -9
POTASH - MAGNESIA (FERTILIZER) -9
SAMPLING (FERTILIZERS) -4
SODIUM NITRATE -9
SUPERPHOSPHATE -9
TRIPLE SUPERPHOSPHATE -9
UREA -9

Card 1/1

Example 4 A pamphlet of particular value.

PAMPHLET NO : P.M. 17.104/14 DATE: 1958 025865
SOURCE : Royal Dutch Explosive Manufactories Ltd, Amsterdam
AUTHOR : J. TROMMEL
TITLE : THE SOLUBILITY OF CELLULOSE NITRATES IN ALCOHOL-ETHER 1:2
AVAILABLE : Library, Research Department, AE&CI

ABSTRACT

It is shown that the solubility is greatly affected by the nitrogen content when this is in the region of 13%. The content depends on the composition of the mixed acid used for nitrating, nitration time and temperature. Solubility increased when the cellulose was first treated with acetone, but when the products were nitrated for a longer period or renitrated, acetone treatment had less effect on the solubility. No direct connection was found between the sudden decrease in solubility, which occurs at 20°C for 13.15% N but at 0°C for 13.20% N_2 and the discontinuity in the (101) spacing at 13.15% N. Experimental details are given and results are tabulated.

INDEX TERMS

CELLULOSIC MATERIALS - MOLECULAR STRUCTURE -6
COTTON LINTERS (NITRATED) -9
COTTON LINTERS - NITRATION -4
MIXED ACID COMPOSITION -6
NITROCOTTON - NITRATION TIME -6
NITROCOTTON - NITROGEN CONTENT -6
NITROCOTTON SOLUBILITY -7

Card 1/1

Example 5 A translation of a journal article.

TRANSLATION NO : Q6.776

023738

PERIODICAL ARTICLE : SVENSK PAPPERSTIDNING, Feb., 1966, 69, 4, 28, 100-106

AUTHOR : A. BRONIATOWSKI

TITLE : ANALYSIS OF ORGANIC ADDITIVES, COATING AND SURFACE-TREATMENT AGENTS IN PAPER

SOURCE : Nobel Division, ICI

AVAILABLE : Central Report files, Research Department, AE&CI

ABSTRACT

Methods for the determination of organic additives, surface-treatment and coating agents, and binders have been combined into a systematic analytical procedure. The procedure consists of an exploratory analysis, described in detail, and an extraction analysis, not described here. In the exploratory analysis the following are detected : nitrogen; chlorine; sulphur; phosphorus; fluorine; amido nitrogen; formaldehyde in amino resins and aldehyde groups in oxidized starch and vegetable gum; resins, resinous products; fatty oils; polyvinyl polymers; styrene-butadiene interpolymers; starch, dextrine, polyvinyl alcohol and polyvinyl acetate; phenol resin; silicone resin, and sulphur and phosphorus in organic compounds; proteins; carboxymethyl cellulose; alginate; methyl cellulose; and low-polymer acrylates and polyethoxy compounds soluble in water; polymers directly on the coated paper surface; ash analysis.

INDEX TERMS

ADDITIVES - IDENTIFICATION -4
ANALYTICAL METHODS -4
COATING COMPOSITIONS - IDENTIFICATION -4
PAPER - ADDITIVES -9
PAPER - ANALYSIS -4
PAPER (COATED) -9
SURFACE-ACTIVE AGENTS - IDENTIFICATION -4

Card 1/1

Example 6 A South African patent.

PATENT NO : SA. 65/5774 PRIORITY DATE: 28.10.1964 017166
PATENTEE : W.R. GRACE & CO., Massachusetts, USA
TITLE : IMPROVEMENTS RELATING TO CLOSURES
CLASS : 7/3
AVAILABLE : Patents files, Research Department, AECI

ABSTRACT

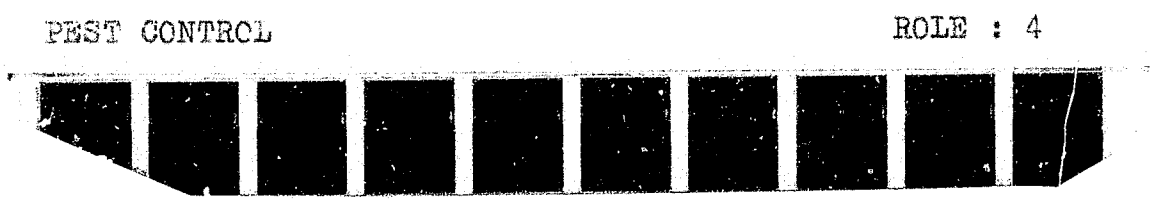
A method is claimed for the production of container closure sealing gaskets from a thermoplastic resilient material, in which the thermoplastic resilient material comprises as an essential ingredient a copolymer of an α-olefine and another α-olefinically unsaturated monomer, or a poly α-olefine in admixture or combination with such a copolymer and/or with a polymer of one or more α-olefinically unsaturated monomers.

T. ' -olefine is ethylene and the poly α-olefine is polyethylene, and the thermoplastic resilient material comprises a copolymer or mixture of copolymers of an α-olefine and a vinyl or acryli. ester either alone or in admixture or combination with a polymer of one or more poly α-olefines.

INDEX TERMS

ACRYLIC ACID ESTERS -1
CONTAINERS - SEALING -4
ETHYLENE -1
GASKETS -9
OLEFINES -1
OLEFINES, COPOLYMERS -1
OLEFINES - COPOLYMERIZATION -4
PLASTICS (THERMOPLASTIC) -2
POLYETHYLENE -1
SEALING COMPOSITIONS -2
SEALING COMPOSITIONS -4
VINYL ACETATE -1
VINYL ALCOHOL, ESTERS -1

Card 1/1



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Figure 1. A film-jacket 'master' of 16 mm film representing all the current available information in the system on pest control, role 4 - ie, use of equipment. Thirty-one items were in the system and an additional item, representing new information, is shown in the process of being added.



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Figure 2. A diazo 'working' copy of the same information as shown in Figure 1 with the additional item in its correct position. Such copies are available for study or distribution wherever and whenever required.

QUESTIONS USED IN TESTING TIRSS

APPENDIX VII

NUMBER	QUESTION	NUMBER	QUESTION
1	How does plasticizer absorption behaviour of suspension of PVC depend on the nature of the plasticizer?	7	Are there any AE&CI plants where traces of radioactivity present in raw materials build up to a dangerous level?
2	How may molecular weight distribution be calculated from gel permeation chromatograms for polyethylene?	8	What is the effect of voidage in a bed of pelleted catalyst on the conversion efficiency of ammonia to nitric oxide?
3	What is the precision of sieving procedures for measuring particle size distribution of corvic polymers?	9	What is the effect of chemically absorbed water on the sintering of catalyst pellets?
4	What concentrations of dilaurylthio-dipropionate should be used with Cyasorb UV531 to protect polyethylene sacks from UV degradation?	10	Are there any uses for spent antimony chloride catalyst ex Arcton process?
5	What is the effect of injecting Topanol OC into a polyethylene reactor on the composition of the recycle gas stream?	11	What is the mechanical stability of ICI high temperature shift catalyst after treatment with water?
6	What polymer properties control the rate of absorption of hot plasticizer by granular PVC?	12	How can rock fragmentation be decreased when blasting is carried out with a pneumatically loaded ammonium nitrate blasting agent?

NUMBER	QUESTION
13	How necessary is it to control the relative humidity in process buildings used for the preparation of antimony permanganate delay compositions for delay detonators?
14	How can the sensitivity of pneumatically loaded ammonium nitrate-fuel oil explosives be increased?
15	Have there been any investigations into means of improving the adhesion of the final countering cottons to PP fuse?
16	How do Armoflo 16 and AS 7 compare as antisetting agents for ammonium nitrate which is to be transported in bulk?
17	What effect does the use of fuse raw materials from different suppliers have on the properties of the finished fuse?
18	What infrared gas analyzers are being used in ICI?
19	Has the fluoride specific ion electrode been used quantitatively?
20	Has a sulphur balance been determined for a coal based synthesis gas plant?
21	What is the optimum cake thickness for floor casting of molten aluminium sulphate?
22	What methods can be used for absorbing a soluble component from a gas containing dust particles likely to clog conventional absorber packing?
23	What is the particle size distribution of soot in vinyl plant reactor outlet gas?
24	What is the effect of grist of phosphate rock on the efficiency of a phosphoric acid plant?

NUMBER	QUESTION	NUMBER	QUESTION
25	Under what conditions is an ethylene gas stream capable of generating dangerous electric charges?	32	Are instructions for the reduction of ICI methanol synthesis catalyst 25.2 available?
26	What is the capacity of the Midland peroxide plant for manufacturing 45% solution of catalyst K?	33	Is a simple factorial design for evaluating the relative importance of the variables in solubilising aluminium phosphate available?
27	What materials have been tried as clarity modifiers for manufacture of polyethylene film grades?	34	What are the important variables during the recovery of Gibbsite from Variscite?
28	What information is available on the application of the Cusum statistical method to process control in poly-theylene manufacture?	35	What materials of construction can be used for electrolytic cells to remove iron from alum solutions?
29	How may floss generation during poly-ethylene manufacture be minimised?	36	What criterion must be met to manufacture non-incendive short period detonators which conform to delay time requirements?
30	How precise are viscosity measurements on cone and plate viscometers?	37	What alternative explosive compositions, which are insensitive to impact, have been developed to replace Pentolite boosters?
31	Which methods are available for testing the mechanical strength of catalyst pellets?		

NUMBER	QUESTION	NUMBER	QUESTION
38	To what extent does the decoupling of an explosive in a borehole affect the fracture pattern in the medium surrounding the borehole?	44	Has atomic absorption spectrophotometry been applied to analyses connected with fertilizer production?
39	On what basis can the initiating mixture used in commercial detonators be classified as "safe" to use?	45	What is the best atomic absorption spectrophotometer to buy?
40	What is the effect of moisture on the propagation sensitivity (ADC) of Monobel explosives?	46	What is the relationship between throughput and efficiency for a mist cyclone?
41	What is the effect of including beeswax or DNT in Pentolite on its sensitivity?	47	How can free sulphur trioxide be removed from sulphuric acid plant tail gas?
42	What on-line equipment is available for the determination of trace quantities of water in process streams?	48	Is a method available for measuring crystallisation point of ammonium nitrate solutions?
43	What reports are available on the quantitative aspects of gas chromatography?	49	What work has been done on the determination of impurities in ethylene?
		50	What analytical methods are available for the determination of mercury in effluents?

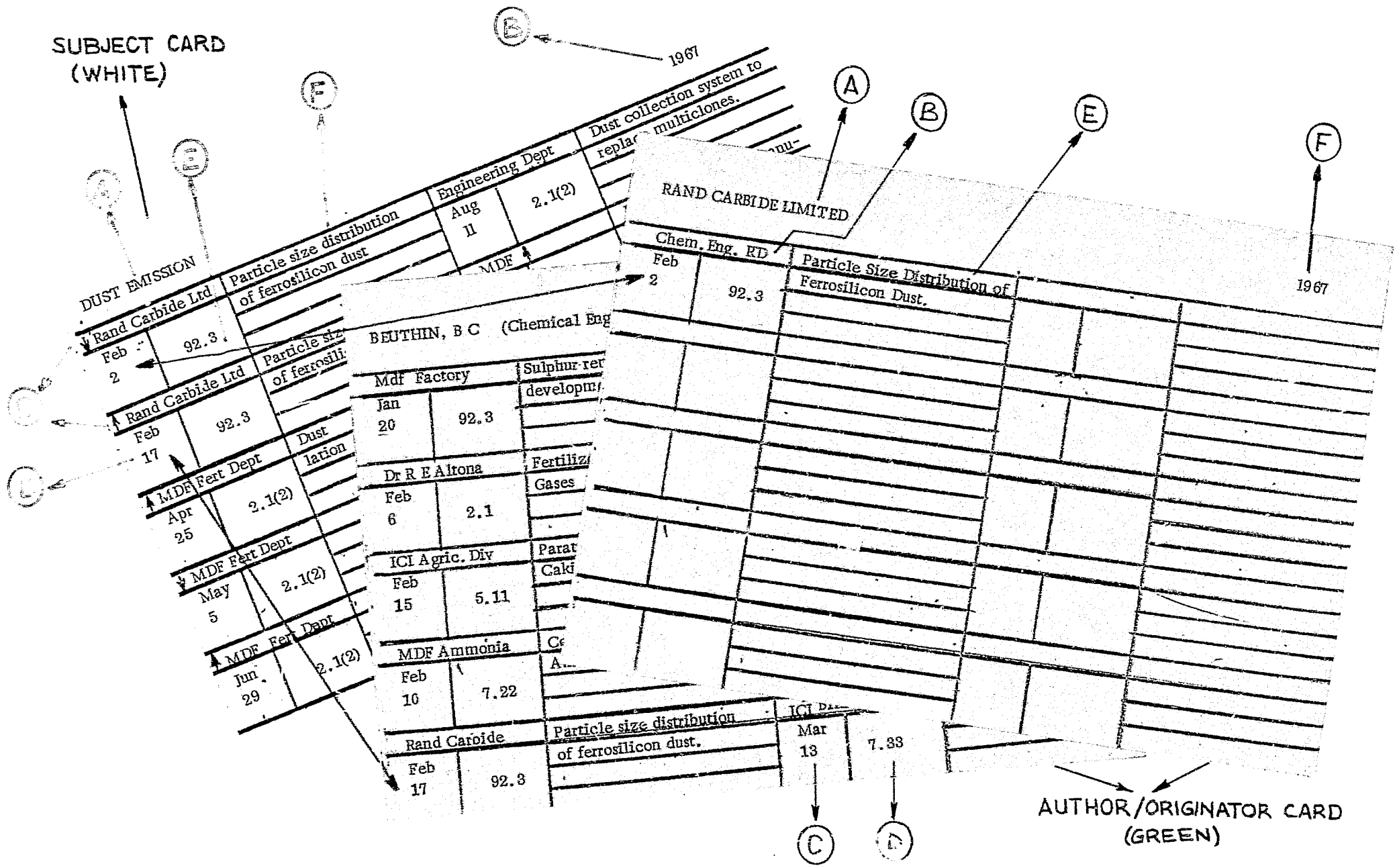
NUMBER	QUESTION	NUMBER	QUESTION
51	What work has been done on the determination of the specific surface area of ferrosilicon?	58	Do silicones poison the catalytic filaments used in explosimeters?
52	Has a method been developed to fill the plastic containers which were designed for Primagel boosters?	59	Has anyone ever tried to ignite service safety fuse by electrical means?
53	What are the factors influencing the final properties of blackpowder?	60	To what extent is the precision of the delay times of short delay detonators containing red lead/ silicon delay elements affected by the pressure in the detonator when the delay element is burning?
54	What are the important variables in the manufacture of Sinex slurries which affect their quality?	61	What media recommended for the determination of the particle size distribution of antimony powder by means of the Shimadzu sedimentograph?
55	What effect has ageing on the burning characteristics of safety fuse?	62	Does a fusehead with an antistatic spur require to be sleeved for anti-static protection?
56	What are the factors that need to be strictly controlled during the manufacture of one-second delay composition?	63	What tests have been devised for assessing the mechanical strength of fuseheads?
57	How can the loss of fuel oil from ANFO explosives be minimised?		

NUMBER	QUESTION	NUMBER	QUESTION
64	Would other grades of nitrocellulose be suitable as a replacement for imported DHX 3/5 nitrocellulose in the incendiary slurry used in special fast ignitercord?	70	What PVC copolymer properties influence their processing characteristics in plasticised applications?
65	Is the grade of red lead used in the manufacture of ignitercord suitable for making delay composition for detonators?	71	How can the kinetics of the interaction of plasticiser with granular PVC be determined?
66	Has AE&CI ever manufactured sheathed electric delay detonators?	72	What factors influence the rate of setting of UF resins with acidic hardeners?
67	What information is available on butylation catalysts for melamine-formaldehyde resins?	73	How does rate of absorption of plasticiser by granular PVC vary with temperature?
68	How satisfactory would UF4A resin be for veneering applications?	74	What methods has AE&CI available for studying the porosity of solids?
69	What is the correlation between impact strength of film measured by Monsanto dart and bag dropping test results?	75	What is known about the possibility of pre-reducing carbon monoxide conversion catalysts? Are such catalysts commercially available?

NUMBER	QUESTION	NUMBER	QUESTION
76	Which agents can be used for shifting the transition temperature for the rhombic and monoclinic forms of ammonium nitrate crystals?	82	What equipment has been designed for determining the electrical firing characteristics of detonators fitted with Group I fuseheads?
77	How useful is ammonia liquor for removing carbon dioxide from gases?	83	How does an air gap below an explosives charge in a borehole affect the crack pattern in the surrounding medium?
78	Is it feasible to recover ammonia from aqueous effluent by sparging with air?	84	Is the gas tightness of the closure of importance in achieving accuracy and precision of delay times in millisecond delay detonators containing red lead/silicon delay elements?
79	Is it presently economically attractive to expand facilities for producing powdered aluminium sulphate at Modderfontein?	85	Are there any carbohydrates available in Zambia which are suitable for use in NG based explosives compositions?
80	Can cooling of lead azide with mother liquor be omitted without affecting quality of the product?	86	Difficulty is being experienced as a result of setting in shipments of prilled ammonium nitrate. How can this be overcome?
81	What information is available regarding the marketing of conventional explosives in competition with slurried explosives?		

NUMBER	QUESTION
87	What errors were responsible for the metering errors on the purge from Midland Polyethylene Plant ca 1970?
88	What techniques are available to improve the dispersion of pigment particles when compounding polyethylene?
89	Can ethylene gas be ignited by corona discharge?
90	During manufacture of polyethylene-terephthalate how does the acidity of antimonic acid catalyst affect polymer properties?
91	How may the chain branching of PVC be determined?
92	How does heat stability of suspension PVC depend on granulating agent used?
93	Is there a precise method for determining particle size distribution of PVC lattices?
94	What are the hazards resulting from electrostatically charged mist in tanks also containing inflammable vapours?
95	What methods are available for assessing the resistance to break-down of granules?
96	Is there a significant variation in performance of monopumps when they are run at different temperature of the liquid pumped?
97	Is the calcine dust load at the scrubber inlet of the sulphuric acid plant at Modderfontein the cause of excessive mist in the stack gas?
98	Are steam curtains of any use in containing escapes of inflammable gases?
99	Can titanium dioxide pigments be made from ilmenite via the chloride process?

NUMBER	QUESTION	NUMBER	QUESTION
100	What investigations have been carried out on the failure rate of chemical plant equipment?		
101	What on-line methods are available for the determination of water in chlorinated hydrocarbons?		
102	How do you calibrate gas chromatographs used for on-line moisture measurement?		
103	Has AE&CI ever considered using nuclear magnetic resonance techniques?		
104	What methods are available for determining traces of nickel carbonyl?		
105	What reports are available on on-line analysis in fertilizer plants?		


SUBJECT CARD
(WHITE)
DUST EMISSION
Rand Carbide Ltd
Feb
2
92.3
Particle size distribution
of ferrosilicon dust
Engineering Dept
Aug
11
2.1(2)
MDF
1967
Rand Carbide Ltd
Feb
17
92.3
MDF Fert Dept
Apr
25
2.1(2)
MDF Fert Dept
May
5
2.1(2)
MDF Fert Dept
Jun
29
2.1(2)
BEUTHIN, B C (Chemical Eng
Mdf Factory
Jan
20
92.3
Dr R E Altona
Feb
6
2.1
ICI Agric. Div
Feb
15
5.11
MDF Ammonia
Feb
10
7.22
Rand Carbide
Feb
17
92.3
Particle size distribution
of ferrosilicon dust.
RAND CARBIDE LIMITED
Chem. Eng. RD
Feb
2
92.3
Particle Size Distribution of
Ferrosilicon Dust.
1967
Mar
13
7.33
AUTHOR/ORIGINATOR CARD
(GREEN)
A
B
C
D
E
F

APPENDIX VIII

DESCRIPTION OF CORIS

The system is best described by illustration - please see accompanying examples and test.

1 All items to be included in CORIS are indexed by subject (white cards) and by author/originator (green cards) - see examples above in which a green arrow is used to indicate the same item filed under subject and originator.
Both types of cards are double-sided and have a maximum of twenty entries each.

2 Details of subject card (red symbols)

A = indexing term (from thesaurus)

B = year

C = addressor - arrow pointing down ↓
addressee - arrow pointing up ↑
(copy for information only - no arrow)

D = date of document

E = file number

F = brief abstract

3 Details of author/originator cards (blue symbols)

A = addressor

B = addressee

C = date of document

D = file number

E = brief abstract

F = year

APPENDIX IX

DESCRIPTION OF LIBRIS

As in the case of TIRSS, LIBRIS is a manual card index. Each card comprises bibliographic information, an abstract and index terms. No 'continuation' cards are permitted so that it is essential to limit the information concerning each document to what can conveniently be typed on an A6 card. (105 x 148 mm).

Again, as in TIRSS, electric typewriters with the small 'Charter' type-face are used and a set of cards for each document consists of:

author/title cards as necessary
a card for each index term used
a card for the classified index, the reverse side of which also serves as the library register

The cards are filed alphabetically in the subject index, all those which refer to one subject being in random order.

The bibliographic information has been cut to the minimum essential for the identification of each document. Normal library conventions such as indicating the number of pages, whether or not the publication includes plates, tables, diagrams, etc and all reference to the type of binding are not used at all (see Footnote). Not only has this helped to keep the input costs down, but with the relatively small size of the document collection involved, no inconvenience has been experienced by the library staff as a result of these deliberate omissions.

As stated in Chapter 6, sub-section 6.3.2, of this dissertation the abstracts provided are indicative only. In certain instances it has been found that there is no point in providing any abstract and they are omitted completely when this is appropriate - eg for many pamphlets where an abstract

---

[Footnote. It has been drawn to the author's attention by an experienced librarian that in the humanities in particular the use of these conventions is frequently valuable and a means of saving the user's time. For example, the titles of books and pamphlets in some subjects convey no idea as to the size and extent of subject coverage of two such documents. A pamphlet on, say, a historical subject and of possibly 30 pages must of necessity deal with the subject matter briefly. In technical fields it is generally accepted that the vast majority of pamphlets are brief documents but they are likely to be consulted for particular specific facts more than for any other reason; it is immaterial therefore whether these facts are presented in a book of 300 pages or in a pamphlet of 3 pages].

would be no more than a repetition of the index terms, for encyclopaedic works where the contents include very many subjects and for such publications as dictionaries where an abstract could be no more than a statement of the obvious.

Many of the rules and guiding principles laid down for TIRSS have been found to be directly applicable to LIBRIS and it has not been found necessary to compile a separate guide for the LIBRIS abstractors/indexers However, in the case of certain publications it is essential to remember that LIBRIS is firstly an IR system and that various established library procedures must be modified. Thus, for example, annual technical publications which are frequently classified as journals in a conventional library, are indexed separately and in depth. There are many such publications where the titles start with such phrases as 'Annual review of .....' or 'Progress in ..... for the year .....' It has also been found most desirable to treat the reports of many conferences, symposia, etc in the same way, whether these comprise preprints, 'working papers' or reprints.

Examples of cards prepared for various types of documents are set out below - the arrows indicate where each card is filed:

Example 1 : a book

541.124 MIN

MINKOFF, F.J. and TIPPER, C.F.H.
Chemistry of combustion reactions.
London, Butterworths, 1962.
Research Library, AE & CL

Describes the conditions under which hydrogen, carbon monoxide, the lower hydrocarbons and related compounds react with oxygen in the gas phase at less than 1000°C. The state of knowledge of intermediate molecules and radicles, reaction mechanisms and high temperature reactions in a flame front, is reviewed.

ALDEHYDES - COMBUSTION
CARBON MONOXIDE OXIDATION
COMBUSTION
COMBUSTION PRODUCTS - ANALYSIS
COMBUSTION - SURVEY
GAS PHASE REACTIONS
HIGH TEMPERATURE SYSTEMS
HYDROCARBONS - OXIDATION
HYDROCARBONS - PYROLYSIS
HYDROGEN - OXIDATION
REACTION MECHANISM
SURVEY (LITERATURE)

Example 2 : A monograph

582.28 FIN

FINCHAM, J.R.S. and DAY, P.R.
Fungal genetics.
(Botanical Monographs, 4.)
Oxford, Blackwell, 1963.
Research Library, AE & CI.

Discusses the chromosome theory; the biology of fungi of genetic interest; the induction, isolation and characterization of mutants; chromosome mapping; genetic consequences of changes in chromosome number; the gene, the structure of genes and the mechanism of genetic exchange; the biochemical analysis of gene function; comparative genetics and physiology; extra-nuclear inheritance; genetics of pathogenicity. The structure of DNA is discussed in an appendix.

FUNGAL DISEASES
FUNGI - GENETICS
FUNGI - PHYSIOLOGY
NUCLEIC ACIDS DEOXYRIBO-, PROPERTIES

Example 3 : An annual

662.21 PEN

PENNER, S.S. and WILLIAMS, F.A. editors
Detonation and two-phase flow.
(Progress in astronautics and rocketry, 6.)
New York, Academic Press, 1962.
Research Library, AE & CI.

Papers in Part I cover the range of physical conditions under which detonation may be sustained. Progress is recorded in the understanding of the phenomena involved in transition from deflagration to detonation and of stable detonations in dilute sprays. In Part 2 problems associated with high frequency instabilities in liquid fuel rocket engines and progress in the understanding of the nature of two-phase flow phenomena in converging-diverging nozzles are discussed.

COMBUSTION PARAMETERS
DEFLAGRATION/DETONATION - TRANSITION
DETONATION PARAMETERS
DETONATION WAVES - STRUCTURE
ENGINE - PERFORMANCE
ENGINE (ROCKET)
EXPLOSIVES - DETONATION
FLOW SYSTEMS (TWO PHASE)
FLUID FLOW - MEASUREMENT
GAS MIXTURES - DETONATION
GAS/SOLID FLOW
NOZZLES - PERFORMANCE
PROPELLANTS - COMBUSTION
PROPELLANTS (ROCKET)

Example 4 : A map

MAP 1.3/2528 CB
SOUTH AFRICA. Trigonometrical Survey
Silverton. Topographical. Scale : 1:50,000.
2nd edition.
Pretoria, Government Printer, 1966.
Research Library, AE & CI.

Shows the Eastern part of Pretoria, Memelodi, part of the Magaliesberg, Pienaars River dam and part of the Pienaars River.

MAP (TOPOGRAPHICAL)
→ TRANSVAAL

Example 5 : A non-technical book

330 SAM
SAMUELSON, P.A.
Economics; an introductory analysis.
7th edition.
New York, McGraw-Hill, 1967.
Research Library, AE & CI.

Textbook discusses basic economic aspects and national income, determination of national income and its fluctuations, the composition and pricing of national output, distribution of income and the pricing of productive factors, international trade and finance, and current economic problems.

CAPITAL INVESTMENT
→ COMMERCE
COST ESTIMATING
ECONOMICS
INCOME (NATIONAL)

Example 6 : A collection of papers presented at a symposium

678 INT

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY.
International Symposium on macromolecular chemistry, Prague, 1965. 4 vols.
(Polymer Symposia, 16.)
New York, Interscience, 1967.
Library, Midland Factory, AE & CI.

The theme of the symposium comprises the following sections: Mechanisms of formation and transformation; structure and properties, systems and models of macromolecules; organic, biological and inorganic macromolecular compounds, monomers and modifiers; methods and disciplines.

MOLECULAR STRUCTURE - ANALYSIS
MOLECULAR WEIGHT DISTRIBUTION - DETERMINATION
POLYMER DEGRADATION
POLYMERIZATION
POLYMERIZATION - KINETICS
POLYMERIZATION - REACTION MECHANISM
POLYMERS - CRYSTALLIZATION
POLYMERS - FRACTIONATION
POLYMERS (HIGH MOLECULAR WEIGHT)
POLYMERS - LIGHT SCATTERING
POLYMERS - MOLECULAR STRUCTURE
POLYMERS - PROPERTIES
POLYMERS - RELAXATION
POLYMERS - STEREOISOMERISM
POLYMERS - TRANSITIONS
SYMPOSIA

Example 7 : A pamphlet (no abstract) - this copy filed in 'Classified' section of LIBRIS

PM 16.255

DINEGAR, R.H. and others

Effect of specific surface on the shock sensitivity of pressed granular PETN.
Los Alamos, N.M., University of California.
Library, Somerset West Factory, AE & CI.

PENTAERYTHRITOL TETRANITRATE - SENSITIVITY

Example 8 : A pamphlet (complete with abstract)

PM 16.373

RABE, W.A. and RATKAY, T.A.
Rigid dry-blend and its extrusion; (paper)... Society of Plastics Engineers, Incorporated, Quebec Section... regional technical conference... Montreal... 1964.
Montreal, Que., Shawinigan Chemicals Limited, 1964.
Research Library, AE & CI.

The advantages, practical and economic, of extruding PVC dry blends (or powder compounds) are discussed. Consistency of the polymer and the correct choice of lubricant are critical. Stabilizer systems, modifying copolymers or graft polymers, and fillers are reviewed, together with mixing and extruding the compound. Single- and twin-screw extruders are described briefly.

EXTRUDERS (PLASTICS)
EXTRUDERS (SCREW)
POLYVINYL CHLORIDE DRY BLENDS
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE - LUBRICANTS
POLYVINYL CHLORIDE - MIXING
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE - STABILIZERS
VINYL CHLORIDE POLYMERS

Example 9 : A dictionary

Ref 802:582 UPH

UPHOF, J.C.T.
Dictionary of economic plants.
Weinheim (Bergstrasse), Engelmann, 1959.
Research Library, AE & CI.

CROPS
DICTIONARY
PLANTS

As mentioned above the reverse side of the cards in the 'classified' section of LIBRIS are used to comprise a register of all publications held. The example below shows that the whereabouts of any publication and the number of copies held can be recorded in a simple manner, such as by a X or other symbol. If considered worthwhile the entry symbol could comprise the original order number for the purchase of a publication:

		1	2	3	4
RD	1	X	X		
PAT.	2				
PACK.	3				
PHOT.	4				
PTSL	5				
MDF	6				
MSD	7				
MID.	8		X		
SWF.	9				
UMB.	10	X			
HO exclu-ding MSD	11				
	12				

Research Department Library holds two copies, bought one at a time.

Midland Factory Library holds two copies, bought together on one order.

Umbogintwini Factory Library holds one copy.

Example of LIBRIS register card
(reverse side of card in 'classified' section)

APPENDIX X

This Appendix comprises the actual LIBRIS cards discussed and used in the tests described in Chapter 6, sub-section 6.3.5.

PM 16.35?/7

TOUCHETTE, N.W. and others
Plasti-corder fusion rate of plasticizers in PVC; (paper... Society of Plastics Engineers... annual technical conference, 20th... 1964).
Stamford, Conn, SPE, 1965?
Research Library, AE & CI.

A statistical experiment dealing with fusion of polyvinyl chloride (PVC) with di-2-ethyl hexyl phthalate (DOP) is described. A method is proposed that shows the relative fusion characteristics of a number of plasticizers. The standard deviation is 1.1°C. The 95% confidence limits based on a single determination are ± 2.2°C. The Brabender Plasti-Corder was found to be useful for determing the fusion characteristics of plasticized PVC.

PLASTICIZERS - TESTING
PLASTOGRAPHS
POLYVINYL CHLORIDE - PLASTICIZATION
POLYVINYL CHLORIDE (PLASTICIZED)
SYMPOSIA

PM 16.359/9

SCHMIDT P
DIE BESTIMMUNG DER GELIERFAEHIGKEIT VON POLYVINYLCHORID IN TEMPERATURBEREICH VON 100-160°C MITTELS DES BRABENDER PLASTOGRAPHEN
DUISBURG BRABENDER 19?

RDL AE&CI

The author discusses the determination of the gelation of polyvinyl chloride in the temperature range 100°-160°C with the Brabender plastograph. (German text.)

PLASTOGRAPHS
POLYVINYL CHLORIDE - GELATION

PM 16.359/10

SCHMIDT P
NEW METHOD TO DETERMINE THE GELLING PROPERTIES OF PLASTICIZERS USING THE BRABENDER PLASTOGRAPH, TRANSLATED FROM GERMAN (EXTRACTS)
KUNSTSTOFFE 1951 VOL 41 NO 1 P 23-29
DUISBURG BRABENDER OHG 1954

RDL AE&CI

A mixture of polyvinyl chloride (200 units in weight) and plasticizer (100 units in weight) is kneaded in the plastograph. The deformation resistance is measured throughout the test in cm. g. From the diagrams thus obtained it can be seen that part of the plasticizer attains the upper limit of the measuring range of the plastograph of 1 000 cm. g. within a short time. The gelling speed is based on this time. Plasticizers which do not reach the limit of 1 000 cm. g. within the testing time can be classified according to the start of gel formation given by the minimum of their performance curves. Diagrams, tables, and 5 references in the German text.

PLASTICIZERS - PROPERTIES
PLASTICIZERS - TESTING
PLASTOGRAPHS
POLYVINYL CHLORIDE - GELATION

PM 16.359/11

BIEDENKOPF G
DIE MESSUNG DER RHEOLOGISCHEN EIGENSCHAFTEN VON PVC HART
DUISBURG BRABENDER OHG 1967

RDL AE&CI

The author describes the testing of characteristic properties of PVC compounds with respect to their processability in extruders and injection moulding machines. Photographs of the Brabender Plastograph are included, together with graphs and 22 references. (Reprinted from Kunststoff und Gummi, vol 5, various dates in 1966 and 1967.)

PLASTOGRAPHS
POLYVINYL CHLORIDE COMPOSITIONS
POLYVINYL CHLORIDE - PROPERTIES (RHEOLOGICAL)
RHEOLOGICAL PROPERTIES - DETERMINATION

SOCIETY OF CHEMICAL INDUSTRY PLASTICS AND POLYMER GROUP
THE PHYSICAL PROPERTIES OF POLYMERS; SILVER JUBILEE SYMPOSIUM, LONDON, 1958
SOCIETY OF CHEMICAL INDUSTRY MONOGRAPH 5
LONDON SCI 1959
UMB AE&CI

Papers deal with such topics as crystallinity in polymers (by C W Burn, of ICI, Plastics Division); optical properties of strained amorphous polymers; permeability of plastics and rubbers; structure and properties of polypropylene; conduction and polarization processes in plasticized polyvinyl chloride compounds (by W Reddish, of ICI, Plastics Division); and non-linear viscoelastic effects in ethylene polymers (by D J H Sandiford, of ICI, Plastics Division). Measurement of the physical properties of polymers is discussed. Diagrams, tables, and references are included.

ESTERS, POLY-, RESINS
PLASTICS - PERMEABILITY
PLASTICS - PROPERTIES (MECHANICAL)
PLASTICS (THERMOPLASTIC)
POLYETHYLENE - VISCOELASTIC PROPERTIES
POLYMERS - CRYSTALLINITY
POLYMERS - PHYSICAL PROPERTIES
POLYPROPYLENE - MECHANICAL PROPERTIES
POLYVINYL CHLORIDE (PLASTICIZED)
POLYVINYL CHLORIDE - PROPERTIES
RUBBER - PROPERTIES
SYMPOSIA

NEWMAN T R
PLASTICS AS AN ART FORM 2ND ED
LONDON SIR ISAAC PITMAN & SONS 1972
ISBN 0-273-31863-2 UMB AE&CI

The author discusses the properties of plastics and methods of modifying them with additives, such as stabilizers, pigments, fillers, reinforcing agents ; laminating, casting, foaming, and fabricating plastics ; and working with polyesters, epoxy resins, acrylics, vinyls, copolymers of the last two, polystyrene, polyethylene, silicones, and foams. Bas-relief, sculpture, mosaic work, and printing techniques are among the topics described. Testing, moulding, extrusion, and coating are considered in the appendices. Illustrations and references are included.

ACRYLIC ACID POLYMERS
EPOXY RESINS
ESTERS, POLY-
PLASTICS - ADDITIVES
PLASTICS (EXPANDED)
PLASTICS - MOULDING
PLASTICS - PRINTING
PLASTICS PROCESSING
PLASTICS - PROPERTIES
POLYETHYLENE
POLYVINYL CHLORIDE
SILICONES
STYRENE POLYMERS
VINYL POLYMERS

MIC 71/13

IOBST, S.A.
Molecular structure and relaxation behavior of polyvinyl chloride.
Thesis (Ph.D.), Lehigh University, 1970.
Ann Arbor, Mich, University Microfilms, 1970.
Research Library, AE & CI.

PVC that was more syndiotactic and crystalline than usual was prepared by low-temperature polymerization. Physical properties were determined and stress relaxation and torsion modulus measurements were made to study the viscoelastic properties of both plasticized and unplasticized PVC. At a given value of molecular weight, viscoelastic measurements confirm previously reported increase in glass transition temperature (T_g) to about 100°C with decreasing polymerization temperature. The absolute value for the modulus above T_g is inversely related to polymerization temperature. The higher modulus indicates a greater degree of physical crosslinking, apparently due to increased crystallinity. With increasing crystallinity, modulus-time curves show longer characteristic relaxation times, a broadened glass-rubber transition region, and higher rubbery moduli. A model for the morphology of PVC is proposed. (77 references.)

POLYMERS - RELAXATION
POLYMERS - VISCOELASTIC PROPERTIES
POLYVINYL CHLORIDE (CRYSTALLINE)
POLYVINYL CHLORIDE - MOLECULAR STRUCTURE
POLYVINYL CHLORIDE - RHEOLOGICAL PROPERTIES

MIC 71/12

LEE, M.-S.
Thermodynamic properties of dilute polyvinyl chloride solutions.
Thesis(Ph.D.), Cape Western Reserve University, 1969.
Ann Arbor, Mich, University Microfilms, 1970.
Research Library, AE & CI.

The osmotic pressure was measured within a wide temperature range for PVC solutions in cyclohexanone, cyclopentanone, and tetrahydrofuran. Molecular weight was found to be independent of temperature of measurement and methods of preparation. It was concluded that no aggregates of PVC were present in the solvent used. The variation of the thermodynamic interaction parameter was determined from the osmotic pressure data and viscosity measurements as a function of concentration, temperature, and molecular weight. Values of the temperature coefficient of the interaction parameter agree with results of Tian-Calvet microcalorimetry and confirm the Maron theory of polymer solutions which requires that heats of solution and dilution be determined by the temperature coefficient of the interaction parameter. Results suggest that the order of solvent power for PVC is cyclohexanone > cyclopentanone > tetrahydrofuran. (85 references.)

POLYMER SOLUTIONS - PROPERTIES
POLYVINYL CHLORIDE - MOLECULAR WEIGHT
POLYVINYL CHLORIDE - PROPERTIES
SOLVENTS (ORGANIC)
THERMODYNAMIC PROPERTIES

J PLA

MORGAN, P. editor
Plastics progress, 1961.
International plastics convention(Interplas) London, 1961.
London, Iliffe, 1962.
Research Library, AE & CI.

Papers deal with technical advances and commercial aspects of polyolefines, polystyrenes, vinyls, and the processing of thermoplastics.

OLEFINES, POLY, - PROPERTIES
PLASTICS - EXTRUSION
PLASTICS - MOULDING
PLASTICS PROCESSING
PLASTICS PROCESSING EQUIPMENT
PLASTICS (THERMOPLASTIC)
POLYETHYLENE - PROPERTIES
POLYVINYL CHLORIDE - PROPERTIES
STYRENE POLYMERS - PROPERTIES
SYMPOSIA

J SOC CON

SOCIETY OF PLASTICS ENGINEERS, INCORPORATED.
Annual technical conference... technical papers...
Stamford, Conn., SPE, 1967-
Research Library, AE & CI.

Annual

vol. 11- ; 1965-

Papers cover the extrusion, colouring, moulding, and properties of plastics, particularly as building, insulating, packaging, and engineering materials. Polyolefines, vinyl polymers, and the properties, structure, and analysis of polymers are among the other topics dealt with.

MATERIALS (CONSTRUCTION) - PROPERTIES
PLASTICS - ANALYSIS
PLASTICS (EXPANDED)
PLASTICS PROCESSING
PLASTICS PROCESSING EQUIPMENT
PLASTICS (REINFORCED)
POLYETHYLENE
POLYMERS - MOLECULAR STRUCTURE
POLYMERS - PROPERTIES
POLYVINYL CHLORIDE
SYMPOSIA

J PLA

MORGAN, P. editor
Plastics progress 1953.
British Plastics Convention, 1953.
London, Iliffe, 1953.
Research Library, AE & CI.

Subjects discussed include unplasticized PVC, reinforced plastics, plastics durability and performance, moulding, marketing, and new uses and developments, such as coating of plastics for optical purposes.

PLASTICS - COATING
PLASTICS - DEVELOPMENT
PLASTICS INDUSTRY
PLASTICS - MOULDING
PLASTICS - PROPERTIES
PLASTICS (REINFORCED)
POLYVINYL CHLORIDE (RIGID)
SYMPOSIA

J PLA

MORGAN, P. editor
Plastics progress, 1957.
British plastics convention, 1957.
London, Iliffe, 1958.
Research Library, AE & CI.

Papers deal with polyolefins, polythene, polyvinyl chloride, extrusion, injection moulding, materials developments, glass reinforced plastics, fluorine polymers.

OLEFINS, POLY-, PROPERTIES
PLASTICS - EXTRUSION
PLASTICS - MOULDING
PLASTICS (REINFORCED)
PLASTICS - TECHNOLOGY
POLYETHYLENE - PROPERTIES
POLYVINYL CHLORIDE - PROPERTIES
SYMPOSIA

HO 3798

PANTKE M

LITERATURE SURVEY REGARDING THE DEGRADATION OF PLASTICISED PVC BY MICRO-ORGANISMS, TRANSLATED FROM GERMAN

MATERIAL UND ORGANISMEN 1971 VOL 6 NO 4 P 295-315 LONDON ICI 1972

RDL AE&C

The survey covers : damage caused by micro-organisms ; surface growth and discolouration ; changes in electrical and mechanical properties ; testing the resistance of plasticized PVC to microbial attack, a) standard laboratory tests ; b) tests in open air, tropical, and subterranean conditions ; microbial attack on components (plasticizers) ; and the possibility of protection against microbial attack. The references cover the period 1945-1971.

MICRO-ORGANISMS
PLASTICS - BIODEGRADATION
POLYVINYL CHLORIDE - DEGRADATION
POLYVINYL CHLORIDE (PLASTICIZED)
SURVEY (LITERATURE)

HO 3780

DEWISME K

NEW TRENDS IN THE DESIGN OF BIOLOGICAL FILTERS, TRANSLATED FROM SPANISH

DYNA MAY 1972 NO 5 P 211-23 LONDON IMPERIAL CHEMICAL INDUSTRIES LIMITED 1972

RDL AE&CI

The author discusses the biological purification of effluents with natural and with plastic media. He also describes comparative tests carried out with biological filters and with activated sludges. He concludes that plastics media are more easily adapted to treating effluents, possess greater flexibility in supporting overloads, are simpler to operate, and cost less. Their principal disadvantage is that high rates of purification in a single stage are not possible. (26 references.)

BIOLOGICAL TREATMENT
EFFLUENTS TREATMENT
FILTER MEDIA
FLOCOR*
PACKING MATERIALS (ENGINEERING)
POLYVINYL CHLORIDE SHEET
SEWAGE TREATMENT

AET 1749

GLOECKNER G AND SIEGEL G

THE SOLUBILITY OF PVC IN PLASTICISERS : INVESTIGATIONS OF THE SYSTEM DIOCTYLPHTHALATE/PVC WITH A HEATED MICROSCOPE, TRANSLATED FROM GERMAN

KOLLOID-ZEITSCHRIFT UND ZEITSCHRIFT FUER POLYMERE 1973 VOL 251 NO 1 P 5-16 JOHANNESBURG AE&CI 1973

RDL AE&CI

The solution (dissolving) temperature of polyvinyl chloride (PVC) in dioctylphthalate was investigated with respect to molecular weight (MW) and pretreatment of the sample with the microscope method. Technical products show an increase in solvation temperature with MW, with a higher solvation temperature for the suspension polymer than would be indicated by its MW. Reprecipitation of the technical products obliterates both the difference and the effect of MW. A minimum solvation temperature was found for polymer fractions with a medium MW. The application of measures (such as tempering, swell-crystallization) which increase crystallinity in crystallizable polymers led to increased solvation temperatures. (29 references.)

PHATHALIC ACID, DIOCTYL ESTER
PLASTICIZERS
POLYMERS - FRACTIONATION
POLYVINYL CHLORIDE - GELATION
POLYVINYL CHLORIDE - MOLECULAR WEIGHT
POLYVINYL CHLORIDE PASTES
POLYVINYL CHLORIDE - PROPERTIES
SOLUBILITY

AET 1752

BIEDENKOPF G

MEASURING THE RHEOLOGICAL PROPERTIES OF RIGID PVC, TRANSLATED FROM GERMAN

KUNSTSTOFF UND GUMMI 1966 VOL 5 P - JOHANNESBURG AE&CI 1973

RDL AE&CI

Part 1 of a series of articles adapted from the author's thesis in which 1) the flow curve of rigid polyvinyl chloride (PVC) compound was determined with an extrusion viscosimeter and 2) the PVC compound was examined under variable test conditions in the kneading zone of the Brabender Plastograph. The Plastograph is described and illustrated. Test procedures are discussed. Diagrams are included in the German text. (Translation of PM 16, 359/11, part 1.)

PLASTOGRAPHS
POLYVINYL CHLORIDE COMPOSITIONS
POLYVINYL CHLORIDE - PROPERTIES (RHEOLOGICAL)
POLYVINYL CHLORIDE (RIGID)
RHEOLOGICAL PROPERTIES - DETERMINATION

AET 1753

BIEDENKOPF G
MEASURING THE RHEOLOGICAL PROPERTIES OF RIGID PVC PTS 2-4, TRANSLATED FROM GERMAN
KUNSTSTOFF UND GUMMI 1967 -
JOHANNESBURG AE&CI 1973
RDL AE&CI

Parts 2-4 of an article adapted from the author's thesis in which the results of tests with the kneading chamber of the Brabender Plastograph show that this equipment is not suitable for determining the flow curves of a thermoplastic material because not all 3 of the coefficients of flow can be determined. To determine absolute values viscometry must be used. The kneader is of practical use for checking factory materials and for establishing terms of acceptance between the processor and the manufacturer of raw materials. Equations, graphs, and 22 references are included in the German text. (Translation of PM 16.359/11, parts 2-4.)

MELT FLOW INDEX - DETERMINATION
PLASTICS (THERMOPLASTIC)
PLASTOGRAPHS
POLYMER MELTS
POLYVINYL CHLORIDE - PROPERTIES (RHEOLOGICAL)
POLYVINYL CHLORIDE (RIGID)
RHEOLOGICAL PROPERTIES - DETERMINATION
VISCOMETERS

AET 1778

MENZEL G
IMPACT-RESISTANT PVC-COMPOUNDS FOR OUTSIDE USE PT1 : RAW MATERIAL PROPERTIES, STABILIZATION AND PIGMENTATION FOR OUTSIDE USE, TRANSLATED FROM GERMAN
PLASTVERARBEITER 1973 VOL 24 NO 7 P 397-405
JOHANNESBURG AE&CI 1973
RDL AE&CI

The author discusses the properties of polyvinyl chloride (PVC) suitable for use in building ; impact-resistant components and PVC types ; stabilization of impact-resistant PVC ; problems of pigmentation ; and light- and weather-resistance. Tables are included which show the physical properties of impact-resistant and rigid PVC ; stabilizer systems for weather-resistant PVC compounds ; the composition of stabilizer-systems ; properties of weather-resistant pigments ; and the results of weathering tests.

BUILDING MATERIALS
POLYVINYL CHLORIDE COMPOSITIONS
POLYVINYL CHLORIDE (HIGH IMPACT)
POLYVINYL CHLORIDE - PIGMENTATION
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE - STABILIZATION
POLYVINYL CHLORIDE - STABILIZERS
POLYVINYL CHLORIDE - WEATHERING
STABILIZER SYSTEMS

AET 1811

SCHAPER W
TECHNICAL MEASURES FOR THE PREVENTION OF ACRO-OSTEOLYSIS WITH (IN) AUTOCLAVE CLEANERS, TRANSLATED FROM GERMAN
INTERNATIONAL SYMPOSIUM ON THE PREVENTION OF OCCUPATIONAL RISKS IN THE CHEMICAL INDUSTRY, 2ND, FRANKFURT AM MAIN, 1973
JOHANNESBURG AE&CI 1974
RDL AE&CI

During 1962-9 individial cases of acro-osteolysis were observed in some Solvay PVC factories. This disease can be diagnosed from X-ray photographs, which show pseudo fractures and, in some cases, the fingers look shorter because the tips are puffed up. Vinyl chloride is thought to be a contributing cause. To protect the staff, particularly the autoclave cleaners, measures were taken as follows : 1) good ventilation was ensured ; 2) VC was drawn off by suction ; 3) descent into the autoclaves was limited, and 4) when the autoclaves were entered, the effective circulation of air was ensured.

AUTOCLAVES - CLEANING
DISEASES - CONTROL
DISEASES (OCCUPATIONAL)
POLYVINYL CHLORIDE PRODUCTION
VINYL CHLORIDE

AET 1777

MITTERBERGER W D AND GROSS R
SIMPLE ANALYTICAL TESTS FOR FINISHED ARTICLES AND PVC POWDER COMPOUNDS PT 1 : SEPARATION PROCESSES AND ANALYTICAL INVESTIGATIONS, TRANSLATED FROM GERMAN
KUNSTSTOFFTECHNIK 1973 VOL 12 NO 7 P 176-9
JOHANNESBURG AE&CI 1973
RDL AE&CI

Methods which do not require special knowledge and costly apparatus are outlined. The time factor and the smallness of the sample are also taken into account. The authors discuss the determination of PVC content ; quantitative separation of PVC powder mixtures, granular materials, and finished articles ; ether extraction ; carbon tetrachloride extraction ; n-butanol extraction ; thin-layer chromatography ; determination of solids content ; and qualitative analysis of pigments and fillers.

ADDITIVES - DETERMINATION
ANALYTICAL METHODS
CHROMATOGRAPHY (THIN FILM)
POLYVINYL CHLORIDE - ADDITIVES
POLYVINYL CHLORIDE - ANALYSIS
POLYVINYL CHLORIDE FILLERS
POLYVINYL CHLORIDE - PIGMENTS

MFC/AD 751 682

VOROBYEV V A AND ADRIANOV R A
TECHNOLOGY OF POLYMERS, TRANSLATED FROM RUSSIAN
CHARLOTTESVILLE VA US ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER 1972
RDL AE&CI

Translation of Russian book (Moscow, 1971) that covers industrial methods of producing polymers, properties of polymers, and (briefly) the application of these polymers as materials of construction. Polyethylene, polyvinyl chloride, polytetrafluoro- and polytrifluorochloro-ethylene, polystyrene, polyurethanes, polyesters, and cellulose esters and ethers are among the polymers discussed. Diagrams and extensive references are included.

CELLULOSE ESTERS
CHAIN BRANCHING REACTIONS
CONDENSATION, POLY-
ESTERS, POLY-
ETHYLENE, TETRAFLUORO-, POLYMERS
MATERIALS (CONSTRUCTION) - PROPERTIES
POLYETHYLENE
POLYMERIZATION
POLYMERS - PRODUCTION
POLYMERS - PROPERTIES
POLYPROPYLENE
POLYURETHANES
POLYVINYL CHLORIDE
RUBBER (SYNTHETIC)
STYRENE POLYMERS

MFC/AD 698 604

NICOLL, W.A.
Cross-linked PVC wire insulation systems; paper... International wire and cable symposium, 18th... Atlantic City, NJ... 1969.
Clinton, Mass, International Telephone and Telegraph Corporation, 1969.
Research Library, AE & CI.

PVC wire insulating and cable jacketing materials have long been the wire and cable industry standards for applications requiring flame retardant capabilities, a good combination of toughness and flexibility, and low cost. One of their major defects has been the normal tendency of a thermoplastic to soften at high temperatures. PVC softens and readily deforms over a wide temperature range. This deformation at high temperature has been altered by irradiation cross-linking. Cross-linked PVC insulating and jacketing systems can be obtained by varying compound formulations and electron beam exposure. Various properties can be emphasized in any one compound formulation.

CABLES - INSULATING MATERIALS
INSULATING MATERIALS (ELECTRIC)
POLYMERS - CROSS-LINKING
POLYMERS - DEFORMATION
POLYMERS - IRRADIATION
POLYVINYL CHLORIDE (HEAT-RESISTANT)
WIRE - INSULATION

MFC/AD 751 772

NORWITZ G AND OTHERS
DETERMINATION OF APPARENT DENSITY OF PROPELLANTS AND POWDERED MATERIALS OF INTEREST IN ORDNANCE
FRANKFORD ARSENAL TEST REPORT T 72-15-1
PHILADELPHIA FRANKFORD ARSENAL 1972
RDL AE&CI

A study was made of methods of determining apparent density of propellants and powdered materials. The apparent density of propellants was determined by 3 free-fall techniques: (a) DuPont Densitometer method, (b) cylinder method with cylinders of 397 ; 284 ; 93,6 ; 26,9 ; and 15,3 ml, (c) Scott Volumeter method. The apparent density of 3 powdered materials (powdered magnesium, polyvinyl chloride, and strontium peroxide) was determined by 2 free-fall techniques : (a) Scott Volumeter method, (b) graduated cylinder method with graduated cylinders of 100 ; 50 ; 25 ; and 10 ml. The apparent density of the powdered materials by the dropping compaction technique was determined with graduated cylinders of 100 ; 50 ; 25 ; and 10 ml. Results of the different techniques obtained by 2 operators were compared. Tables and 16 references are included.

DENSITY - DETERMINATION
EXPLOSIVE POWDER
ORDNANCE
POLYVINYL CHLORIDE - DENSITY
POWDERS - PROPERTIES
PROPELLANTS - PROPERTIES

MFC/PB 187 780

JOHNS, H.
Extension tests on PVC contraction joint forming water-stops.
Denver, Col., United States Bureau of Reclamation, 1969.
Research Library, AE & CI.

Laboratory tests on short sections of polyvinyl chloride test samples taken from materials used in concrete-lined canals are described. The results indicate that: 1) most strips will serve satisfactorily if the joint does not open more than $\frac{3}{8}$ in; 2) most strips could be extended over 2 in; 3) the size of the hole in the centre bulb does not greatly affect performance; 4) fins on the horizontal flange restrict deformation to that portion of the flange that is between fins; 5) strips should restrain movement of the slab; 6) stress relaxation and the effect of cycling should be investigated further. Photographs are included.

JOINTS (EXPANSION)
LININGS - TESTING
PLASTICS - PROPERTIES (MECHANICAL)
POLYVINYL CHLORIDE - TESTING

016:678 MAT

MATTHAN J AND OTHERS EDS
AGEING AND WEATHERING OF PLASTICS : A REVIEW OF THE LITERATURE
SHAWBURY SALOP RUBBER AND PLASTICS RESEARCH ASSOCIATION 1970
RDL AE&CI

Data are provided on the ways in which the best weather resistance of plastics can be achieved. Material is arranged under the following headings: weathering factors and exposure tests; polyurethanes; polyolefines; glass fibre reinforced polyester resins; epoxy resins; PVC; acrylics; phenolic and amino resins; cellulose esters; polystyrene and other plastic materials. A comprehensive bibliography is included.

BIBLIOGRAPHY
CELLULOSE ESTERS
EPOXY RESINS
ESTERS, POLY-, RESINS
PHENOL CONDENSATION PRODUCTS
PLASTICS - AGEING
PLASTICS (REINFORCED)
PLASTICS - WEATHERING
POLYURETHANES
POLYVINYL CHLORIDE
SURVEY (LITERATURE)

614.7 INT

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY.
Control of water supplies.
Chemical control of the human environment... international symposium... preprints... Johannesburg... 1969. Vol.5.
Pretoria, CSIR, 1969.
Research Library, AE & CI.

Papers, which deal with control of water quality, control and disposal of sewage and industrial effluents, and particular methods, include: 'Control of liquid effluent from AE & CI's Modderfontein Factory', by A.T. Alexander (AE & CI); 'Disposal of factory liquid effluent: an agricultural scheme', by G.F.S. Hyam (AE & CI); 'Treatment of domestic sewage and industrial effluents on plastic media', by P.N.J. Chipperfield (ICI); and 'Control of liquid effluents from the chemical industry', by L.J. Merckx (ICI).

EFFLUENTS DISPOSAL
EFFLUENTS TREATMENT
FERTILIZERS (LIQUID)
FERTILIZERS (NITROGENOUS)
FILTER MEDIA
MODDERFONTEIN FACTORY
PASTURE IMPROVEMENT
POLYVINYL CHLORIDE
SEWAGE TREATMENT
SYMPOSIA
WATER POLLUTION - CONTROL
WATER POLLUTION - DETERMINATION
WATER SUPPLY

MFC/N 72-24609

ATTERBY P
PLASTICS ON FIRE - CORROSION
FOA REPORTS 1972 VOL 6 NO 5 P 1-7
STOCKHOLM FOERSVARETS FORSKNINGSANSTALT 1972
ISBN 91-7056-011-0 RDL AE&CI

Secondary damage has been severe in some industrial fires because of the presence of polyvinyl chloride (PVC). PVC decomposes when exposed to fire, with evolution of HCl. 1 kg of PVC evolves about 0,56 kg of HCl, about the equivalent of 10 kg of 5% hydrochloric acid, which corrodes metals, concrete, and electronic equipment. Damage can be reduced by rapid and correct decontamination. References are included.

DECOMPOSITION PRODUCTS
FIRE HAZARDS
HYDROCHLORIC ACID - CORROSIVITY
HYDROGEN CHLORIDE
POLYVINYL CHLORIDE - DECOMPOSITION

REF 058 : 678 USF

US FOAMED PLASTICS MARKETS AND DIRECTORY 1974
WESTPORT CONN TECHNOMIC PUBLISHING COMPANY 1974
ISBN 0-87762-128-4 RDL AE&CI

A directory which contains a review of the market for foamed plastics as well as the addresses of processors and producers of blowing agents, machinery, and foamed plastics. Polyurethanes mainly are dealt with but polystyrene foams, polyvinyl chloride foams, and a number of other foamed plastics are also covered.

DIRECTORY
FOAMING AGENTS
PLASTICS (EXPANDED)
PLASTICS PRODUCTION EQUIPMENT
POLYURETHANES (EXPANDED)
POLYVINYL CHLORIDE (EXPANDED)
STYRENE POLYMERS (EXPANDED)
SURVEY (MARKET)

665.5 AME

AMERICAN CHEMICAL SOCIETY DIVISION OF PETROLEUM CHEMISTRY
CANADIAN SOCIETY FOR CHEMICAL ENGINEERING OF THE CHEMICAL INSTITUTE OF CANADA
ORIGIN AND REFINING OF PETROLEUM; A SYMPOSIUM
AMERICAN CHEMICAL SOCIETY AND CHEMICAL INSTITUTE OF CANADA JOINT CONFERENCE, TORONTO, 1970
ADVANCES IN CHEMISTRY 103
WASHINGTON ACS 1971
ISBN : 8412-0120-X RDL AEGCI

Papers deal with the origin of petroleum, particularly chemical and migrational aspects; properties of the petroleum deposit at the Athabasca tar sands; petroleum refining, including catalytic reforming and cracking, hydrocracking, alkylation, and isomerization; developments in ethylene chemistry; and vinyl chloride and polyvinyl chloride. Diagrams, tables, and very extensive references are included.

ALKYLATION
CATALYSIS (HOMOGENEOUS)
ETHYLENE PRODUCTION
HYDROCARBONS - CRACKING
HYDROCARBONS - REFORMING
ISOMERIZATION
NAPHTHA
OIL REFINING
PETROCHEMICALS
PETROLEUM REFINING
POLYVINYL CHLORIDE
SYMPOSIA
VINYL CHLORIDE PRODUCTION

661.7 MIL

MILLER, S.A. editor
Ethylene and its industrial derivatives.
London, Benn, 1969.
Research Library, AE & CI.

Deals with the history of C_2H_4 chemistry (including discovery and development of polyethylene by ICI); production, recovery, pyrolysis, properties, analysis, combustion, and uses of C_2H_4; production, properties, and uses of polyethylene and related polymers; production, properties, and uses of acetaldehyde and ethylene oxide and their derivatives; hydration, halogenation, hydrohalogenation, and ethylation of C_2H_4, and properties and uses of derivatives obtained by these processes; and production, properties, and uses of vinyl acetate and other vinyl esters, and their derivatives (mainly polymers).

ACETALDEHYDE
BENZENE, ETHYL-
ETHANE, 1,2-DICHLORO-
ETHYL ALCOHOL
ETHYLENE - ANALYSIS
ETHYLENE - FLAMMABILITY LIMITS
ETHYLENE OXIDE
ETHYLENE POLYMERIZATION
ETHYLENE POLYMERS
ETHYLENE PRODUCTION
ETHYLENE - PROPERTIES
ETHYLENE/PROPYLENE POLYMERS
ETHYLENE - REACTIONS
POLYETHYLENE
POLYVINYL CHLORIDE
STYRENE
STYRENE POLYMERS
VINYL ACETATE
VINYL ACETATE POLYMERS
VINYL CHLORIDE
VINYL CHLORIDE POLYMERS

62.002.3 ENG

ENGINEERING EQUIPMENT USERS ASSOCIATION.
Chemical resistant materials.
(E.E.U.A. handbook 21.)
London, EEUA, 1968.
Research Library, AE & CI.

A guide to the selection of chemical resistant materials for use in construction work.

Part 1: Filled resin materials; carbon and graphite; glass reinforced plastic materials.

Part 2: Polyvinyl chloride; polythene; polypropylene; glass fibre resin-reinforced polyvinyl chloride and polypropylene.

CARBON - PROPERTIES
ESTERS, POLY -, REINFORCED
FIBRES (GLASS)
GRAPHITE - PROPERTIES
MATERIALS (CONSTRUCTION) - PROPERTIES
MATERIALS (CONSTRUCTION) - SPECIFICATIONS
PLASTICS - CHEMICAL RESISTANCE
PLASTICS (REINFORCED)
POLYETHYLENE - PROPER
POLYMERS - CHEMICAL RESISTANCE
POLYPROPYLENE - PROPERTIES
POLYVINYL, CHLORIDE - PROPERTIES

621.798.18 PIN

PINNER, S.H. editor
Modern packaging films.
London, Butterworths, 1967.
Research Library, AE & CI.

Deals with early origins of packaging films, production methods, advantages, disadvantages and applications of polyethylene, polypropylene, polystyrene and PVC films, shrink wrapping films, testing and analysis of thin polymer films, printing and adhesion of packaging films, cold seal coatings, automatic packaging machines and an assessment of future growth potential.

FILM (PACKAGING)
PACKAGING (AUTOMATIC)
PACKAGING - ECONOMICS
PACKAGING MATERIALS
PACKAGING (SHRINK)
PLASTIC FILMS PRINTING
PLASTIC FILMS - TESTING
POLYETHYLENE FILM
POLYPROPYLENE FILM
POLYVINYL CHLORIDE FILM
STYRENE POLYMERS - FILM
SYMPOSIA

677.4 MAR

MARK, H.F. and others, editors.
Man-made fibers : science and technology, vol. 3.
(Polymer engineering and technology.)
New York, Interscience, 1968.
Research Library, AE & CI.

Deals with the production and properties of polyethylene terephthalate, copolyesters containing ethylene terephthalate, polyesters of 1,4-cyclohexane-dimethanol and their fibres, acrylonitrile and its fibres, the fibres of polyvinyl alcohol, polyvinylidene chloride, polyvinyl chloride, linear polyolefines, and spandex. The applications of glass textile fibres, properties of elementoorganic fibre-forming polymers, the behaviour of metallic fibres during processing, and dyeing, finishing, and testing of fibres are also discussed.

FIBRES (GLASS)
FIBRES (METALLIC)
FIBRES - PIGMENTATION
FIBRES - PROPERTIES
FIBRES - SPINNING
FIBRES (SYNTHETIC)
FIBRES - TREATMENT
POLYETHYLENE FIBRES
POLYPROPYLENE FIBRES
POLYVINYL CHLORIDE FIBRES
TEREPHTHALIC ACID, POLYETHYLENE ESTERS

678 SWE

SWEETING, O.J. editor
The Science and technology of polymer films. Vol.2
(Polymer engineering and technology.)
New York, Wiley-Interscience, 1971.
Research Library, AE & CI.

Chapter 1 deals with the barrier properties of films. In the remainder of the book, films of importance in packaging, excluding laminates and other composites, are discussed. Polymerization of the monomer, orientation and other properties of the polymer, and technology of film production are covered for polyethylene, polypropylene, polystyrene, polyvinyl chloride, and about a dozen other films. Photographs, diagrams, tables, trade names, and the regulations about food additives of the US Food and Drug Administration are included. (Very extensive references.)

CELLOPHANE FILM
FILM (PACKAGING)
FOOD ADDITIVES
FOODS - PACKAGING
PACKAGING - REGULATIONS
PLASTIC FILMS - ORIENTATION
PLASTIC FILMS - PERMEABILITY
PLASTIC FILMS - PRODUCTION
PLASTIC FILMS - PROPERTIES
POLYETHYLENE FILM
POLYMERIZATION
POLYMERS - PROPERTIES
POLYPROPYLENE FILM
POLYVINYL CHLORIDE FILM
STYRENE, POLYMERS - FILM

Q 665.5 UNI

UNITED NATIONS, New York.
Studies in petrochemicals. 2 volumes.
Conference on the development of petrochemical industries in developing countries, Teheran, 1964.
New York, United Nations, 1966.
Research Library, AE & CI.

Characteristics of the petrochemical industry and prospects for its development, aspects of supply and demand, research and technology, individual studies of raw materials, nitrogenous fertilizers, and plastic materials are contained in volume I. Volume II contains papers on synthetic fibre and rubber industries, the petrochemical industry in various countries, regional development, financial and legal aspects and location factors.

FERTILIZERS (NITROGENOUS)
FERTILIZERS PRODUCTION
FERTILIZERS - SURVEY
FIBRES PRODUCTION
FIBRES - SURVEY
FIBRES (SYNTHETIC)
HYDROCARBONS - REFORMING
INDUSTRIAL ORGANIZATION
PETROCHEMICAL INDUSTRY
PETROLEUM REFINING
PLASTICS PRODUCTION
PLASTICS - SURVEY
POLYETHYLENE (LOW DENSITY)
POLYVINYL CHLORIDE
STYRENE POLYMERS
SURVEY (MARKET)
SYMPOSIA

678 BRY

BRYDSON, J.A.
Plastics materials.
London, Iliffe, 1966.
Research Library, AE & CI.

Deals with the history, development and properties of commercially available plastics. In the second half of the book individual classes of plastics are examined and processing and uses of each type are reviewed. Plastic materials with similar properties are compared.

METHACRYLIC ACID, METHYL ESTER POLYMERS
PLASTICS PROCESSING
PLASTICS - PRODUCTION
PLASTICS - PROPERTIES
POLYETHYLENE - PROPERTIES
POLYMERS - MOLECULAR STRUCTURE
POLYMERS PRODUCTION
POLYMERS - PROPERTIES
POLYURETHANE - PROPERTIES
POLYVINYL CHLORIDE - PROPERTIES
RESINS - PROPERTIES

678.01 BRU

BRUINS, P.F. editor
New polymeric materials; (symposium)... Polytechnic Institute of Brooklyn... New York... 1968.
(Applied polymer symposia, 11.)
New York, Interscience, 1969.
Research Library, AE & CI.

Papers deal with propylene- and ethylene-modified PVC; copolymers and polymers of 4-methylpentene-1; thermoplastic polyurethanes; the chemistry and development of ionomers; modifying the surface of inorganic reinforcing fillers (such as kaolin and colloidal crysotile asbestos) for filled linear polyethylene; boron-containing high-temperature polymers; polymer 360 (a polyarylsulphone thermoplastic); thermoplastics based on ASA; and the chemistry, properties, and applications of polybutylene, Tyrin-chlorinated polyethylene, and carboxy nitroso rubber (a non-flammable fluorocarbon elastomer).

1-BUTENE, POLYMERS
FILLERS - MODIFICATION
FLUOROCARBONS POLYMERS
IONOMERS
1-PENTENE, 4-METHYL-, POLYMERS
PLASTICS - FILLERS
PLASTICS (HEAT RESISTANT)
PLASTICS - PROPERTIES
PLASTICS (REINFORCED)
PLASTICS (THERMOPLASTIC)
POLYETHYLENE
POLYETHYLENE, CHLORINATED
POLYMERS (HIGH TEMPERATURE)
POLYMERS - PROPERTIES
POLYURETHANES
POLYVINYL CHLORIDE
SYMPOSIA

678.01 McC

McCRUM, N.G. and others.
Anelastic and dielectric effects in polymeric solids.
London, Wiley, 1967.
Research Library, AE & CI.

The Chemical and physical structure and properties of polymeric solids, relaxation theories and experimental methods for the study of anelastic and dielectric relaxation are described in the first half. Mechanical and dielectric relaxation in polymeric solids are dealt with in the second half.

AMIDES, POLY-, PROPERTIES
METHACRYLIC ACID, METHYL ESTER POLYMERS - PROPERTIES
POLYETHYLENE - PROPERTIES
POLYMERS - DIELECTRIC PROPERTIES
POLYMERS - MECHANICAL PROPERTIES
POLYMERS - MOLECULAR STRUCTURE
POLYMERS - MOLECULAR WEIGHT DISTRIBUTION
POLYMERS - RELAXATION
POLYURETHANE - PROPERTIES
POLYVINYL CHLORIDE - PROPERTIES

678.01 DEL

DELATYCKI O ED
MECHANICAL PERFORMANCE AND DESIGN IN POLYMERS; HELD AT UNIVERSITY OF MELBOURNE, AUSTRALIA, 1970
APPLIED POLYMER SYMPOSIA 17
NEW YORK INTERSCIENCE 1971
RDL AE&CI

Papers deal with mechanical properties of thermoplastics and the influence on those properties of mechanical and thermal treatment employed in converting thermoplastics to plastic articles. The use of this information in the design of thermoplastics is discussed. Creep studies, deformation and fracture, high-speed impact strength, design of plastic pipes, and strength and fracture toughness of glass fibre-reinforced plastics are among the topics considered.

PLASTIC ARTICLES - DESIGN
PLASTICS - HEAT TREATMENT
PLASTICS - PROPERTIES (MECHANICAL)
PLASTICS (THERMOPLASTIC)
POLYMERS - DEFORMATION
POLYMERS - FRACTURE
POLYMERS - MECHANICAL PROPERTIES
PIPES - DESIGN
PIPES (PLASTIC)
PLASTICS - CREEP
PLASTICS PROCESSING
PLASTICS (REINFORCED)
POLYETHYLENE
POLYPROPYLENE
POLYVINYL CHLORIDE
SYMPOSIA

678.01 BON

BONI, K.A. and SLIEMERS, F.A. editors
International symposium on polymer characterization; held at Battelle Memorial Institute, Columbus, Ohio... 1967.
(Applied polymer symposia, 8.)
New York, Interscience, 1969.
Research Library, AE & CI.

Papers deal with the determination of molecular weight distribution and number-average by such methods as light scattering and gel permeation chromatography (GPC). The use of GPC in analyzing monomers, catalysts, carrier solvents, plasticizers, and other additives is described, together with optical methods of polymer characterization. Microstructure, morphology, and thermal and solution properties of polymers are discussed.

CHROMATOGRAPHY (GEL PERMEATION)
LIGHT SCATTERING
MOLECULAR WEIGHT DISTRIBUTION - DETERMINATION
OPTICAL METHODS
OSMOMETRY
POLYMERS - ANALYSIS
POLYMERS - MOLECULAR WEIGHT DISTRIBUTION
POLYMERS - PROPERTIES
POLYVINYL CHLORIDE (CRYSTALLINE)
SPECTROMETRY (NUCLEAR MAGNETIC RESONANCE)
STYRENE POLYMERS - ANALYSIS
SYMPOSIA
THERMAL ANALYSIS

678.01 OGO

OGORKIEWICZ, R.M. editor
Engineering properties of thermoplastics; a collective work produced by Imperial Chemical Industries Limited, Plastics Division.
London, Wiley-Interscience, 1970.
Research Library, AE & CI.

The characteristics (the nature of polymeric materials and the composition and processing of plastics) and uses of thermoplastics are discussed, together with deformation behaviour, strength, and other physical properties. Methods by which particular types of thermoplastics can be characterized are described. The economics and design of plastic articles are considered. Data are presented in graphical form. (57 references.)

DESIGN DATA
ENGINEERING DESIGN
PHYSICAL PROPERTIES
PLASTIC ARTICLES - DESIGN
PLASTICS PROCESSING
PLASTICS PROCESSING EQUIPMENT
PLASTICS - PROPERTIES
PLASTICS STRESSES
PLASTICS (THERMOPLASTIC)
POLYETHYLENE (LOW DENSITY)
POLYETHYLENE - PROPERTIES
POLYMERS - DEFORMATION
POLYMERS - PROPERTIES
POLYPROPYLENE - PROPE'
POLYVINYL CHLORIDE - (TIES

678.019 GUI

GUILLET J E ED
POLYMERS AND ECOLOGICAL PROBLEMS
AMERICAN CHEMICAL SOCIETY, SYMPOSIUM, NEW YORK, 1972, PROCEEDINGS
POLYMER SCIENCE AND TECHNOLOGY 3
NEW YORK PLENUM 1973
ISBN 0-306-36403-4 RDL AE&CI

The papers deal with such topics as polymers with controlled 'lifetimes' ; a delayed action photo-activator for the degradation of polymers used in packaging ; photo-activated degradation of polyolefines ; biodegradability of synthetic polymers ; effluents from municipal incineration of plastics ; auto-ignition of multicomponent fibre systems ; thermal analysis of irradiated polyvinyl chloride ; recycling polytetrafluoroethylene ; and legal problems associated with the disposal and recycling of plastics. An edited report of a panel discussion is included, together with diagrams, photographs, tables, and some references.

DECOMPOSITION PRODUCTS
DEGRADATION PRODUCTS
ETHYLENE, TETRAFLUORO-, POLYMERS
FIBRE COMPOSITES
OLEFINES, POLY-, DEGRADATION
PACKAGING MATERIALS
PLASTICS - ADDITIVES
PLASTICS - BIODEGRADATION
PLASTICS - DEGRADATION
PLASTICS - WASTE DISPOS'
PLASTICS - WASTE RECOV
POLYETHYLENE - DEGRADATION
POLYMER DEGRADATION
POLYMERS - OXIDATION
POLYMERS (PHOTOSENSITIVE)
POLYPROPYLENE
POLYVINYL CHLORIDE - DEGRADATION
/MPOSIA
/ASTE - INCINERATION

678.019 PIN

PINNER, S.H. editor
Weathering and degradation of plastics...
Manchester, Columbine, 1966.
Research Library, AE & CI.

Contents: Fundamental chemistry of polymer degradation; experimental techniques for studying degradation; chemistry of antioxidants, antiozonants and heat stabilizers; correlation of accelerated and natural weathering tests; thermal degradation of polyvinyl chloride; degradation and weathering of polystyrene and styrenated polyester resins; degradation of polyolefins; economic potential for weather-resistant plastics.

OLEFINES, POLY-, DEGRADATION
PLASTICS - ADDITIVES
PLASTICS - DEGRADATION
PLASTICS - TESTING
PLASTICS - WEATHERING
POLYETHYLENE - DEGRADATION
POLYMER DEGRADATION
POLYMERS - STABILIZATION
POLYVINYL CHLORIDE - DEGRADATION

678.01 RIT

RITCHIE, P.D. editor
Physics of plastics.
London, Iliffe for the Plastics Institute, 1965.
Research Library, AE & CI.

After an introduction that deals with elementary concepts relating to the molecular structure and organization of high molecular weight polymers, including solutions and melts, the investigation of this structure by light scattering, X-ray, infra-red, and NMR spectroscopy is outlined. Chemical aspects of physical properties are discussed, together with deformation and mechanical, thermal, electrical, optical, and acoustical properties. The effects of plasticizers, fillers, and other additives on the physical properties of polymers are also dealt with.

ANALYTICAL METHODS (PHYSICAL)
FILLERS
PLASTICIZERS - PROPERTIES
PLASTICS - ADDITIVES
PLASTICS - PROPERTIES
POLYMER MELTS
POLYMER SOLUTIONS
POLYMERS - DEFORMATION
POLYMERS (HIGH MOLECULAR WEIGHT)
POLYMERS - MOLECULAR STRUCTURE
POLYMERS - PHYSICAL PROPERTIES
POLYVINYL CHLORIDE - PROPERTIES

678(02) VIE

VIEWEG, R. editor
Kunststoff-Handbuch. 12 vols.
Munich, Hanser, 1963-
Research Library, AE & CI.

The synthesis, manufacture, properties and uses of synthetic plastics are described. The volumes comprise: Fundamentals of synthesis; Manufacture and testing; Polyvinylchloride; Raw materials; Polyolefines; Polystyrenes; Polyamides; Polyurethanes; Polyesters; Polymethacrylates; Thermosetting plastics and resins.

AMIDES, POLY-
ESTERS, POLY-
METHACRYLIC ACID, METHYL ESTER POLYMERS
OLEFINES, POLY-
PLASTICS
PLASTICS PROCESSING
PLASTICS PRODUCTION
PLASTICS - PROPERTIES
PLASTICS - RAW MATERIALS
PLASTICS - TECHNOLOGY
PLASTICS - TESTING
PLASTICS (THERMOSETTING)
POLYURETHANES
POLYVINYL CHLORIDE
SILICONES
STYRENE POLYMERS

678.02 KES

KESKKULA, H. editor
Polymer modification of rubbers and plastics... American Chemical Society symposium... Chicago... 1967.
(Applied polymer symposia, 7.)
New York, Interscience, 1968.
Research Library, AE & CI.

Papers deal with the chemistry and physics of heterogeneous polymeric composites. The analysis, compatibility, cross-linking, failure, preparation, and properties of rubber-modified rigid polymers and copolymers are discussed, together with the modification of elastomers by polymers that are rigid at ambient temperatures. Two papers deal with NBR/PVC blends.

ACRYLONITRILE/BUTADIENE/STYRENE POLYMERS
1,3-BUTADIENE, POLYMERS
ELASTOMERS - PROPERTIES
NITRILES, POLYMERS
PLASTICS (REINFORCED)
POLYMER BLENDS - PROPERTIES
POLYMERS - ANALYSIS
POLYMERS - CROSS-LINKING
POLYMERS - DEFORMATION
POLYMERS - FRACTURE
POLYMERS (GRAFT)
POLYMERS (HIGH IMPACT STRENGTH)
POLYMERS - PHYSICAL PROPERTIES
POLYMERS - RHEOLOGICAL PROPERTIES
POLYVINYL CHLORIDE BLENDS
RUBBER BLENDS
STYRENE POLYMERS
SYMPOSIA
YIELD STRESS

678.019 SOC

SOCIETY OF CHEMICAL INDUSTRY.
High temperature resistance and thermal degradation of polymers.
Symposium, 21st London, 1960.
(Society of Chemical Industry monograph, 13).
London, The Society, 1961.
Research Library, AE & CI.

Papers dealt with specific polymers such as polyphosphonitrilic chloride, polyesters, acrylic and methacrylic acid ester polymers, nitrile polymers, polyvinyl chloride, polyethylene terephthalate, polyphenylene oxides, polyphenylenes, polyamides, polyethylenes, and polypropylene.

HIGH TEMPERATURE PROPERTIES
PLASTICS - AGEING
POLYETHYLENE - DEGRADATION
POLYMER DEGRADATION
POLYMERS - DISCOLOURATION
POLYMERS (INORGANIC)
POLYMERS - PYROLYSIS
POLYVINYL CHLORIDE - DECOMPOSITION
SYMPOSIA

678.027 ELD

ELDEN R A AND SWAN A D
CALENDERING OF PLASTICS
GRIFFIN G J L ED
LONDON ILIFFE FOR THE PLASTICS INSTITUTE 1971
ISBN 0-592-05439-X
RDL AE&CI

The monograph deals with the selection and preparation of raw materials for calendering; calenders and auxilary equipment; the calendering process; calendering faults and their remedies; control testing of raw materials and finished sheet; and post-calendering processing of sheet. Photographs, diagrams, graphs and references are included.

CALENDERING COMPOSITIONS
CALENDERS
PLASTIC SHEET PRODUCTION
PLASTIC SHEET - PROPERTIES
PLASTICS - ADDITIVES
PLASTICS - CALENDERING
PLASTICS - RAW MATERIALS
POLYVINYL CHLORIDE - CALENDERING
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE SHEET

678.029 NEU

NEUMANN J A AND BOCKHOFF F J
WELDING OF PLASTICS
NEW YORK REINHOLD 1959
RDL AE&CI

Methods of welding thermoplastics are described in detail. Many illustrated step-by-step procedures are included. Design data, chemical and physical properties of thermoplastics (particularly PE and rigid PVC), heat sealing of plastic film and thin sheet, and welding of vessels, lining materials, and ducting and piping are covered, as well as methods of testing welds. A chart that shows the chemical resistance of a very large number of thermoplastics is included, together with diagrams, photographs, tables, and references.

CHEMICAL RESISTANCE
DESIGN DATA
HEAT SEALING
LINING MATERIALS
PIPES (PLASTIC)
PIPES - WELDING
PLASTIC FILMS - JOINING
PLASTIC FILMS - WELDING
PLASTICS - CHEMICAL RESISTANCE
PLASTICS - HEAT SEALING
PLASTICS - JOINING
PLASTICS - PROPERTIES (MECHAMICAL)
PLASTICS TESTING
PLASTICS (THERMOPLASTIC)
PLASTICS - WELDING
POLYETHYLENE - WEATHERING
POLYETHYLENE - WELDING
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE - WELDING
TEST METHODS
WELDING
WELDING FLAWS
WELDS - TESTING

678.027 FIS

FISHER E G AND CHARD E D
BLOW MOULDING OF PLASTICS
LONDON ILIFFE FOR THE PLASTICS INSTITUTE 1971
ISBN 0-592-05438-1
RDL AE&CI

The monograph covers the development of blow moulding equipment from the earlier days, when it was taken over from the glass container industry, to the present. Machines and processes are described and illustrated with photographs and diagrams. The ingredients of polyethylene and polyvinyl chloride moulding compositions are discussed. Properties are tabulated. Patents are listed, together with the names and addresses of manufacturers of equipment.

BLOW-MOULDING
BLOW-MOULDING COMPOSITIONS
CONTAINERS (PLASTIC)
CONTAINERS PRODUCTION
DIE - DESIGN
EXTRUDER - DESIGN
EXTRUDER (PLASTICS)
MOULDING EQUIPMENT - DESIGN
PLASTICS - ADDITIVES
PLASTICS - MOULDING
POLYETHYLENE - BLOW-MOULDING
POLYVINYL CHLORIDE - MOULDING
STYRENE POLYMERS

678.029.43 HAI

HAIM, G.
Manual for plastic welding.
Vol. 3 : Polyvinyl chloride.
London, Crosby Lockwood, 1959.
Research Library, AE & CI.

Manual discusses bonding agents, welding equipment, processes, welds, the training of welders, the equipment used for fabricating and forming of polyvinyl chloride, the lining of storage tanks, polyvinyl chloride pipe and duct lines, and the applications of polyvinyl chloride in the building, chemical, and general industries.

MATERIALS (CONSTRUCTION)
PIPES - JOINING
PIPES (POLYVINYL CHLORIDE)
PLASTICS PROCESSING EQUIPMENT
PLASTICS WELDING APPARATUS
POLYVINYL CHLORIDE
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE PRODUCTION
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE - WELDING

678.029.43 ZAD

ZADE, H.P.
Heatsealing and high-frequency welding of plastics.
London, Temple Press, 1959.
Research Library, AE & CI.

Information is given on the two processes, and the physical properties of thermoplastics in relation to their welding processes. An index of patents traces the development of the welding methods and an index of trade names provides an aid to the selection of materials for specific purposes.

HEAT SEALING
PATENTS INDEXES
PLASTICS FILMS - WELDING
PLASTICS - HEAT SEALING
PLASTICS - HEAT SEALING PROPERTIES
PLASTICS (THERMOPLASTIC)
PLASTICS - WELDING
PLASTICS WELDING APPARATUS
POLYETHYLENE - WELDING
POLYVINYL CHLORIDE - WELDING
TRADE NAMES - INDEX
WELDING (HIGH-FREQUENCY)

678.048 AME

AMERICAN CHEMICAL SOCIETY. Division of Industrial and Engineering Chemistry.
Stabilization of polymers and stabilizer processes; a symposium... 153rd (national) meeting... Miami Beach, Fla.,... 1967.
(Advances in chemistry, 85.)
Washington, D. C., ACS, 1968.
Research Library, AE & CI.

Papers deal with stabilizing polypropylene, polystyrene, polyvinyl chloride (PVC) and other polymers; anti-oxidation and anti-ozonization; oven-ageing tests; anti-oxidants and other stabilizers and their testing; effects of stabilizers on the melt rheology of PVC; microbial degradation of plasticized vinyl films; photodegradation of polymers; and fire retardents for thermoplastics. 'Hydroperoxide decomposition by some sulphur compounds', by B.A. Marshall of ICI, Plastics Division, is included.

ANTIOXIDANTS
ANTIOXIDANTS - TESTING
FIREPROOFING AGENTS
OXIDATION (AUTO-)
PLASTICS - BIODEGRADATION
PLASTICS - STABILIZATION
PLASTICS (THERMOPLASTIC)
POLYMER DEGRADATION
POLYMERS - STABILIZATION
POLYVINYL CHLORIDE DEGRADATION
POLYVINYL CHLORIDE - PROPERTIES (RHEOLOGICAL)
POLYVINYL CHLORIDE STABILIZATION
PYROCATECHOL
STABILIZERS (HEAT)
STABILIZERS (LIGHT)
STABILIZERS - PROPERTIES
SYMPOSIA

678.048 GOR

GORDON, G. Ya.
Stabilization of synthetic high polymers.
Jerusalem, Israel Program for Scientific Translations, 1964.
Research Library, AE & CI.

Discusses structure and thermal stability of polymers; oxidation of polymers in the dark and under illumination; inhibition of polymer decomposition due to oxidants, heat, and light; stabilization of polyethylene, polypropylene, polystyrene, and polyvinyl chloride.

POLYETHYLENE - DEGRADATION
POLYETHYLENE - STABILIZATION
POLYMER DEGRADATION
POLYMERS (HIGH MOLECULAR WEIGHT)
POLYMERS - STABILIZATION
POLYVINYL CHLORIDE - DECOMPOSITION
POLYVINYL CHLORIDE STABILIZATION
POLYVINYL CHLORIDE - STABILIZERS

678.049 AME

AMERICAN CHEMICAL SOCIETY. Division of industrial and engineering chemistry.
Plasticization and plasticizer processes; a symposium ... at the 147th meeting of the American Chemical Society, Philadelphia, Pa., 1964.
Washington, The Society, 1965.
(Advances in chemistry series, 48).
Research Library, AE & CI.

Topics dealt with included the effect of plasticizers on the properties of polymers, methods of producing new plasticizers, the use of the graded gel block in evaluating polyvinyl chloride plastisols, plasticization of and antiplasticizers for bisphenol polycarbonates; and compatibility and plasticization of poly-beta-vinylnaphthalene with polyethylene oxide.

ELASTIC PROPERTIES
PLASTICIZATION
PLASTICIZERS - ANALYSIS
PLASTICIZERS - PRODUCTION
PLASTICIZERS - PROPERTIES
POLYMERS - PLASTICIZATION
POLYMERS - PROPERTIES
POLYVINYL CHLORIDE - EVALUATION
POLYVINYL CHLORIDE (PLASTICIZED)
POLYVINYL CHLORIDE - PROPERTIES
SYMPOSIA

678.048 HAW

HAWKINS W L ED
POLYMER STABILIZATION
NEW YORK WILEY-INTERSCIENCE 1972
ISBN 0-471-36300-6 RDL AE&CI

The book covers stabilization against thermal oxidation by antioxidants and combinations of stabilizers; thermal degradation by sequential elimination and random scission; stabilization against oxidative photodegradation (ultraviolet radiation); methods of stabilization and choice of stabilizer; prevention of degradation by ozone; protection against ionizing radiation, burning, and chemical agents; the biological degradation of polymers; and weatherability tests, accelerated thermal stability tests, and some miscellaneous tests. Mechanisms are illustrated. Diagrams, tables and very extensive references are included.

ANTIOXIDANTS
FIREPROOFING AGENTS
HEAT STABILITY
IONIZATION
OXIDATION (AUTO-)
PLASTICS - BIODEGRADATION
PLASTICS - DEGRADATION
PLASTICS - FIREPROOFING
PLASTICS - FLAMMABILITY
PLASTICS - STABILIZATION
PLASTICS - STABILIZERS
PLASTICS - TESTING
POLYETHYLENE - STABILIZATION
POLYMER DEGRADATION
POLYMERS - STABILIZATION
POLYPROPYLENE - STABILIZATION
POLYVINYL CHLORIDE - STABILIZATION
STABILIZERS - EVALUATION
WEATHERING

678.07 FRI

FRISCH K C AND SAUNDERS J H EDS
PLASTIC FOAMS VOL 1
MONOGRAPHS ON PLASTICS VOL 1 PT 1
NEW YORK DEKKER 1972
ISBN 0-8247-1218-8 RDL AE&CI

Part 1 contains an extensive treatment of the principles of the formation of nearly all types of plastic foam. Foams which are mainly flexible are then discussed seriatim. Polyurethane foams, sponge rubber and latex foams, polyolefine foams (LDPE, HDPE, PP), polyvinyl chloride foams, and silicone foams are covered. In each case the chemistry involved the selection of monomers and suitable equipment for foaming, and foaming and processing methods, such as moulding, are considered, together with the relationship between structure and properties. A chapter on testing is included, as are diagrams, photographs, tables, and very extensive references.

FOAMING AGENTS
FOAMING EQUIPMENT
PLASTICS (EXPANDED)
PLASTICS (FLEXIBLE)
PLASTICS PROCESSING
PLASTICS - PROPERTIES
PLASTICS - TECHNOLOGY
PLASTICS TESTING
LATEX
POLYETHYLENE (EXPANDED)
POLYMERS - FOAMING
POLYPROPYLENE (EXPANDED)
POLYURETHANES (EXPANDED)
POLYVINYL CHLORIDE (EXPANDED)
RUBBER (EXPANDED)
SILICONES

678.07 BEN

BENNING, C J
Plastic foams: the physics and chemistry of product performance and process technology. 2 vols.
New York, Wiley-Interscience, 1969
Research Library, AE&CI

Vol I (Chemistry and physics of foam formation) deals with the technology of foams produced from polystyrene, polyurethane, polyolefines, and other polymers and resins individually, as well as expandable beads and spheres and inorganic foams (from aqueous systems from filled organic foams, and metal foams). Vol 2 (Structure, properties and applications) deals with such topics as modification of foam structures and laboratory procedures for predicting foam process and performance.

CROSS-LINKING AGENTS
FILLERS
FIREPROOFING AGENTS
FOAMING AGENTS
PLASTICS (EXPANDED)
PLASTICS - FILLERS
POLYETHYLENE (EXPANDED)
POLYURETHANES (EXPANDED)
POLYVINYL CHLORIDE (EXPANDED)
STYRENE POLYMERS (EXPANDED)
UREA/FORMALDEHYDE RESINS (EXPANDED)

678.07 MOI

MOISEYEV, A.A. and others, editors
Expanded plastics; a collection of papers, translated from Russian by E.J. Hazzard.
Oxford, Pergamon, 1963.
Research Library. AE & CI.

Collection covers the production, properties and uses of expanded plastics based on polystyrene and polyvinyl chloride, phenol-formaldehyde resins, expanded polyurethanes, and the production of articles from these expanded plastics.

FLOATING STRUCTURES
INSULATING COMPOSITIONS (ELECTRIC)
INSULATING COMPOSITIONS (THERMAL)
PLASTICS - ADDITIVES
PLASTICS (EXPANDED)
PLASTICS PRODUCTION
PLASTICS - PROPERTIES
POLYURETHANE (EXPANDED)
POLYVINYL CHLORIDE (EXPANDED)
RUBBER (EXPANDED)
STYRENE POLYMERS (EXPANDED)

678.674 PAR

PARKYN, B. and others
Unsaturated polyesters and polyester plasticisers.
(Polyesters, 2.)
London, Iliffe for the Plastics Institute, 1967.
Research Library, AE & CI.

Unsaturated polyesters are dealt with under the headings: production; comercial resins; control, analysis, and inspection; polymerization, catalysis, and inhibition; properties of cured resins; ancillary materials; applications of resins. Polyester plasticizers are dealt with under the headings: preparation and production; properties in relation to structure; low molecular weight polyester plasticizers; and behaviour of polyester plasticizers in polyvinyl chloride and in polyvinyl acetate. Diagrams and tables are included. (Extensive references.)

CATALYSTS (POLYMERIZATION)
ESTERS, POLY-, PRODUCTION
ESTERS, POLY-, REACTIONS
ESTERS, POLY-, RESINS
PEROXIDES - PROPERTIES
PLASTICIZERS - PRODUCTION
PLASTICIZERS - PROPERTIES
POLYMERIZATION - INHIBITION
POLYVINYL CHLORIDE - PLASTICIZERS
ESTERS, POLY-, PROPERTIES

678: 541 HAM

HAM, G.E. editor
Copolymerization.
(High polymers, 18)
New York, Interscience. 1964.
Research Library, AE&CI.

After dealing with theory of copolymerization and the relation between monomer structure and reactivity with free radicals (involving resonance, polar, and steric factors), copolymers of alpha-olefines, block copolymers with ethylene as a component, and ethylene-propylene copolymers are discussed. Cationic, anionic, and block and graft copolymerizations are discussed, as well as copolymerizations involving styrene, acrylonitrile, vinyl chloride, acrylates, or methacrylates as principal components. Reactivity ratios are tabulated.

ACRYLIC ACID, POLYMERS
ACRYLONITRILE POLYMERS
COPOLYMERIZATION
COPOLYMERS - PROPERTIES
ETHYLENE, 1,1- DICHLORO-, POLYMERS
ETHYLENE POLYMERS
ETHYLENE/PROPYLENE POLYMERS
METHACRYLIC ACID, POLYMERS
OLEFINES, POLY-
POLYETHYLENE
POLYVINYL CHLORIDE
STYRENE POLYMERS
SURVEY (LITERATURE)
VINYL CHLORIDE POLYMERS

678:541 FET

FETTES, E.M. editor
Chemical reactions of polymers.
(High polymers, 19.)
New York, Interscience, 1964.
Research Library, AE&CI.

Deals with reactions of saturated and unsaturated polymeric hydrocarbons, cellulose, proteins, and addition polymers with reactive terminals. Interchange, cleavage, intermolecular, branching, coupling, surface, oxidative, and mechano-chemical reactions are discussed, together with fibre-reactive dyes and the chemical finishing of cellulosic fibres.

CELLULOSE - REACTIONS
COPOLYMERIZATION
CROSS - LINKING
DYES
EPOXIDATION
OXIDATION
POLYETHYLENE
POLYMER DEGRADATION
POLYMERIZATION
POLYMERS - DEPOLYMERIZATION
POLYMERS - REACTIONS
POLYURETHANES
POLYVINYL CHLORIDE
PROTEIN
RADIATION PROCESSES
SURVEY (LITERATURE)

678 : 541 HAW

HAWARD R N ED
THE PHYSICS OF GLASSY POLYMERS
LONDON APPLIED SCIENCE 1973
ISBN 0-85334-565-1 RDL AE&CI

An account (620 pp) of the physical properties and structure of polymers in the glassy state which covers thermodynamic considerations ; x-ray diffraction studies of amorphous polymers : relaxation processes ; creep in glassy polymers (by S Turner, ICI Plastics Division) ; yield and post-yield behaviour ; cracking and crazing in polymeric glasses ; rubber reinforced thermoplastics ; diffusion and sorption of gases and vapours in glassy polymers ; and the morphology of regular block copolymers. Diagrams, micrographs, tables, and very extensive references are included.

COPOLYMERS (BLOCK)
COPOLYMERS - MOLECULAR STRUCTURE
PLASTICS - CRACK PROPAGATION
PLASTICS CRAZING
PLASTICS - CREEP
PLASTICS - PROPERTIES (MECHANICAL)
PLASTICS (REINFORCED)
PLASTICS - STRESSES
PLASTICS (THERMOPLASTIC)
POLYMERS - DEFORMATION
POLYMERS- MOLECULAR STRUCTURE
POLYMERS - PROPERTIES (PHYSICAL)
POLYMERS - RELAXATION
POLYMERS - TRANSITIONS
POLYVINYL CHLORIDE
STRESS-STRAIN CURVES
X-RAY DIFFRACTION METHODS
YIELD STRESS

678.7 : 54 JEL

JELLINEK H H G
DEGRADATION OF VINYL POLYMERS
NEW YORK ACADEMIC PRESS 1955
RDL AE&CI

Written from the point of view of kinetics of reaction, the book contains discussions of bulk degradation in vacuo, degradation in solution, oxidative degradation, and mechanical and ultrasonic degradation. Diagrams, tables, and extensive references are included.

CAVITATION
DEGRADATION
METHACRYLIC ACID, METHYL ESTER POLYMERS
OXIDATION
POLYETHYLENE - DEGRADATION
POLYETHYLENE - OXIDATION
POLYMER DEGRADATION
POLYMERS - DEPOLYMERIZATION
POLYMERS - OXIDATION
POLYVINYL CHLORIDE - DEGRADATION
STYRENE POLYMERS
VINYL ACETATE POLYMERS
VINYL POLYMERS

678:541 PLA

PLATZER N A J CH
MULTICOMPONENT POLYMER SYSTEMS ; A SYMPOSIUM
AMERICAN CHEMICAL SOCIETY, 159TH MEETING,
HOUSTON, TEXAS, 1970
ADVANCES IN CHEMISTRY 99
WASHINGTON DC ACS 1971
RDL AE&CI

Thirty-seven papers deal with polyblends, copolymers, and composites made from olefine, diene, vinyl halide, styrene, acrylic, urethane, and epoxy resins, as well as from polyamides, polyesters, polyarylenes, and others. Theory, processing, and practical applications are discussed. Random, graft, and block copolymers with improved mechanical, thermal, or optical properties are discussed, together with polymers reinforced with, or bonded to, minerals, carbon black, metals, or fibres.

CARBON BLACK
CONCRETE/RESIN
COPOLYMERIZATION
COPOLYMERS - PROPERTIES
ELASTOMERS - PROPERTIES
FIBRE COMPOSITES
FIBRES(GLASS)
PLASTICS - PROPERTIES
PLASTICS (REINFORCED)
PLASTICS - REINFORCEMENT
PLASTICS (THERMOPLASTIC)
POLYMER BLENDS
POLYMER BLENDS - PROPERTIES
POLYMER SOLUTIONS
POLYMERIZATION
POLYMERS (METAL-CONTAINING)
POLYMERS - PHYSICAL PROPERTIES
POLYVINYL CHLORIDE - STABILIZATION
SYMPOSIA

678:541 INT

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY
THERMODYNAMIC INTERACTIONS IN POLYMER SOLUTIONS
MICROSYMPOSIUM ON MACROMOLECULES, 9TH, PRAGUE, 1971
CASASSA E F AND SEDLÁČEK B EDS
POLYMER SYMPOSIA 39
NEW YORK INTERSCIENCE 1972
RDL AE&CI

Papers and discussions were grouped in 5 sessions: 1) effects of molecular size and shapes on polymer-solvent interactions; 2) interactions in dilute polymer solutions; 3) specific interactions and hydrophobic bonds; 4) experimental characterization of interactions; and 5) phase equilibria. General statistical theories of polymer solutions; copolymers and biological macromolecules; and the effects of primary molecular structure on thermodynamic properties and chain conformations received attention. Diagrams, tables, and references are included.

COPOLYMERS - PROPERTIES
LIGHT SCATTERING
MOLECULAR STRUCTURE
PHASE SYSTEMS
POLYMER SOLUTIONS
POLYMER SOLUTIONS - PROPERTIES
POLYMERS - MOLECULAR STRUCTURE
POLYMERS - VISCOSITY
POLYVINYL CHLORIDE (C[illegible]INATED)
SOLUBILITY PARAMETEI
SOLVENTS
SYMPOSIA
THERMODYNAMIC PROPERTIES

678:543 SLO

SLONIM, I. Ya. and LYUBIMOV, A.N.
The NMR of polymers.
Turton, C.N. and Turton, T.I. translators
New York, Plenum Press, 1970.
Research Library, AE & CI.

The physical bases of nuclear magnetic resonance (NMR) and recording and interpreting NMR spectra are discussed, together with the application of the NMR method to the study of the structure of polymers and molecular motion and chemical processes in polymers. Quantitative analysis of polymers is also dealt with. (285 references have been added to the 748 references in the Russian edition, 1966.)

METHYCRYLIC ACID, METHYL ESTER POLYMERS - ANALYSIS
NUCLEAR MAGNETIC RESONANCE
NUCLEAR MAGNETIC RESONANCE SPECTRA
POLYETHYLENE - ANALYSIS
POLYMERS - ANALYSIS
POLYMERS - CRYSTALLINITY
POLYMERS - MOLECULAR ORIENTATION
POLYMERS - MOLECULAR STRUCTURE
POLYMERS - RELAXATION
POLYMERS - TRANSITIONS
POLYPROPYLENE - ANALYSIS
POLYVINYL CHLORIDE - ANALYSIS
SPECTROMETRY (NUCLEAR MAGNETIC RESONANCE)

678:547 SAU

SAUNDERS K J
ORGANIC POLYMER CHEMISTRY
LONDON CHAPMAN & HALL 1973
ISBN 0-412-10580-2 RDL AE&CI

An introduction to the organic chemistry of adhesives, fibres, paints, plastics, and rubbers. Theory is related to industrial practice. The author deals mainly with polymers of commercial significance. Polyolefines, polystyrene and styrene copolymers, PVC and related polymers, PVA and related polymers, polyurethanes, and a dozen other groups of polymers are discussed seriatim. Polymerization, molecular structure, properties, and, in most cases, uses are considered. Molecular structure and reactions are illustrated. Trade names and manufacturers are included. Extensive references are included.

AMIDES, POLY-
COPOLYMERS - PROPERTIES
ESTERS, POLY-
ETHERS, POLY-
ETHYLENE/PROPYLENE POLYMERS
OLEFINES, POLY-
PHENOL/FORMALDEHYDE RESINS
POLYETHYLENE
POLYMERIZATION
POLYMERS - MOLECULAR STRUCTURE
POLYMERS - PROPERTIES
POLYMERS - REACTIONS
POLYURETHANES
POLYVINYL CHLORIDE
STYRENE POLYMERS
VINYL ACETATE POLYMERS

678.743 KAU

KAUFMAN, M.
The History of PVC; the chemistry and industrial production of polyvinyl chloride.
London, MacLaren, 1969.
Research Library, AE & CI.

The account starts with the preparation of vinyl chloride in 1835 (prehistory in the sense of the preparation being previous in history and necessarily prior to the preparation of polyvinyl chloride) and progresses through polymerization, modification of vinyl chloride polymers, plasticization, stabilization, and processing to early applications of polyvinyl chloride. Illustrated with portraits of early chemists and prototypes of apparatus.

POLYVINYL CHLORIDE
POLYVINYL CHLORIDE - DEVELOPMENT
POLYVINYL CHLORIDE - PLASTICIZATION
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE STABILIZATION
SCIENCE - HISTORY
TECHNOLOGY - HISTORY
VINYL CHLORIDE POLYMERIZATION
VINYL CHLORIDE POLYMERS
VINYL CHLORIDE PRODUCTION

678.743 INT

INTERNATIONAL UNION OF PURE AND APPLIED CHEMISTRY
POLY (VINYL CHLORIDE) : FORMATION AND PROPERTIES
MICROSYMPOSIUM ON MACROMOLECULES, 7TH, PRAGUE, 1970
SEDLÁČEK B ED
POLYMER SYMPOSIA 33
NEW YORK INTERSCIENCE 1971
RDL AE&CI

Thirty-three papers deal with radical polymerization; non-radical formation; morphology and mechanical properties; rheology and plasticization; solution properties; molecular structure; and destruction. Diagrams, photographs, tables, and references are included.

CHAIN BRANCHING REACTIONS
CROSS-LINKING
PLASTICIZER/POLYVINYL CHLORIDE COMPATIBILITY
POLYMER SOLUTIONS - PROPERTIES
POLYMERIZATION
POLYMERIZATION - KINETICS
POLYMERS - REACTIONS
POLYVINYL CHLORIDE DEGRADATION
POLYVINYL CHLORIDE - MOLECULAR WEIGHT DISTRIBUTION
POLYVINYL CHLORIDE - PLASTICIZATION
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE - RHEOLOGICAL PROPERTIES
POLYVINYL CHLORIDE STABILIZATION
SYMPOSIA
VINYL CHLORIDE POLYMERIZATION

678.743 HEN

HENSON J H L AND WHELAN A EDS
DEVELOPMENTS IN PVC TECHNOLOGY ; SYMPOSIUM, LONDON, 1973, PROCEEDINGS
LONDON APPLIED SCIENCE PUBLISHERS 1973
ISBN 0-85334-578-3 RDL AE&CI

Papers deal with the pattern of usage of polyvinyl chloride (PVC), by D.A Tester of ICI Plastics Division ; the preparation and properties of PVC produced by mass (or bulk) polymerization ; lubricants, impact-strength modifiers, plasticizers, stabilizers, and other additives ; the preparation, properties, and extrusion of PVC dry blends ; the production of PVC bottles on blow-moulding machines ; the extrusion of rigid PVC foams, by R W Gould of ICI Plastics Division ; and the injection moulding of PVC. Discussion, diagrams, photographs, tables and references are included.

BLOW-MOULDING
CONTAINERS (POLYVINYL CHLORIDE)
EXTRUDERS - DESIGN
EXTRUDERS (SCREW)
IMPACT STRENGTH IMPROVERS
INJECTION MOULDING
MOULDING EQUIPMENT
POLYMERIZATION (MASS)
POLYVINYL CHLORIDE - ADDITIVES
POLYVINYL CHLORIDE DRY BLENDS
POLYVINYL CHLORIDE (EXPANDED)
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE - IMPACT STRENGTH
POLYVINYL CHLORIDE - ADDITIVES
POLYVINYL CHLORIDE - MOULDING
POLYVINYL CHLORIDE - PLASTICIZERS
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE - STABILIZERS
SYMPOSIA
VINYL CHLORIDE POLYMERIZATION

678.74 SIT

SITTIG, M.
Vinyl monomers and polymers.
(Chemical process monograph, 24.)
Park Ridge, N.J., Noyes Development Corporation, 1966.
Research Library, AE & CI.

Feed specifications, temperature, pressure, reaction time and medium, catalyst, reactor design and product recovery are given for various monomers and polymers, including vinyl chloride and polyvinyl chloride, vinyl fluoride and polyvinyl fluoride, styrene and polystyrene.

ETHYLENE, FLUORO-, POLYMERS
POLYMERS - PRODUCTION
POLYVINYL CHLORIDE - PROCESSING
STYRENE POLYMERS

678.743 MAT

MATTHEWS G
VINYL CHLORIDE AND VINYL ACETATE POLYMERS
VINYL AND ALLIED POLYMERS VOL 2
LONDON ILIFFE FOR THE PLASTICS INSTITUTE 1972
ISBN 0-592-05443-8 RDL AE&CI

Almost the entire book deals with PVC and its technology. The production and properties of VC, the production and properties of VC polymers and copolymers, and degradation, stabilization, plasticization, and other aspects of formulation of PVC are covered, as well as mixing compounding, extrusion, calendering, and moulding. Miscellaneous processes, test procedures, and applications are discussed. The final chapter, by I Llewellyn and H Williams, deals with VA homopolymers and copolymers. Diagrams, tables, and extensive references are included.

POLYMERIZATION
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE - FORMULATION
POLYVINYL CHLORIDE PASTES
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE - PROPERTIES
VINYL ACETATE COPOLYMERS
VINYL ACETATE - POLYMERIZATION
VINYL ACETATE POLYMERS
VINYL CHLORIDE COPOLYMERS
VINYL CHLORIDE POLYMERIZATION
VINYL CHLORIDE POLYMERS
VINYL CHLORIDE PRODUCTION
VINYL CHLORIDE - PROPERTIES

678.743 PEN

PENN W S
PVC TECHNOLOGY 3RD ED
TITOW W V AND LANHAM B ; EDS
LONDON APPLIED SCIENCE 1971
ISBN 0-85334-510-4 RDL AE&CI

Deals with commercial polymers and compounds; compounding principles; properties and choice of plasticizers; fillers and stabilizers; compounding for special properties; fabrication methods and machinery; rigid polyvinyl chloride, pastes, latexes, solutions, adhesives, foamed vinyls, and PVC pipes. Standards are listed. Trade names and sources of supply are included, as well as diagrams, tables and references.

PIPES - EXTRUSION
PIPES (POLYVINYL CHLORIDE)
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE (EXPANDED)
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE FILLERS
POLYVINYL CHLORIDE - FORMULATION
POLYVINYL CHLORIDE LATEX
POLYVINYL CHLORIDE MOULDING
POLYVINYL CHLORIDE PASTES
POLYVINYL CHLORIDE - PLASTICIZERS
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE SHEET
POLYVINYL CHLORIDE - STABILIZERS

678.743 SCH

SCHILDKNECHT, C.E.
Vinyl and related polymers; their preparations, properties, and applications in rubbers, plastics, fibres, and in medical and industrial arts.
New York, Wiley, 1952.
Research Library, AE & CI.

Deals with polymers derived from acetylene, addition polymers and copolymers from vinyl and related monomers, especially those types concerned with synthetic rubbers, plastics, and fibres. Emphasis is on the practical chemistry and physics of polymerization and polymers, the basic inventions, methods of synthesis, and the advantages and limitations of the products.

ACRYLIC ACID, POLYMERS
ACRYLONITRILE POLYMERS
COPOLYMERIZATION
COPOLYMERS - PROPERTIES
ETHYLENE, 1,1-DICHLORO-, POLYMERS
METHACRYLIC ACID, POLYMERS
POLYETHYLENE
POLYMERIZATION
POLYMERS (ADDITION)
POLYMERS - PROPERTIES
POLYVINYL CHLORIDE
RUBBER (SYNTHETIC)
STYRENE POLYMERS
VINYL ACETATE POLYMERS
VINYL POLYMERS - PREPARATION

678.743 KOL

KOLESKE, J. V. and WARTMAN, L.H.
Poly(vinyl chloride).
(Macdonald polymer monograph, 3.)
London, Macdonald, 1969.
Research Library, AE & CI.

A literature survey dealing with the polymerization of vinyl chloride (methods, initiation, kinetics), characterization of polyvinyl chloride (molecular weight determination, spectroscopic studies, physical constants), chemical properties (reactions, degradation, stabilization), and physical properties (properties in bulk, plasticized polymer, dilute solutions). Applications of polyvinyl chloride are briefly discussed.

MOLECULAR WEIGHT DETERMINATION
PLASTICS (THERMOPLASTIC)
POLYVINYL CHLORIDE - ANALYSIS
POLYVINYL CHLORIDE DEGRADATION
POLYVINYL CHLORIDE - MOLECULAR WEIGHT
POLYVINYL CHLORIDE - PLASTICIZERS
POLYVINYL CHLORIDE PRODUCTION
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE STABILIZATION
POLYVINYL CHLORIDE - STABILIZERS
SURVEY (LITERATURE)
VINYL CHLORIDE POLYMERIZATION
VINYL CHLORIDE POLYMERS

678.743 THO

THOMASS H
PVC-FOLIEN
MUNICH CARL HANSER 1963
MID AE&CI

Reviews the production of PVC film and sheet under the headings : synthesis of PVC, plasticizers, stabilizers, fillers, manufacturing processes (including extrusion and calendering), finishing, special effects, specifications, testing and applications.

CALENDERS
PLASTIC FILMS PRINTING
PLASTIC FILMS - WELDING
PLASTIC SHEET - MOULDING
POLYVINYL CHLORIDE - CALENDERING
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE FILLERS
POLYVINYL CHLORIDE FILM
POLYVINYL CHLORIDE - FORMULATION
POLYVINYL CHLORIDE - PIGMENTS
POLYVINYL CHLORIDE - PLASTICIZATION
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE SHEET
POLYVINYL CHLORIDE - SOLVENTS
POLYVINYL CHLORIDE - SPECIFICATIONS
POLYVINYL CHLORIDE - STABILIZERS
POLYVINYL CHLORIDE - TESTING

678.743.22 CHE

CHEVASSUS, F. and BROUTELLES, R.de
The Stabilization of polyvinyl chloride...
Translated from French.
London, Arnold, 1963.
Research Library, AE & CI.

Part 1 deals with the theory of degradation and stabilization of polyvinyl chloride. Part 2 with classification and mixtures of stabilizers and part 3 with practical aspects such as test conditions, influence of components on compounds, compounds for use in electrical insulation, stabilization of flexible and rigid products, of plastisols and organosols and of paints and varnishes.

POLYVINYL CHLORIDE DEGRADATION
POLYVINYL CHLORIDE STABILIZATION
POLYVINYL CHLORIDE STABILIZERS
STABILIZERS - PROPERTIES

678.743 SHA

SHAH, P.L.
Effect of plasticization and particle size on fusion rate of poly-(vinyl chloride).
Thesis (M.Sc.), Tennessee Technological University, Cookeville, Tenn., The Author, 1968.
Research Library, AE & CI.

A Brabender plastograph was used. Dry blend samples with different wts % of plasticizer and different average particle sizes were prepared in a Henschel mixer. Results, recorded simultaneously as plots of torque vs time and temperature, show that the fusion rate of PVC is a direct function of wt % plasticizer, particle size of PVC polymer, polymerplasticizer interaction, and ageing time of dry blend samples up to 18 hrs. Reproducible results were obtained with the plastograph except in the initial portion of the fusion rate curve. (15 references.)

PLASTOGRAPHS
POLYVINYL CHLORIDE DRY BLENDS
POLYVINYL CHLORIDE - PARTICLE SIZE
POLYVINYL CHLORIDE - PLASTICIZATION
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE - TESTING

678.743.22 BRI

BRITISH GEON LIMITED.
Geon PVC resins.
(British Geon Technical manual, 1).
London, The Company, 1959.
Research Library, AE & CI.

Manual defines the types of Geon resins, describes their properties, the effects of compounding on these properties, and compounding procedure.

GEON
POLYVINYL CHLORIDE COMPOSITIONS
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE FILLERS
POLYVINYL CHLORIDE - PLASTICIZERS
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE - STABILIZERS
VINYL CHLORIDE COPOLYMERS - PROPERTIES

678.743.22 KAU

KAUFMAN, M. editor
Advances in PVC compounding and processing.
Symposium on recent advances in PVC compounding and processing, Manchester, 1961.
London, MacLaren, 1962.
Research Library, AE & CI.

Papers dealt with : Factors affecting the properties of vinyl chloride polymers and copolymers; polyvinyl chloride plasticization, polyvinyl chloride stabilization; polyvinyl chloride-rubber blends; compounding; extrusion; sintering processes.

POLYVINYL CHLORIDE BLENDS
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE - PLASTICIZATION
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE STABILIZATION
SINTER COATING
SINTER COATING COMPOSITIONS
SYMPOSIA
VINYL CHLORIDE COPOLYMERS - PROPERTIES

PM 5.5/1

WARNER A J AND OTHERS
SOLID WASTE MANAGEMENT OF PLASTICS
DEBELL AND RICHARDSON INCORPORATED PROJECT 1440.2
WASHINGTON DC MANUFACTURING CHEMISTS' ASSOCIATION 1970
RDL AESCI

This survey, undertaken for the MCA, provides an analysis of, and reference to, the literature on plastics waste disposal. The report enables the reader to compare the situation and the position taken in the USA on the various aspects of solid waste disposal such as sanitary landfill, incineration, pyrolysis, and composting with the corresponding position taken in other countries. Disposal of polyvinyl chloride (PVC) and the incineration and air pollution problems arising therefrom are fully covered. An extensive bibliography and reference to the trade literature now available on equipment for solid waste disposal is included.

ATMOSPHERIC CONTAMINANTS
ATMOSPHERIC POLLUTION - CONTROL
CONTAINERS (PLASTIC)
PLASTICS - WASTE DISPOSAL
GAS CLEANING
GAS (FLUE)
HYDROGEN CHLORIDE
INCINERATORS
POLYVINYL CHLORIDE
SULPHUR DIOXIDE
SURVEY (LITERATURE)
WASTE DISPOSAL
WASTE - INCINERATION

678.743 PEN

PENN W S
PVC TECHNOLOGY 3RD ED
TITOW W V AND LANHAM B J EDS
LONDON APPLIED SCIENCE 1971
ISBN 0-85334-510-4 RDL AESCI

Deals with commercial polymers and compounds; compounding principles; properties and choice of plasticizers; fillers and stabilizers; compounding for special properties; fabrication methods and machinery; rigid polyvinyl chloride, pastes, latexes, solutions, adhesives, foamed vinyls, and PVC pipes. Standards are listed. Trade names and sources of supply are included, as well as diagrams, tables and references.

PIPES - EXTRUSION
PIPES (POLYVINYL CHLORIDE)
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE (EXPANDED)
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE FILLERS
POLYVINYL CHLORIDE - FORMULATION
POLYVINYL CHLORIDE LATEX
POLYVINYL CHLORIDE MOULDING
POLYVINYL CHLORIDE PASTES
POLYVINYL CHLORIDE - PLASTICIZERS
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE SHEET
POLYVINYL CHLORIDE - STABILIZERS

678.743.22 KAI

KAINER, H.
Polyvinylchlorid und Vinylchlorid-Mischpolymerisate; Chemie und chemische Technologie.
Berlin, Springer, 1965.
Research Library, AE & CI.

Surveys the production of vinyl chloride polymers, the properties of these, polymerization and compounding additives. Contains a patents index and an index of producers.

PATENTS - SURVEYS
POLYVINYL CHLORIDE - ADDITIVES
POLYVINYL CHLORIDE PRODUCTION
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE - SURVEY
VINYL CHLORIDE COPOLYMERS
VINYL CHLORIDE POLYMERS - ADDITIVES

PM 7.189

AFRICAN EXPLOSIVES AND CHEMICAL INDUSTRIES LIMITED.
Corvic.
Johannesburg, AE & CI, 1970-
Research Library, AE & CI.

Applications and properties of Corvic polymers and copolymers are set out, together with test methods. (Loose-leaf binder.)

CORVIC*
POLYVINYL CHLORIDE - PROPERTIES

PM 8.4/1

ICI (HYDE)
FLOCOR BIOLOGICAL FILTER PACKINGS
HYDE CHES ICI (HYDE) 1965

RDL AE&CI

Technical data are set out for Flocor, a synthetic packing medium used in the biological filters of effluent treatment plants. Flocor consists of approximately equal quantities of flat and corrugated sheets of thin plastic foil which can be assembled on site. Flocor is made of rigid PVC which is unaffected by water and weather, possesses high chemical resistance, and is resistant to bacterial attack. Applications and site work are discussed and illustrated, in addition to development work carried out in the Brixham Research Laboratory of ICI. (Cover title : Flocor : a new concept in effluent treatment.)

BIOLOGICAL TREATMENT
EFFLUENTS TREATMENT
FILTER MEDIA
FLOCOR*
PACKING MATERIALS (ENGINEERING)
POLYVINYL CHLORIDE SHEET
SEWAGE TREATMENT

PM 8.4/3-5

ASKEW M W
BIOFILTRATION TECHNOLOGY (AND OTHER PAPERS)
BRIXHAM ICI BRIXHAM RESEARCH LABORATORY
1967-1969

RDL AE&CI

In the first paper, the development of plastics filter media and applications of these are reviewed. The performance is discussed of waste treatment plants in which Flocor is incorporated. Flow sheets of single- and multi-stage biofiltration systems are included, as well as 14 references. (Reprinted from Effluent and water treatment journal, October and November, 1969.) Similar ground is covered in High-rate biofiltration : past and future, a paper presented at a meeting of the East Anglian Group, Metropolitan and Southern Branch of the Institute of Water Pollution Control, 1969, and in Plastics in waste treatment, reprinted from Process biochemistry, December 1966 and January 1967.

BIOLOGICAL TREATMENT
EFFLUENTS TREATMENT
FILTER MEDIA
FLOCOR*
PACKING MATERIALS (ENGINEERING)
POLYVINYL CHLORIDE SHEET
SEWAGE TREATMENT

PM 7.140

AFRICAN EXPLOSIVES AND CHEMICAL INDUSTRIES LIMITED, Johannesburg.
"Welvic" PVC compounds.
Johannesburg, AE & CI, 1968.
Research Library, AE & CI.

POLYVINYL CHLORIDE COMPOSITIONS
WELVIC

PM 8.4/6-9

CHIPPERFIELD P N J
EXPERIENCES IN GREAT BRITAIN BY IMPERIAL CHEMICAL INDUSTRIES LIMITED WITH PLASTIC FILTER MEDIA
WATER POLLUTION CONTROL FEDERATION, ANNUAL CONFERENCE, KANSAS CITY, 1965
HYDE CHES IMPERIAL CHEMICAL INDUSTRIES LIMITED 1965-1967

RDL AE&CI

The author reviews research into plastic packings at Brixham Research Laboratory ; Flocor packings ; the economics and performance of Flocor ; and the practical application of Flocor to treating wastes from various industries. Tables and 6 references are included. Other papers included in the pamphlet comprise : The pollution of estuaries : an industrial view and Some thoughts on the discharge of industrial effluents to tidal waters , reprinted from Chemistry and Industry, 1967, pp 1245-7 and 1962, pp 1660-6 respectively, and The use of plastic media in the biological treatment of sewage and industrial wastes, a paper presented at the 15th Canadian Chemical Engineering Conference, Quebec, 1965.

BIOLOGICAL TREATMENT
EFFLUENTS TREATMENT
FILTER MEDIA
FLOCOR*
PACKING MATERIALS (ENGINEERING)
POLYVINYL CHLORIDE SHEET
SEWAGE TREATMENT
WATER POLLUTION
WATER (RIVER)

PM 8.4/2

ICI (HYDE)
FLOCOR BIOLOGICAL TREATMENT SYSTEM
HYDE CHES ICI (HYDE) 1968

RDL AE&CI

Work at the Brixham Research Laboratory undertaken to develop Flocor is described. Flocor in use in effluents or sewage treatment plants in Great Britain is described and illustrated.

BIOLOGICAL TREATMENT
EFFLUENTS TREATMENT
FILTER MEDIA
FLOCOR*
PACKING MATERIALS (ENGINEERING)
POLYVINYL CHLORIDE SHEET
SEWAGE TREATMENT

PM 8.4/10

PEARSON C R
USE OF SYNTHETIC MEDIA IN THE BIOLOGICAL TREATMENT OF INDUSTRIAL WASTES
INSTITUTE OF SEWAGE PURIFICATION, NORTH WESTERN BRANCH, SYMPOSIUM ON THE TREATMENT OF EFFLUENTS FROM THE CHEMICAL INDUSTRY, MANCHESTER, 1965

RDL AE&CI

The author discusses effluent quality requirements, the biochemical basis of biological filtration, properties required in an ideal packing, factors that affect the design and operation of high rate packings, and economic aspects of the use of packings for roughing treatment. (1 reference.)

BIOLOGICAL TREATMENT
EFFLUENTS TREATMENT
FILTER MEDIA
FLOCOR*
PACKING MATERIALS (ENGINEERING)
POLYVINYL CHLORIDE SHEET
SEWAGE TREATMENT

PM 8.6/426

IMPERIAL CHEMICAL INDUSTRIES, LIMITED.
Plastics Division.
"Corvic" brand of quick processing vinyl chloride polymers; grades D65/6 & D65/8.
Welwyn Garden City, ICI, 19?
Research Library, AE & CI.

CORVIC*
POLYVINYL CHLORIDE COMPOSITIONS

PM 8.6/463

IMPERIAL CHEMICAL INDUSTRIES, LIMITED.
Plastics Division.
Rigid P.V.C. intensifiers.
Welwyn Garden City, ICI.,1957.
Research Library, AE & CI.

POLYVINYL CHLORIDE (RIGID)

PM 8.6/451

IMPERIAL CHEMICAL INDUSTRIES, LIMITED.
Plastics Division.
"Welvic" P.V.C. compounds and masterbatches.
Welwyn Garden City, ICI, 19?
Research Library, AE & CI.

POLYVINYL CHLORIDE COMPOSITIONS
WELVIC*

PM 8.6/W 112-R

IMPERIAL CHEMICAL INDUSTRIES LIMITED PLASTICS DIVISION
PLASTICISERS FOR PVC
WELWYN GARDEN CITY HERTS ICI 1966
RDL AE&CI

Plasticizers are tabulated by abbreviated or trade name in alphabetical order, together with chemical constitution and manufacturer.

DIRECTORY
PLASTICIZERS - COMPOSITION
POLYVINYL CHLORIDE - PLASTICIZERS
TRADE NAMES

PM 8.6/W 106

IMPERIAL CHEMICAL INDUSTRIES LIMITED PLASTICS DIVISION
THE CHEMICAL RESISTANCE OF PVC 2[illegible]ED
WELWYN GARDEN CITY HERTS ICI 1974
RDL AE&CI

Data are tabulated that pertain to the resistance of both unplasticized and plasticized (with dioctyl phthalate) polyvinyl chloride to a wide range of chemicals The permeability of PVC to gas and water vapour is also considered briefly.

POLYVINYL CHLORIDE - CHEMICAL RESISTANCE
POLYVINYL CHLORIDE (PLASTICIZED)
POLYVINYL CHLORIDE (RIGID)
WELVIC*

PM 8.6/1032
IMPERIAL CHEMICAL INDUSTRIES LIMITED PLASTICS DIVISION
A NEW PROCESS FOR THE MANUFACTURE OF MICROCELLULAR PVC FOAM FROM CORVIC VINYL POLYMER P65/49
WELWYN GARDEN CITY HERTS ICI 1963
RDL AE&CI

CORVIC*
POLYVINYL CHLORIDE (EXPANDED)
VINYL POLYMERS

PM 8.6/950
IMPERIAL CHEMICAL INDUSTRIES LIMITED PLASTICS DIVISION
WELVIC PVC PASTE FOR PROTECTIVE COATINGS
WELWYN GARDEN CITY HERTS ICI 1963
RDL AE&CI

POLYVINYL CHLORIDE PASTES
WELVIC *

PM 8.6/1049
IMPERIAL CHEMICAL INDUSTRIES LIMITED PLASTICS DIVISION
THE PRODUCTION OF PVC COATED FABRIC AND PAPER FROM CORVIC PASTE-MAKING POLYMERS
WELWYN GARDEN CITY HERTS ICI 1963
RDL AE&CI

CORVIC*
FABRICS (COATED)
PAPER (COATED)
POLYVINYL CHLORIDE PASTES

PM 8.6/1042
IMPERIAL CHEMICAL INDUSTRIES LIMITED PLASTICS DIVISION
WELVIC PVC PASTES FOR PROTECTIVE COATINGS
WELWYN GARDEN CITY HERTS ICI 1963
RDL AE&CI

POLYVINYL CHLORIDE PASTES
WELVIC*

PM 8.6/1138
IMPERIAL CHEMICAL INDUSTRIES LIMITED PLASTICS DIVISION
HIGH TEMPERATURE RIGID WELVIC GRADES
WELWYN GARDEN CITY HERTS ICI 1965
RDL AE&CI

POLYVINYL CHLORIDE (HEAT-RESISTANT)
POLYVINYL CHLORIDE (RIGID)
WELVIC*

PM 8.29

PM 8.6/1060
IMPERIAL CHEMICAL INDUSTRIES LIMITED PLASTICS DIVISION
PVC IN CHEMICAL PLANT
WELWYN GARDEN CITY HERTS ICI 1963
RDL AE&CI

CHEMICAL PLANT EQUIPMENT
CHEMICAL PLANT - MATERIALS (CONSTRUCTION)
POLYVINYL CHLORIDE (RIGID)

PM 8.69

IMPERIAL CHEMICAL INDUSTRIES LIMITED, Plastics Division.
Welvic paste.
Welwyn Garden City, Herts., ICI, 1961.
Research Library, AE&CI.

The pamphlet deals with the properties and uses of Welvic pastes (dispersions of polyvinyl chloride in plasticizer); addition of pigments and fillers to the pastes; moulding, spreading, spraying, dipping and dip coating; hardening articles made from the paste; and bonding the paste to metal.

POLYVINYL CHLORIDE PASTES
POLYVINYL CHLORIDE - PROPERTIES
WELVIC *

ICI (HYDE) BUILDING AND ALLIED PRODUCTS GROUP
BUILDING PRODUCTS ; COLLECTED BROCHURES
HYDE CHES ICI 1966-1969
RDL AE&CI

The folder contains brochures and data sheets as follows : ICI plastics in housing, 1969 ; British Visqueen Limited building product data sheets: Visqueen polythene building sheet, 1966 ; Visqueen 2000T polythene damp proof course, 1968 ; Politarp, 1969 ; ICI Fibres Limited Contract floor covering carpets in ICI fibres, 1969 ; Sintilon rigid vinyl sheeting ; and New ways with Novolux for homes and gardens, 1969.

BUILDING MATERIALS
CARPETS
PLASTICS
POLYETHYLENE SHEET
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE SHEET

PM 8.169

IMPERIAL CHEMICAL INDUSTRIES, LIMITED. Plastics Division.
Vinyl chloride plastics made by Imperial Chemical Industries Limited.
Welwyn Garden City, Herts, ICI, 1960.
Research Library, AE & CI.

Corvic, Darvic, Flovic, and Welvic products are described and illustrated and their more important properties and uses are outlined.

CORVIC *
POLVINYL CHLORIDE
WELVIC *

PM 8.135

IMPERIAL CHEMICAL INDUSTRIES LIMITED.
Flovic.
ICI (Hyde)...
Research Library, AE & CI.

FLOVIC*
POLYVINYL CHLORIDE (RIGID)
VINYL ACETATE COPOLYMERS
VINYL CHLORIDE COPOLYMERS

PM 8.180

IMPERIAL CHEMICAL INDUSTRIES, LIMITED. Plastics Division.
Corvic vinyl polymers and copolymers.
Welwyn Garden City, Herts, ICI, 1962.
Research Library, AE & CI.

The Corvic range of vinyl polymers and copolymers is described. Details of paste-making polymers and latices are omitted. Properties are discussed, together with the choice of ingredients other than the polymers for PVC compounds. PVC formulations for various applications are set out. Compounding and fabricating techniques are dealt with, as well as weathering of PVC. Compounding machines are listed.

CORVIC*
POLYVINYL CHLORIDE - ADDITIVES
POLYVINYL CHLORIDE COMPOSITIONS
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE - PROPERTIES
VINYL CHLORIDE COPOLYMERS
VINYL CHLORIDE POLYMERS

PM 8.205/3

IMPERIAL CHEMICAL INDUSTRIES LIMITED
FERMENTATION
HIGH-RATE BIOFILTRATION USING PLASTICS FILTER MEDIA 3
HYDE CHES ICI 1973
RDI. AE&CI

The use of Flocor* filter media (polyvinyl chloride packing materials) in the biological treatment of distillery, brewery, malting, and winery wastes is described and illustrated with examples.

BIOLOGICAL TREATMENT
EFFLUENTS TREATMENT
FERMENTATION - ENGINEERING
FILTER MEDIA
FLOCOR*
PACKING MATERIALS (ENGINEERING)
POLYVINYL CHLORIDE

PM 14.394

ROTENBERG, I.P. and others
Properties of the system polyvinyl chloride + plasticizer, translated from Russian.
(Plasticheskiye Massy (Plastics), 1968, 1, pp 8-12.)
Dayton, Ohio, US Air Force Systems Command, 1968.
Research Library, AE & CI.

Correct selection of the polymer/plasticizer system is important in obtaining porous polyvinyl chloride (PVC) by saturating the paste with gas or low-boiling liquids. Necessary properties of such a system follow : polymer/plasticizer compatibility; stability of PVC paste in storage; stability of saturated raw foam in atmospheric conditions; and greatest possible time at the beginning of coalescence of the foam during warm-up, and a high tangent of dielectric loss angle. (5 references.)

PLASTICIZER/POLYVINYL CHLORIDE COMPATIBILITY
PLASTICIZERS - EVALUATION
POLYVINYL CHLORIDE (EXPANDED)
POLYVINYL CHLORIDE LATEX
POLYVINYL CHLORIDE PASTES
POLYVINYL CHLORIDE - PLASTICIZERS
POLYVINYL CHLORIDE (POROUS)
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE - VISCOSITY

PM 12.82

PARRISH, J.R.
Ultra-violet absorbers for plastics; final report.
Pretoria, CSIR, 1969.
Research Library, AE & CI.

Tests carried out on polypropylene films into which commerical and experimental UV absorbers were incorporated are described. The best commercial UV absorbers proved to be the octyloxy- or decyloxy-2-hydroxybenzophenones (Cyasorb UV531 and Uvinul 410) and some nickel complexes, which are named. One test was carried out on rigid PVC. The best protection was conferred by Uvinul D49 (2,2'-dihydroxy-4,4'-dimethoxybenzophenone) and a nickel complex, which is named.

ABSORBENTS (ULTRAVIOLET LIGHT)
POLYPROPYLENE FILM
POLYPROPYLENE OXIDATION
POLYPROPYLENE - STABILIZERS
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE - STABILIZERS
POLYVINYL CHLORIDE - WEATHERING
STABILIZERS - EVALUATION
STABILIZERS (ULTRAVIOLET LIGHT)

PM 16.61/16

SOCIETY OF PLASTICS ENGINEERS, INC. Palisades Section.
Vinyls in building ... regional technical conference ...
New York ... 1967.
Stamford, Conn., SPE, 1967.
Research Library, AE & CI.

ACRYLIC ACID, POLYMERS - PROPERTIES
BUILDING MATERIALS
POLYVINYL CHLORIDE, DEGRADATION
POLYVINYL CHLORIDE (RIGID)
SYMPOSIA

PM 16.61/21

SOCIETY OF PLASTICS ENGINEERS.
New trends in thermoplastic sheet processing ... Regional technical conference ... Montreal ... 1968.
Stamford, Conn., S.P.E.
Research Library, AE & CI.

PLASTIC SHEET (THERMOPLASTIC)
PLASTICS PROCESSING
POLYETHYLENE PROCESSING
POLYVINYL CHLORIDE - PROCESSING
SYMPOSIA

PM 16.61/47

SOCIETY OF PLASTICS ENGINEERS, INCORPORATED.
Ontario Section.
Polymer structures and properties... regional technical conference... Toronto, Ont.,... 1970.
Stamford, Conn., SPE, 1970.
Research Library, AE&CI.

Papers deal with fibrillated asbestos-reinforced thermoplastics; polyethylene flow studies; effect of processing history on melt flow defects; influence of polyvinyl chloride structure on ease of processing with plasticizers; effects of gamma irradiation on mechanical properties of high MW polymers; mechanisms of UV stabilization of films; and structural details of plastics and rubbers as revealed by birefringence under strain.

PLASTICS - COMPOUNDING SYMPOSIA
PLASTICS - FLEXIBILITY
PLASTICS PROCESSING
PLASTICS (REINFORCED)
PLASTICS (THERMOPLASTIC)
POLYETHYLENE
POLYMER DEGRADATION
POLYMERS (HIGH MOLECULAR WEIGHT)
POLYMERS - IRRADIATION
POLYMERS - MELT FLOW PROPERTIES
POLYMERS - RHEOLOGICAL PROPERTIES
POLYMERS - STABILIZATION
POLYVINYL CHLORIDE - PLASTICIZATION
POLYVINYL CHLORIDE (PLASTICIZED)
STRESS-STRAIN - MEASUREMENT

PM 16.61/39

SOCIETY OF PLASTICS ENGINEERS, INCORPORATED,
Chicago Section
Plastics in building...regional technical conference...
Chicago, Ill.,...1969
Stamford, Conn., SPE, 1969
Research Library, AE&CI

Papers deal with construction panels, polyvinyl chloride side-wall coverings, portable expandable shelters, caravans, mobile homes (such as are factory-built and erected as units on site), world trends in the manufacture and use of PVC pipe, applications and manufacture of PVC building materials in Europe, and building codes, fire tests, and acceptance tests for plastics in the construction industry.

BUILDING CONSTRUCTION
BUILDING MATERIALS
BUILDING UNITS (PREFABRICATED)
FLAMMABILITY TESTS
PIPES (POLYVINYL CHLORIDE)
PLASTICS
PLASTICS - FLAMMABILITY
POLYVINYL CHLORIDE (RIGID)
SYMPOSIA
WALL COVERING

PM 16.61/48

SOCIETY OF PLASTICS ENGINEERS, INCORPORATED.
VIPAC-Philadelphia Section.
Rigid vinyl... regional technical conference... Cherry Hill, N.J.,... 1970.
Stamford, Conn., SPE, 1970.
Research Library, AE & CI.

Papers deal with the effect of formulation changes on the lubrication of rigid polyvinyl chloride (PVC); extrusion of rigid PVC sheet and film; use of the extrusion rheometer in formulating rigid PVC; developing and marketing vinyl siding and accessories (building materials); PVC, rigid and flexible, in building; processing and properties of chlorinated PVC; high impact PVC for outdoor uses; PVC bottles; and injection moulding of PVC.

BUILDING MATERIALS
CONTAINERS (POLYVINYL CHLORIDE)
FOODS - PACKAGING
IMPACT STRENGTH IMPROVERS
PACKAGING MATERIALS
POLYVINYL CHLORIDE (CHLORINATED)
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE - FORMULATION
POLYVINYL CHLORIDE (HIGH IMPACT)
POLYVINYL CHLORIDE - INJECTION MOULDING
POLYVINYL CHLORIDE - LUBRICANTS
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE - STABILIZERS
SYMPOSIA

PM 16.61/49

SOCIETY OF PLASTICS ENGINEERS, INCORPORATED.
Vinyl Plastics Professional Activities Group.
Vinyl plastics : fundamentals of materials and compounding practices... lecture notes... Atlanta, Ga,... 1969.
Greenwich, Conn., SPE, 1970.
Research Library, AE & CI.

Processing, properties, and performance test data on vinyl plastics are presented, with graphs and tables used to amplify the text. Theaspects covered include general-purpose polyvinyl chloride (PVC) resins; dispersion and solution resins, and vinyl latexes; modifying resins for vinyls; plasticizers; degradation and stabilization of PVC; fillers for vinyls; pigmentation of vinyls; compounding and premixing; vinyl foam; and properties and testing of flexible vinyl chloride plastics. Bibliographies are included.

FILLERS - PROPERTIES
PIGMENTS - PROPERTIES
PLASTICIZER/POLYVINYL CHLORIDE COMPATIBILITY
PLASTISOLS
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE DEGRADATION
POLYVINYL CHLORIDE FILLERS
POLYVINYL CHLORIDE - MODIFICATIONS
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE STABILIZATION
VINYL CHLORIDE COPOLYMERS

PM 16.61/53

SOCIETY OF PLASTICS ENGINEERS, INCORPORATED.
Palisades Section.
Plastics and ecology : influence on pollution, flammability and safety... regional technical conference... Cherry Hill, NJ... 1970.
Greenwich, Conn, SPE, 1970.
Research Library, AE & CI.

Papers deal with such topics as the biodegradability of synthetic organic polymers; mist abatement from plastics processing operations; use of polymers in waste water treatment; phosphonium biomides as fire retardents for thermoplastics; flammability of PVC; polymer colour and flammability; intumescent (swelling) coatings; plastics with selective wavelength absorption; and US Federal regulations for octyltin-stabilized PVC for packaging food. Abstracts of a panel discussion on solid plastics waste disposal are included, as well as some others.

EFFLUENTS TREATMENT
FIREPROOFING AGENTS
FOODS - PACKAGING
MIST REMOVAL
PACKAGING - REGULATIONS
PLASTICS - BIODEGRADATION
PLASTICS - FIREPROOFING
PLASTICS - FLAMMABILITY
POLYMER DEGRADATION
POLYVINYL CHLORIDE - STABILIZERS
SCRAP MATERIALS RECOVERY
SYMPOSIA
WATER TREATMENT CHEMICALS

PM 16.61/50

SOCIETY OF PLASTICS ENGINEERS, INCORPORATED.
Akron Section.
Processing and commercial applications of high-temperature plastics.... regional technical conference... Akron, Ohio... 1970.
Greenwich, Conn, SPE, 1970.
Research Library, AE & CI.

Papers deal with Ucardel P-4174 (a polymeric alloy); Arylon, a modified polyaryl ether thermoplastic; polycarbonates; Astrel Brand 360 plastic, (a polyarylsulphone for elevated temperatures); polybutadiene polymers for stable dielectrics; irradiated plastics; glassfilled polyethylene terephthalate moulding compound; chlorinated polyvinyl chloride; and fibrous glass for improving performance of thermoplastics at elevated temperatures.

1,3-BUTADIENE, POLYMERS
CARBONIC ACID, ESTERS (POLY-)
FIBRES (GLASS)
HIGH TEMPERATURE PROPERTIES
PLASTICS (HEAT RESISTANT)
PLASTICS - PROPERTIES
PLASTICS (REINFORCED)
PLASTICS (THERMOPLASTIC)
POLYMERS (HIGH TEMPERATURE)
POLYMERS - IRRADIATION
POLYVINYL CHLORIDE (CHLORINATED)
SULPHONES, POLY-
SYMPOSIA
TEREPHTHALIC ACID, POLYETHYLENE ESTERS

PM 16.61/57

SOCIETY OF PLASTICS ENGINEERS, INCORPORATED.
Vinyl Plastics Division.
Vinyl plastics, 2 : fundamentals of processing equipment and techniques...lecture notes...divisional technical conference ...Atlanta, Ga...1971.
Greenwich, Conn, SPE, 1971.
Research Library, AE & CI.

Papers deal with mixers and mixing; calendering of PVC; single- and four-screw extruders; batch-type fluxing equipment; die design and auxiliary equipment; compounding plastisols; thermoforming machines and thermoforming of rigid PVC; rotational moulding; and mechanically whipped vinyl plastisols foam.

EXTRUDER - DESIGN
EXTRUDER (PLASTICS)
EXTRUDER (SCREW)
MOULDING EQUIPMENT - DESIGN
PLASTICS PROCESSING
PLASTICS PROCESSING EQUIPMENT
PLASTISOLS
POLYVINYL CHLORIDE COMPOSITIONS
POLYVINYL CHLORIDE - MIXING
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE (RIGID)
SYMPOSIA
VINYL COMPOUNDS

PM 16.61/73

SOCIETY OF PLASTICS ENGINEERS INCORPORATED
CHICAGO SECTION
PLASTECOLOGY 1972 ; REGIONAL TECHNICAL CONFERENCE, ROSEMONT, ILL, 1972
GREENWICH CONN SPE 1973

RDL AEGCI

Papers deal with the recovery and re-use of plastics from waste. Representative papers are concerned with the extrusion forming of waste plastics and glass ; concrete-polymer composites ; corrosion of incinerators in the presence of PVC ; combustion processes with polymers that contain fire-retardant additives ; biodegradability of synthetic polymers ; polysaccharide films as biodegradable packaging materials ; automatic collection of PE bags containing urban waste. Diagrams, photographs, tables, and references are included

COMBUSTION PRODUCTS
CONCRETE/RESIN
CONTAINERS (POLYETHYLENE)
CORROSION PREVENTION
INCINERATORS
PACKAGING MATERIALS
PLASTICS - BIODEGRADATION
PLASTICS - WASTE RECOVERY
POLYSACCHARIDES
POLYVINYL CHLORIDE
SYMPOSIA
WASTE DISPOSAL

PM 16.61/77

SOCIETY OF PLASTICS ENGINEERS INCORPORATED PALISADES. SECTION AND VINYL PLASTICS DIVISION

FLEXIBLE VINYLS AND HUMAN SAFETY : AN OBJECTIVE ANALYSIS; REGIONAL TECHNICAL CONFERENCE, KIAMESHA LAKE, NY, 1973
GREENWHICH CONN SPE 1973

RDL AE&CI

Papers deal with a vinyl processor's choice of plasticizers; the safety of phthalates; US Federal regulations that affect vinyl flexible products; US Occupational Safety and Health Agency Standards and the safe use of asbestos; US Food and Drug Administration regulations that govern plasticizers for vinyl products; pigments and safety; plastics additives (Cd and Pb stabilizers) and the environment; inhalation toxicity tests; and toxicological studies of phthalates (6 papers). Tables and references are included.

ASBESTOS FIBRE
FOOD ADDITIVES
FOODS - PACKAGING
PACKAGING MATERIALS
PHTHALIC ACID ESTERS
PIGMENTS - PROPERTIES
PLASTICIZERS - TOXICITY
POLYVINYL CHLORIDE - ADDITIVES
POLYVINYL CHLORIDE - SPECIFICATIONS
POLYVINYL CHLORIDE - TOXICITY
SAFETY REGULATIONS
STABILIZERS - TOXICITY
SYMPOSIA
TOXICITY - DETERMINATION
TOXICOLOGY
VINYL POLYMERS

PM 16.61/75

SOCIETY OF PLASTICS ENGINEERS INCORPORATED

PLASTICS IN BUILDING CONSTRUCTION : REALITIES AND CHALLENGES ; NATIONAL TECHNICAL CONFERENCE, PITTSBURGH, 1972
GREENWICH CONN SPE 1973

RDL AE&CI

The use of plastics, such as polyurethane foams, polyvinyl chloride, polycarbonate sheet, polyesters, resins as materials and prefabricated components, windows, doors, bathrooms, wall panels, and caravans, motor cars, and domestic and public discussed in a large number of papers. Diagrams, photographs, tables, and references are included.

BUILDING CONSTRUCTION
BUILDING INDUSTRY
BUILDING MATERIALS
BUILDING UNITS (PREFABRICATED)
EPOXY RESINS
ESTERS, POLY-
PIPES (PLASTIC)
PLASTICS (EXPANDED)
PLASTICS (REINFORCED)
PLASTICS (THERMOPLASTIC)
POLYURETHANES (EXPANDED)
POLYVINYL CHLORIDE (RIGID)
SYMPOSIA

PM 16.61/80

SOCIETY OF PLASTICS ENGINEERS INCORPORATED MIAMI VALLEY SECTION

VINYL PLASTICS, 2 : FUNDAMENTALS, PROCESSING AND TECHNIQUES, REGIONAL TECHNICAL CONFERENCE, CINCINNATI, OHIO, 1973
GREENWICH CONN SPE 1973

RDL AE&CI

Most of the papers deal with PVC in various forms. Foams, blow moulding, extrusion, compounding, lubricants, impact strength modifiers, and physical properties of PVC resins are discussed. Urethane-coated fabrics, plastisols and organosols, decoration, vinyl powder coatings, and pigments and fillers for vinyls are also considered. Diagrams, photographs, and references are included.

BLOW-MOULDING
DIES - DESIGN
EXTRUDERS (SCREW)
FABRICS - COATING
IMPACT STRENGTH IMPROVERS
LUBRICANTS
MOULDING EQUIPMENT
PIGMENTS - PROPERTIES
PLASTICIZERS - EVALUATION
PLASTISOLS
POLYURETHANES
POLYVINYL CHLORIDE - ADDITIVES
POLYVINYL CHLORIDE - COMPOUNDING
POLYVINYL CHLORIDE (EXPANDED)
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE FIL
POLYVINYL CHLORIDE - MOULDING
POLYVINYL CHLORIDE - PROPERTIES
POLYVINYL CHLORIDE (RIGID)
POWDER COATINGS
SYMPOSIA
VINYL FILM
VINYL POLYMERS

PM 16.61/81

SOCIETY OF PLASTICS ENGINEERS INCORPORATED ENGINEERING PROPERTIES AND STRUCTURE DIVISION

PREDICTING PLASTICS PERFORMANCE ; DIVISION TECHNICAL CONFERENCE, DOWNINGTOWN, PA, 1973
GREENWICH CONN SPE 1973

RDL AE&CI

Twenty papers deal with such topics as the thermomechanical history and strength of polymeric solids ; structure-property relationships in short-fibre reinforced plastics ; effects of processing and environmental conditions on the performance of plastics ; unsteady states of cooling on crystallization ; effect of melt processing variables on the properties of injection-moulded polypropylene ; tensile properties of polyethylene ; performance and mechanical properties of polyvinyl chloride ; structure and properties of flexible vinyl foams ; weathering of polyolefines ; simulation of mould filling ; kinetic, thermal, and rheological characterization of thermosetting moulding compounds ; use of lubricant melt rheology to predict extrudability of melts. Diagrams, tables, and extensive references are included

MECHANICAL PROPERTIES
MELTS - PROPERTIES
MOULDING COMPOSITIONS - PROPERTIES
PLASTICS - PERFORMANCE
PLASTICS PROCESSING
PLASTICS - PROPERTIES (MECHANICAL)
PLASTICS (REINFORCED)
PLASTICS - STRESSES
PLASTICS (THERMOSETTING)
POLYETHYLENE - PROPERTIES
POLYMER DEGRADATION
POLYMER MELTS
POLYPROPYLENE - PROPERTIES
POLYVINYL CHLORIDE - PROPERTIES
SYMPOSIA

PM 16.313

BARGELLINI, F. and BENEDETTI, L.
Esters of isomalic acid as primary plasticizers in polyvinyl chloride non-toxic formulations.
Washington, I & EC, 1968.
Research Library, AE & CI.

The preparation, properties, and evaluation of isomalic acid esters are described. Transesterification of dimethyl isomalate is the most convenient way to prepare the esters. Tests showed that, with one exception, they were suitable primary plasticizers for PVC, the best being di(2-ethylhexyl) acetyl isomalate and di(2-ethylhexyl) propionyl isomalate, the properties of which resembled those of tributyl acetyl citrate.

PLASTICIZERS - EVALUATION
PLASTICIZERS - PRODUCTION
PLASTICIZERS - PROPERTIES
POLYVINYL CHLORIDE - PLASTICIZERS

PM 16.315

PLASTICS INSTITUTE and BRITISH SOCIETY OF RHEOLOGY.
Practical rheology in polymer processing... conference... preprinted papers... London... 1969.
London, Plastics Institute, 1969.
Research Library, AE & CI.

Papers include 'Polymer properties relevant in melt processing', by F.N. Cogswell and P. Lamb, and 'An application of rheology to injection moulding large area articles' by I.T. Barrie, of Plastics Division, ICI. Other papers deal with extruder design, metering in screw extruders, dry blend extrusion of rigid PVC, polyolefine rheology in film making and blow moulding, and other topics.

EXTRUDER - DESIGN
EXTRUDER (PLASTICS)
PLASTICS - EXTRUSION
PLASTICS - MOULDING
PLASTICS (THERMOPLASTIC)
POLYETHYLENE - MELT FRACTURE
POLYETHYLENE - RHEOLOGICAL PROPERTIES
POLYMER MELTS
POLYMERS - MELTING
POLYMERS - RHEOLOGICAL PROPERTIES
POLYPROPYLENE - PROPERTIES
POLYVINYL CHLORIDE DRY BLENDS
RHEOLOGY
SYMPOSIA

PM 16.64

BRITISH PLASTICS FEDERATION PIPE GROUP
UNIVERSITY OF SOUTHAMPTON
INTERNATIONAL PLASTICS PIPES SYMPOSIUM, 2ND, SOUTHAMPTON 1972, PROCEEDINGS
SOUTHAMPTON BLAIR BOWDEN FOR BPF 1972
ISBN 0-903329-01-8 RDL AE&CI

Papers deal with plastics as engineering materials, the design of pipe fittings, joints, and systems, and the use of plastic pipes in gas distribution, unsteady flow conditions, irrigation systems, and in effluent and sewage drainage systems. W L Thorne and D A Hall of ICI Plastics Division contribute a paper entitled Choice of materials available to the gas industry. The acceptance and the place of plastics pipes in chemical process work is also discussed. Diagrams, discussion, tables, and references are included, as well as BPF's Buyers' guide to thermoplastics pipe and fittings, publication 62/4, 1972.

CHEMICAL PLANT - MATERIALS (CONSTRUCTION)
IRRIGATION
MATERIALS (CONSTRUCTION)
PIPE FITTINGS
PIPE JOINTS
PIPELINES
PIPES (GAS TRANSPORT)
PIPES - INSTALLATION
PIPES - JOINING
PIPES - MATERIALS (CONSTRUCTION)
PIPES (PLASTIC)
PIPES (SOIL DRAINAGE)
PIPES (WATER TRANSPORT)
POLYETHYLENE (HIGH DENSITY)
POLYVINYL CHLORIDE (RIGID)
SYMPOSIA

16.327

SWEDISH FIRE PROTECTION ASSOCIATION
PROTECTION 69 ; PLASTICS-FIRE-CORROSION
STOCKHOLM THE ASSOCIATION 1969
RDL AE&CI

1: International symposium on corrosion risks in connection with fire in plastics, Stockholm... 1969. Papers deal with such topics as corrosion caused by burning plastics, particularly PVC; corrosion of concrete and metals; fire risks and fire protection relating to PVC; and post-fire prevention of metallic corrosion with temporary preventives. 'PVC in building and the corrosion risk' by D R Jones, Plastics Division, ICI, is included.
2: 15th Nordic fire protection day - fire risks and defence against fire in the manufacture, treating and storage of plastics, Stockholm... 1969. Summaries only are included.

BUILDINGS - DAMAGE
CONCRETE - CORROSION
CORROSION
CORROSION INHIBITING AGENTS
CORROSION PREVENTION
FIRE HAZARDS
FIRE PROTECTION
METALS - CORROSION
PLASTICS - CORROSIVITY
PLASTICS - FLAMMABILITY
PLASTICS - HAZARDS
POLYVINYL CHLORIDE - DECOMPOSITION
SYMPOSIA

PM 16.359/3

NASS, L. I.
Lubricants in vinyl processing... (paper)... Society of Plastics Engineers, Incorporated, Eastern New England Section... meeting... 1963.
Duisburg, Brabender, 1963?
Research Library, AE & CI.

Lubricants (including plasticizers, stabilizers, and other additives that impart lubricity) and processing techniques in which lubrication is necessary are reviewed, together with the problems that a compounder may have to solve.

PLASTICS - COMPOUNDING
POLYVINYL CHLORIDE - LUBRICANTS
SYMPOSIA
VINYL COMPOUNDS

PM 16. 333/1

BETTS J E AND PROBER M
A NEW FLAME-RESISTANT CHEMICALLY CROSS-LINKED PVC INSULATION : FLAMENOL XL
INTERNATIONAL WIRE AND CABLE SYMPOSIUM, 20TH, ATLANTIC CITY, NJ, 1971
BRIDGEPORT CONN GENERAL ELECTRIC 1971
RDL AE&CI

General Electric's single-conductor Flamenol XL locomotive and car cables are described. Properties are discussed and tabulated.

CABLES (ELECTRIC)
CABLES - INSULATING MATERIALS
CABLES (POLYVINYL CHLORIDE)
INSULATING MATERIALS (ELECTRIC)
INSULATING MATERIALS - PROPERTIES
POLYVINYL CHLORIDE
POLYVINYL CHLORIDE (HEAT-RESISTANT)
POLYVINYL CHLORIDE - PROPERTIES

PM 16.359/5

WATTS, J.W.
Measurement of the stability of poly(vinyl-chloride) using the C.W. Brabender plastograph; (paper... Society of Plastics Engineers, Incorporated... regional technical conference... Philadelphia, Pa.,... 1963).
Baton Rouge, La., Dow Chemical Company, 1963?
Research Library, AE & CI.

The use is described of the plastograph to measure the heat stability of polyvinyl chloride (PVC) during processing. Measurement of the temperature of the plastic in the mixing head of the plastograph and the effects of volatile components (such as plasticizers) and torque on constant temperature runs are discussed. A diagram of the plastograph, a typical torque-time curve for PVC, and graphs are included.

PLASTOGRAPHS
POLYVINYL CHLORIDE - HEAT STABILITY
STABILITY TESTS
SYMPOSIA

PM 16.359/4

HECKER, A. C. and COHEN, S.
Evaluation of the fusion rates of rigid PVC compounds using the Brabender plastograph... (paper,...Society of Plastics Engineers, Incorporated, Quebec Section... regional technical conference.. Montreal... 1964).
Duisburg, Brabender, 1964.
Research Library, AE & CI.

The use of the plastograph to predict the extrudability of rigid polyvinyl chloride compounds containing different additives and stabilized with different systems is described. Test procedures and the effects of polymers, stabilizers, lubricants, impact modifiers, plasticizer level, and emulsion polymer on the fluxing rate are discussed. Results are tabulated.

PLASTOGRAPHS
POLYVINYL CHLORIDE - ADDITIVES
POLYVINYL CHLORIDE - EXTRUSION PROPERTIES
POLYVINYL CHLORIDE (RIGID)
SYMPOSIA

PM 16.359/12

BIEDENKOFF C
DIE THERMISCHE BEANSPRUCHING VON PVC-HART IN EINEM EINSPINDEL-EXTRUDER
INDUSTRIE-ANZEIGER 1962 NO 82 AUSGABE KUNSTSTOFFE UND KUNSTSTOFFVERARBEITUNG 5
DUISBURG BRABENDER OHG 1962

RDL AE&CI

The author discusses the thermal stress on PVC compounds in a single screw extruder. Graphs and photographs are included.

PLASTICS - STRESSES
PLASTOGRAPHS
POLYVINYL CHLORIDE COMPOSITIONS
STRESSES - DETERMINATION

PM 16.359/13

BRABENDER C W INSTRUMENTS INCORPORATED
AN OUTLINE OF REQUIREMENTS FOR PROCESSING AND EXTRUSIONS OF DRY BLEND
SOUTH HACKENSACK NJ BRABENDER 1964

RDL AE&CI

The dry blending (or powder mixing) of polyvinyl chloride is discussed briefly.

POLYVINYL CHLORIDE DRY BLENDS
POLYVINYL CHLORIDE - EXTRUSION

PM 16.373

RABB, W.A. and RATKAY, T.A.
Rigid dry-blend and its extrusion; (paper)... Society of Plastics Engineers, Incorporated, Quebec Section... regional technical conference... Montreal... 1964.
Montreal, Que., Shawinigan Chemicals Limited, 1964.
Research Library, AE & CI.

The advantages, practical and economic, of extruding PVC dry blends (or powder compounds) are discussed. Consistency of the polymer and the correct choice of lubricant are critical. Stabilizer systems, modifying copolymers or graft polymers, and fillers are reviewed, together with mixing and extruding the compound. Single- and twin-screw extruders are described briefly.

EXTRUDERS (PLASTICS)
EXTRUDERS (SCREW)
POLYVINYL CHLORIDE DRY BLENDS
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE - LUBRICANTS
POLYVINYL CHLORIDE - MIXING
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE - STABILIZERS
VINYL CHLORIDE POLYMERS

PM 16.394

SOCIETY OF THE PLASTICS INDUSTRY, INCORPORATED.
Vinyl film, sheeting and coated fabrics conference, 12th., ... proceedings... New York... 1969.
New York, SPI, 1969.
Research Library, AE & CI.

Papers deal with records for measuring and reducing production costs; improving effectiveness of salesmens call reports; processing rigid PVC; the formulation and physical properties of blown vinyl films; planning in the industry; establishing safety standards; and woven cotton versus spun-bonded substrates.

MARKETING
PLASTIC FILMS - PRODUCTION
PLASTIC FILMS - PROPERTIES
PLASTICS PRODUCTION - ECONOMICS
POLYVINYL CHLORIDE (RIGID)
PRODUCTION PLANNING
SUBSTRATES
SYMPOSIA
VINYL FILM

PM16.433

MARTIN, F.A. and others
A Study on methods of evaluating waxes as lubricants in rigid PVC fabrication.
Mountainside, N.J., American Hoechst, 1970 (?).
Research Library, AE & CI.

A Brabender Plasti-Corder was used to determine the torque requirements and heat-stability characteristics of rigid PVC. Operation of this equipment was initially carried out at constant jacket temperature on PVC having a specific viscosity of 0.28-0.31. However, tests showed that with properly stabilized resins, sequential and reproducible results could he obtained at higher jacket temperatures. The effect of various stabilizers on lubrication was determined and it was found that the effectiveness of the lubricant appeared to be based on the stabilizer used. Torque/time curves are included.

HEAT STABILITY - DETERMINATION
LUBRICANTS - EVALUATION
POLYVINYL CHLORIDE - HEAT STABILITY
POLYVINYL CHLORIDE - LUBRICANTS
POLYVINYL CHLORIDE (RIGID)
POLYVINYL CHLORIDE STABILIZATION
TORQUE DETERMINATION

PM 16.451

EUROPEAN CHEMICAL MARKETING RESEARCH ASSOCIATION.
Petrochemicals and their raw materials in Europe; proceedings of the International conference of the European Chemical Marketing Research Association, 4th... Budapest...1970.
Budapest, OMKDK-Technoinform, 1971.
Research Library, AE & CL

Papers deal with such topics as the distribution of olefines from a single centralized cracker versus local production; large size ethylene plants; development of the petrochemical industry in small countries; international co-operation; polyolefines (development, status, and potential); European market for PVC, by H. Hurard of Solvay et Cie; world rubber market trends; petrochemicals for detergents; ethylene and propylene oxides and their derivatives; urethane polymer in West Europe; aromatics (processing and outlets); and dimethylterephthalate and terephthalic acid. Flow sheets, diagrams, and tables are included.

ETHYLENE PRODUCTION
EUROPE
OLEFINES, POLY-
OLEFINES - PRODUCTION
PETROCHEMICAL INDUSTRY
PETROCHEMICALS
POLYVINYL CHLORIDE
RAW MATERIALS - ECONOMICS
SURVEY (MARKET)
SYMPOSIA

PM 16.489/1

DARBY J R AND MUSCHICK E
SANTICIZER 711 IN THE AMERICAN PVC INDUSTRY; PRESENTED AT A SPECIAL SYMPOSIUM, DERBY, ENGLAND ST LOUIS MO MONSANTO 1971?
RDL AE&CI

The properties and uses of the plasticizer, Santicizer. 711, a di-C(7-9-11) linear phthalate ester, are reviewed. Diagrams, tables, and 24 references are included.

PLASTICIZER/POLYVINYL CHLORIDE COMPATIBILITY
PLASTICIZERS - PROPERTIES
POLYVINYL CHLORIDE - PLASTICIZERS

PM 16. 529

NORWEGIAN PLASTICS FEDERATION
ENVIRONMENTAL CAPITAL '73 ; PROCEEDINGS OF A SYMPOSIUM, OSLO, 1973
OSLO NORSK PLASTFORENING 1973
RDL AE&CI

Papers deal with such topics as the environmental aspects of plastics ; packaging of foods with plastics ; the polymer cycle and society ; recycling packaging in Japan. The US Government decided that PVC containers cannot be used for liquor because liquor can extrac VC monomer, which is a carcinogen. W P J Rabé of AE&CI contributed to the discussion. Diagrams and references are included.

CARCINOGENS
CONTAINERS (POLYVINYL CHLORIDE)
FOODS - PACKAGING
PACKAGING MATERIALS
PLASTICS - BIODEGRADATION
PLASTICS - HAZARDS
PLASTICS - PYROLYSIS
PLASTICS - WASTE DISPOSAL
PLASTICS - WASTE RECOVERY
POLYVINYL CHLORIDE
SYMPOSIA
WASTE DISPOSAL
WASTE - INCINERATION

PM 16. 537

SOUTH AFRICAN INSTITUTION OF CHEMICAL ENGINEERS
MANUFACTURE OF LARGE TONNAGE PLASTICS ;
SYMPOSIUM, JOHANNESBURG, 1973
JOHANNESBURG SAICE 1973
RDL AE&CI

The papers were introduced by G B Darling of AE&CI. Basic polymer chemistry was discussed by C G McCormack ; low density polyethylene, by D A Gosnell of AE&CI ; high density polyethylene by S Göwecke ; and PVC, by A J M Weir of AE&CI. The history and development of the processes are discussed. Diagrams and some statistics relating to consumption are included.

PLASTICS PRODUCTION
POLYETHYLENE (HIGH DENSITY)
POLYETHYLENE (LOW DENSITY)
POLYETHYLENE PRODUCTION
POLYMERIZATION - REACTION MECHANISM
POLYMERIZATION (SUSPENSION)
POLYMERS - MOLECULAR STRUCTURE
POLYMERS - MOLECULAR WEIGHT
POLYMERS - PROPERTIES (PHYSICAL)
POLYVINYL CHLORIDE PRODUCTION
SYMPOSIA

PM 16. 567/1

BLOOM L I
PLASTICS IN FOOTWEAR
JOHANNESBURG AE&CI 1972
RDL AE&CI

The shoe trade in SA, with an annual output of more than 40 000 000 pairs, is a market which has attracted the attention of the plastics industry. In the USA shoe production is of the order of 650 000 000 pairs and in the UK it is 220 000 000 pairs. It has been suggested that by 1980, footwear production in SA will reach about 65 000 000 pairs and this figure could even reach 80 000 000. By the year 2000, it is estimated that more than 130 000 000 pairs of shoes and boots will be made in SA. Plasticized polyvinyl chloride and microcellular polyurethane footwear materials are discussed together with processes in use in the SA footwear industry. Tables are included.(Text of lecture given at Umbogintwini to the Plastics Institute and the SA Institute of the Boot and Shoe Industry, Natal Branch. The slides are omitted.)

FOOTWEAR MATERIALS
FOOTWEAR (PLASTIC)
FOOTWEAR PRODUCTION
POLYURETHANES
POLYVINYL CHLORIDE (PLASTICIZED)
SURVEY (MARKET)

PM 17. 19/378

AMERICAN SOCIETY FOR TESTING AND MATERIALS
SIMULATED SERVICE TESTING IN THE PLASTICS INDUSTRY; SYMPOSIUM, 67TH ANNUAL MEETING, CHICAGO, 1964
PHILADELPHIA ASTM 1965
RDL AE&CI

AGEING TEST
FIBRE COMPOSITES
LACQUERS
PIPES - TESTING
PLASTIC ARTICLES - TESTING
PLASTICS - TESTING
PLASTICIZERS - MIGRATION
POLYPROPYLENE
POLYVINYL CHLORIDE COMPOSITIONS

PM 17. 91/4

BRITISH CHEMICAL ENGINEERING.
Processes in Europe.
(British Chemical Engineering, November, 1969, supplement.)
London, IPC Business Press, 1969.
Research Library, AE & CI.

Refinery processes and the production of sulphuric acid, ammonia, ammonium nitrate, phosphates, and aliphatic, aromatic, polymeric, and inorganic compounds are described briefly, together with the production of some gases and their removal and recovery and the treatment of effluents. Flow diagrams are included for each process.

AMMONIA SYNTHESIS
AMMONIUM NITRATE PRODUCTION
CHEMICALS PRODUCTION
CHEMICALS PRODUCTION - FLOW SHEETS
EFFLUENTS TREATMENT
FERTILIZERS PRODUCTION
GAS CLEANING
HYDROCARBONS - PRODUCTION
PHOSPHATES - PRODUCTION
POLYVINYL CHLORIDE PRODUCTION
SULPHURIC ACID PRODUTION

PM 17.143/2

BRITISH PLASTICS FEDERATION. Building Group.
Corrugated plastics sheeting.
London, BPF, 1968.
Plastics Technical Service Laboratory, AE&CI.

Methods of production are outlined briefly. Properties, such as durability and flammability, are discussed and related to building legislation. The material suitable for each application is illustrated. Manufacturers' data sheets are included for available proprietary brands of cast acrylic sheet (Perspex), glassfibre reinforced polyester laminates, PVC metal laminates, and rigid unplasticized PVC sheeting and wire laminates.

BUILDING MATERIALS
ESTERS, POLY-, RESINS
METHACRYLIC ACID, METHYL ESTER POLYMERS
PERSPEX*
PLASTIC SHEET (CORRUGATED)
PLASTIC SHEET - PROPERTIES
POLYVINYL CHLORIDE LAMINATES
POLYVINYL CHLORIDE SHEET
POLYVINYL CHLORIDE (RIGID)

PM 17.143/4

BRITISH PLASTICS FEDERATION. Building Group.
Plastics-surfaced sheet materials.
(British Plastics Federation publication, 73/i.)
London, BPF, 1970.
Research Library, AE & CI.

Deals with flat plastics sheeting that is normally bonded to core stock to provide a hard-wearing and attractive finish for interior or exterior building applications. Melamine decorative laminated sheets and polyvinyl chloride sheeting are discussed. Manufacturer's data sheets are included.

BUILDING MATERIALS
BUILDING UNITS (PREFABRICATED)
LAMINATES - PRODUCTION
LAMINATES - PROPERTIES
LINING MATERIALS
MELAMINE/FORMALDEHYDE RESINS
POLYVINYL CHLORIDE LAMINATES
POLYVINYL CHLORIDE SHEET
WALL COVERING

PM 17.144/31

GEDDES W C
THE MECHANISM OF PVC DEGRADATION
SHREWSBURY RUBBER AND PLASTICS RESEARCH ASSOCIATION OF GREAT BRITAIN 1966
RDL AE&CI

A critical review of the literature about the degradation of polyvinyl chloride, that covers thermal dehydrochlorination, photodegradation, mechanochemical degradation, degradation by irradiation, and stabilization. Diagrams and 220 references are included.

HYDROGEN CHLORIDE - REMOVAL
POLYMERS - IRRADIATION
POLYVINYL CHLORIDE - DEGRADATION
POLYVINYL CHLORIDE - STABILIZATION
SURVEY (LITERATURE)

PM 17.186/G/B/1

FISONS INDUSTRIAL CHEMICALS
THE FORMULATION OF PVC COMPOUNDS WITH AZODICARBONAMIDE REV ED
LOUGHBOROUGH IEICS FISONS 1969
PTSL AE&CI

The metallic cations, cadmium, zinc, and lead, present as their salts in stabilizers, can change the decomposition temperature of azodicarbonamide. Specimen formulations are set out.

FOAMING AGENTS
FORMAMIDE, 1,1'-AZOBIS-
POLYVINYL CHLORIDE - FORMULATION
POLYVINYL CHLORIDE - STABILIZERS

PM 17.186/G/B/3

FISONS INDUSTRIAL CHEMICALS
LOW DENSITY VINYL FOAMS
LOUGHBOROUGH LEICS FISONS 1969
PTSL AE&CI

Two formulations are set out.

POLYVINYL CHLORIDE (EXPANDED)
→POLYVINYL CHLORIDE - FORMULATION

PM 17.186/G/B/5

FISONS INDUSTRIAL CHEMICALS
EXPANDED VINYL WALL COVERINGS
LOUGHBOROUGH LEICS FISONS 1969
PTSL AE&CI

A formulation is set out.

POLYVINYL CHLORIDE (EXPANDED)
→POLYVINYL CHLORIDE - FORMULATION
WALL COVERING

PM 17.186/G/B/6

FISONS INDUSTRIAL CHEMICALS
EXPANDED VINYL : CARPET BACKING AND UNDERLAY
LOUGHBOROUGH LEICS FISONS 1969
PTSL AE&CI

Properties required in back coatings for tufted carpets are discussed briefly. Formulations for backing and underlay are set out.

PLASTISOLS
POLYVINYL CHLORIDE (EXPANDED)
→POLYVINYL CHLORIDE - FORMULATION

PM 17.186/G/L/6

FISONS INDUSTRIAL CHEMICALS
THE EXPANSION OF POLYVINYLCHLORIDE WITH
GENITRON BLOWING AGENTS
LOUGHBOROUGH LEICS FISONS 1967 REPR 1969
PTSL AE&CI

Extrusion and a free- and a pressure-blown process are outlined. Formulations are included. Precautions to be taken in handling the Genitron blowing agents are briefly discussed.

FOAMING AGENTS
POLYVINYL CHLORIDE - FOAMING
→POLYVINYL CHLORIDE - FORMULATION

PM 18.1

BOOTH M AND OTHERS
FIRE PERFORMANCE OF PLASTICS: A REVIEW OF RAPRA WORK
SHAWBURY SHREWSBURY RUBBER AND PLASTICS ASSOCIATION OF GREAT BRITAIN 1972
RDL AE&CI

This collection of progress reports of work carried out by RAPRA for its sponsors, the Building Group of the British Plastics Federation and the Ministry of Technology, Great Britain, contains: Methods of test: a literature review (45 pp); Smoke and toxic products; a literature review (15 pp); Smoke and toxic gas evolution from unplasticized polyvinyl chloride fires (16 pp); Fire propagation and other tests (23 pp); Flammability tests: an investigation (24 pp); and Smoke and toxic combustion products (48 pp). Diagrams, tables and very extensive references are included.

BUILDING MATERIALS
COMBUSTION PRODUCTS
DECOMPOSITION PRODUCTS
FIRE HAZARDS
FLAME PROPAGATION
FLAMMABILITY TESTS
HEALTH HAZARDS
MATERIALS (CONSTRUCTION)
PLASTICS - FLAMMABILITY
PLASTICS - TESTING
POLYVINYL CHLORIDE
SURVEY (LITERATURE)
TEST METHODS

PM 18.3

DICKERSON, K. and MADDAMS, J. S.
The Hardness of PVC and its variation with temperature. (Shoe and Allied Trades Research Association research report, 228.)
Kettering, Northants, SATRA, 1970.
Research Library, AE & CL

It was found that the softness of all PVC soings decreases with fall in temperature. The rate of decrease is almost linear for most compounds from -14°C to + 34°C. The exceptions are hard compounds, which approach zero softness within this range. The rate of decrease in softness probably varies from compound to compound. An average value is about 0,8 BSS per °C temperature change. The hardness of rubber soles also changes with temperature but not as much as that of PVC. Other results are discussed. Conversion from degrees of BS softness to international degrees of rubber hardness (IRHD) is described briefly. A table is included.

CONVERSION TABLES
FOOTWEAR MATERIALS
HARDNESS - STANDARDS
POLYVINYL CHLORIDE - PROPERTIES

PM 18.3/1

CARTER A R
THE DETERMINATION OF THE K VALUE OF PVC SOLING COMPOUNDS
SHOE AND ALLIED TRADES RESEARCH ASSOCIATION MEMORANDUM TM 1383
KETTERING NORTHANTS SATRA 1968
RDL AE&CI

A method, based on ISO recommendation R 174, for determining the K value of polyvinyl chloride (PVC) separated from a compound, is described. The purification technique selected depends on filtration of a THF solution of PVC followed by precipitation of the PVC from the filtrate by the addition of methanol. The precipitated PVC is then filtered and washed free of plasticizer with methanol. Reproducibility of the method is quite good but the analytical techniques require practice before reproducibility is achieved. Values within 1 - 1,5 of the correct ISO K value should be attained. Determination of K values on the surface layers and the middle layers of PVC units suggests that the molecular weight of the PVC is constant through a sole unit. (3 references.)

FOOTWEAR SOLES
POLYVINYL CHLORIDE - RELATIVE VISCOSITY VALUE
POLYVINYL CHLORIDE - VISCOSITY
VISCOSITY - DETERMINATION

PM 18.39

GAY, F.J. and WETHERLY, A.H.
The Termite resistance of plastics. 2nd edition. (Laboratory studies of termite resistance, 5.)
(Australia. Commonwealth Scientific and Industrial Research Organization, Division of Entomology technical paper, 10.)
Melbourne, Victoria, CSIRO, 1969.
Research Library, AE & CL

An account is given of laboratory tests carried out to determine resistance to termite attack of various plastics; factors affecting such resistance; and methods of improving plastics shown to be susceptible to attack. Plastics vary widely from highly resistant materials, such as nylon, phenolic laminates, and epoxy and polyester resins, to readily damaged materials, such as plasticized polyvinyl chloride, low-density polyethylene, and cellulose esters. Results are tabulated and discussed in detail. (11 references.)

CORVIC *
PLASTICS - PEST RESISTANCE
PLASTICS - TERMITE RESISTANCE
POLYETHYLENE (LOW DENSITY)
POLYVINYL CHLORIDE (PLASTICIZED)

PM 18.40

GRALEN N CH
PLASTICS FROM AN ENVIRONMENTAL STANDPOINT
ROYAL SWEDISH ACADEMY OF ENGINEERING REPORT
IVA 160
LUND RIGELLO PAK AB 1970
PTSL AE&CI

Translation (issued by the publishers of the original Swedish document) that deals with incineration tests in which the waste contained 1% and 2% of PVC by weight. The tests show that 30-40% of the HCl produced is neutralized through being bound to clinker and fly ash. A rocking grate and a reduced flue gas temperature are prerequisites for a high 'natural' reduction. Provision of waste incinerators with equipment for dust separation and gas cleaning almost completely prevents the release of HCl. Diagrams, tables, and references are included.

ATMOSPHERIC POLLUTION - CONTROL
GAS CLEANING
GAS (FLUE)
HYDROGEN CHLORIDE REMOVAL
INCINERATORS
PLASTICS - WASTE DISPOSAL
POLYVINYL CHLORIDE
WASTE - INCINERATION

PM 18.68

BAIRD M E
ELECTRICAL PROPERTIES OF POLYMERIC MATERIALS
LONDON PLASTICS INSTITUTE 1973
ISBN 0-903107-02-3 RDL AE&CI

Experimental knowledge and theoretical interpretation of the electrical properties of polymeric materials are discussed. Dielectric behaviour, resistivity, and dielectric breakdown are dealt with, as well as techniques of measurement. Limitations are indicated. Mathematical expressions are explained briefly. Formulae are given for the rationalized MKS system where the units are the same as SI units. Diagrams and 620 references.

DIELECTRIC LOSSES
DIELECTRIC PROPERTIES
DIELECTRIC PROPERTIES - MEASUREMENT
PLASTICS - PROPERTIES (DIELECTRIC)
POLYETHYLENE - PROPERTIES (DIELECTRIC)
POLYMERS - PROPERTIES (DIELECTRIC)
POLYMERS - RELAXATION
POLYPROPYLENE - PROPERTIES
POLYVINYL CHLORIDE - PROPERTIES (ELECTRICAL)
SURVEY (LITERATURE)

PM 18.153

CHEMISCHE WERKE MUENCHEN OTTO BAERLOCHER GMBH
LEAD STABILIZERS
MUENCHEN OTTO BAERLOCHER 1965
RDL AE&CI

LEAD COMPOUNDS
LEAD COMPOUNDS - HEALTH HAZARDS
POLYVINYL CHLORIDE - STABILIZERS
STABILIZERS
STABILIZERS - PROPERTIES
STABILIZERS - TOXICITY

PM 18.165

PLASTIC COATINGS LIMITED
THE DESIGN ENGINEERS GUIDE TO PLASTIC COATING
GUILDFORD SURREY THE COMPANY 1973
RDL AE&CI

The guide deals mainly with thermoplastics used as permanent protective coatings. General physical data about these coatings are tabulated. Processes for applying the coatings (by dipping, spraying, or cast lining) are outlined. [illegible]es of PVC types, Deconyl, Plasinter, fluoroplastics, electrostatically applied finishes, and plastic coating systems are illustrated.

COATING
COATING COMPOSITIONS - APPLICATION
COATING COMPOSITIONS - PROPERTIES
COATINGS
ETHYLENE, TETRAFLUORO-, POLYMERS
PLASTICS (THERMOPLASTIC)
POLYVINYL CHLORIDE (PLASTICIZED)

PM 18.182

SCHMUTZLER G
EXPLOSION HAZARDS IN THE PRODUCTION OF ADDITIVES
DIE TECHNIK 1969 VOL 24 NO 4 P 240-6
RUBBER AND PLASTICS RESEARCH ASSOCIATION OF GREAT BRITAIN TRANSLATION 1753
SHAWBURY SHREWSBURY RAPRA 1971
RDL AE&CI

The hazardous properties of additives used in the processing of PVC are discussed briefly, together with the investigation of these hazardous properties. Metal stearate dust explosions that have occurred in disc attrition mills, spontaneous ignition of metal soaps, the explosibility of dust clouds of organic tin oxides, and the toxicity of Pb, Ba, and Cd stearates and dibutyl tin oxide are dealt with. Precautions to be taken in producing PVC additives are outlined. Tables and 9 references are included.

ADDITIVES - PRODUCTION
EXPLOSION HAZARDS
EXPLOSIONS (DUST)
HEALTH HAZARDS (INDUSTRIAL)
PLASTICS PRODUCTION - HAZARDS
POLYVINYL CHLORIDE ADDITIVES
SOAPS(METAL)

PM 18.279/1

MALHOTRA H L AND ROGOWSKI B F W
AD HOC FIRE TESTS ON PVC SERVICES IN BUILDINGS ; [illegible]
REPORT OF SPECIAL INVESTIGATION FOR THE [illegible]
BRITISH PLASTICS FEDERATION
GREAT BRITAIN FIRE RESEARCH STATION F 103 0/1/26
BOREHAM WOOD HERTS FIRE RESEARCH STATION 1968
RDL AE&CI

The tests were performed in a 4-storey experimental building in which full size systems were installed for a height of 3 storeys with the uppermost floor used for the installation of suction fans to serve the ventilation stacks. The building was provided on the façade with 3 vertical brick shafts which were open to the rooms. Full-scale fire tests on 10 different installations of plastics services, manufactured from polyvinyl chloride or ABS show that, provided adequate attention is directed to correct fitting, the danger of fire spread via these systems to other compartments in a multi-storey building is no more serious than with non-combustible systems. Other results are discussed. Diagrams and photographs are included.

ACRYLONITRILE/BUTADIENE/STYRENE POLYMERS
BUILDING MATERIALS
BUILDINGS - FIRE HAZARDS
FIRE HAZARDS
HAZARDS - EVALUATION
POLYVINYL CHLORIDE

PM 18.649

GALE, G.M.
Powder flow and fusion behaviour of unplasticized PVC.
(Rubber and Plastics Research Association technical review, 46.)
Shawbury, Shrewsbury, RAPRA, 1969.
Head Office, Plastics Division, AE & CI.

Work was carried out on mixing of PVC powders, fusion behaviour of PVC powder in a single screw extruder, and the effects of some lubricants at various levels of addition. A literature survey was carried out to find out which area should be investigated to learn more about the effects of lubricants on extrusion of unplasticized PVC directly from powder. In this survey the information is mainly confined to: flow in the hopper; filling of the screw channel; conveying the powder from the feed to the transport zone; and fusion of the powders to a melt.

EXTRUDER - GEOMETRY
EXTRUDER (SCREW)
HOPPERS - DESIGN
LUBRICANTS
POLYVINYL CHLORIDE DRY BLENDS
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE - LUBRICANTS
POLYVINYL CHLORIDE - PROPERTIES(RHEOLOGICAL)
POLYVINYL CHLORIDE (UNPLASTICIZED)
POWDER COMPACTION
POWDERS - RHEOLOGICAL PROPERTIES
SURVEY (LITERATURE)

PM 18.657

GALE, G.M.
Extrusion of PVC from dry blends: a literature survey.
(Rubber and Plastics Research Association technical review, 28.)
Shawbury, Shrewsbury, RAPRA, 1966.
Research Library, AE & CI.

Preparation and processing of dry blends and the materials required (polymers, lubricants, stabilizers, fillers) are reviewed. It is concluded that the success of the dry blend extrusion process depends not only on using extruders and dies designed and equipped for powder extrusion, but also on the properties of the prepared dry blends. (51 references.)

EXTRUDER (SCREW)
POLYVINYL CHLORIDE DRY BLENDS
POLYVINYL CHLORIDE - EXTRUSION
POLYVINYL CHLORIDE PREPARATION
POLYVINYL CHLORIDE - PROCESSING
SURVEY (LITERATURE)

PM 18.661

MECKENSTOCK, K.U.
Titanium dioxide pigments for the colouring of plastics.
Translated from German.
(Kronos Information, 41/E.)
Leverkusen, Titangesellschaft, 1968?
Research Library, AE & CI.

The development and properties of titanium dioxide pigments, particularly Kronos RN 40 and Kronos CL 220, are discussed.

PIGMENTS - PROPERTIES
PLASTICS - PIGMENTS
POLYVINYL CHLORIDE - PIGMENTS
POLYVINYL CHLORIDE - PROPERTIES
TITANIUM DIOXIDE

PM 18.694/4

SMITH, H.V.
Polyvinylchloride: a market survey.
(Major thermoplastics, U.K.)
London, Plastics Data Services, 1968.
Research Library, AE & CI.

Information is tabulated under the following: vinyl chloride producers and capacities; polyvinyl chloride producers and capacities; manufacturers of plasticizers, stabilizers, lubricants, and pigments; production, import, export, consumption, and end use pattern of PVC consumption, with forecasts to 1972; export agents; import agents; major processors.

DIRECTORY
POLYVINYL CHLORIDE
POLYVINYL CHLORIDE - ADDITIVES
SURVEY (MARKET)
VINYL CHLORIDE

PM 18.667

RISER, G.R. and PALM, W.E.
An Accelerated light aging study of plasticized PVC, comparing twin carbon arc with xenon arc.
Washington, I&EC Research Results Service, 1968.
Research Library, AE & CI.

The effect of carbon arc and xenon arc on plasticized PVC was studied under dry conditions (ab 5% RH) with a black panel temperature of 83°C. The air temperature in the xenon arc machine was about 8°C higher than in the carbon arc machine. Samples were also exposed to the xenon arc at 20% and 50% RH at a black panel temperature of 63°C. Values obtained for percentage increase in torsional modulus show that the xenon arc produces a faster rate of stiffening than the carbon arc (with the exception of the sample plasticized with TCP). No differences were noted between 20% and 50% RH for xenon arc exposure.

AGEING TEST
POLYVINYL CHLORIDE - AGEING
POLYVINYL CHLORIDE DEGRADATION
POLYVINYL CHLORIDE (PLASTICIZED)

PM 18.727

LACKSONEN, J.W. and BARSAN, R.E.
A Mathematical model for continuous suspension vinyl chloride polymerization in a series of stirred reactors.
Washington, I & EC Research Results Service, 1969.
Research Library, AE & CI.

The mathematical model, designed to serve as the basis for studying the economics of PVC production, is described. The kinetic and residence time distribution equations are set out. Some of the assumptions on which the model was based are known to be incorrect but refinements are difficult to justify without experimental data. An example of the computer output is given.

COMPUTERIZED METHODS
MATHEMATICAL MODELS
POLYVINYL CHLORIDE PRODUCTION
VINYL CHLORIDE POLYMERIZATION

PM 18.745

RUBBER AND PLASTICS RESEARCH ASSOCIATION OF GREAT BRITAIN.
PVC dry blends.
(Verein Deutscher Ingenieure Berichte, no. 130, 1968, translation.)
Shawbury, Shrewsbury, R/.PRA, 1969.
Research Library, AE & CI.

Articles deal with types of PVC and their use in producing PVC dry (or powder) blends; pigments, plasticizers, lubricants, stabilizers, fillers, and modifiers; problems, recipes, limitations, test methods; construction and operation of equipment for producing the blends; processing of PVC dry blends and hot melts; single- and twin-screw extruders; equipment for compounding and granulating plasticized PVC; and injection moulding equipment.

EXTRUDER (SCREW)
MOULDING EQUIPMENT
PLASTICIZERS - PROPERTIES
PLASTICS PRODUCTION EQUIPMENT
POLYMER MELTS
POLYVINYL CHLORIDE - ADDITIVES
POLYVINYL CHLORIDE DRY BLENDS
POLYVINYL CHLORIDE - PIGMENTS
POLYVINYL CHLORIDE - PLASTICIZERS
POLYVINYL CHLORIDE - PROCESSING
POLYVINYL CHLORIDE RECIPES
POLYVINYL CHLORIDE - STABILIZERS
POLYVINYL CHLORIDE - TESTING
VINYL CHLORIDE POLYMERIZATION

PM 18.764

RAM, A and SCHNEIDER, Z.
Flow properties of PVC plastisols.
Washington, D.C., I&EC Research Results Service, 1969.
Research Library, AE & CI.

The viscosity is described of PVC plastisols depending on their volumetric concentration. The two empirical parameters used were corrected for solvency and swelling and represent the intrinsic viscosity and packing volume of the spheres. These parameters tend to the predicted theoretical values at higher shear stresses. An additional working equation, based on the weight fraction, is proposed. Diagrams are included. (13 references.)

PLASTISOLS
POLYVINYL CHLORIDE RHEOLOGY
POLYVINYL CHLORIDE - VISCOSITY

PM 18.854

BANKS M E AND OTHERS
NEW CHEMICAL CONCEPTS FOR UTILIZATION OF WASTE PLASTICS
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY SW-16C
WASHINGTON US GOVERNMENT PRINTING OFFICE 1971

RDL AE&CI

A project undertaken to investigate analytically the use of waste plastic materials for the production of high volume process chemicals is described. The objectives of the analysis were to identify waste plastic / coreactant reaction products with potential commercial value; to identify waste plastic/air combustion products that are potential air pollutants; to conceive of and provide technical and economic evaluations for chemical processes that use waste plastics as raw materials; and to identify potential R&D programmes leading to the development of commercially viable chemical processes. Analytical tools and the results of thermodynamic kinetic, preliminary process design, and economic analysis are discussed. Computer programs, flow sheets, tables, and extensive references are included.

ATMOSPHERIC CONTAMINANTS
COMBUSTION PRODUCTS
COMPUTER PROGRAMS
DECOMPOSITION PRODUCTS
MATHEMATICAL MODELS
PLASTICS - PYROLYSIS
POLYETHYLENE - DECOMPOSITION
POLYVINYL CHLORIDE - DECOMPOSITION
PROCESS EVALUATION
WASTAGE PREVENTION
WASTE PRODUCTS (INDUSTRIAL)

PM 19.182.

FOSTER WHEELER JOHN BROWN BOILERS LIMITED
EFFLUENT TREATMENT
LONDON FWJBB 1973

RDL AE&CI

Effluent treatment plants based on the use of Flocor, a biological filtration plastic module produced by ICI, are discussed briefly. Illustrated.

BIOLOGICAL TREATMENT
EFFLUENTS TREATMENT
FILTER MEDIA
FLOCOR*
POLYVINYL CHLORIDE (RIGID)

PM 20.34/1

ETHYL CORPORATION COMMERCIAL DEVELOPMENT DIVISION
FLOCOR : THE ULTIMATE IN ENGINEERED SURFACES FOR BIOLOGICAL TREATMENT OF WASTES
BATON ROUGE LA THE CORPORATION 196?

RDL AE&CI

Flocor, a synthetic packing, designed for the biological oxidation of waste water, is described and illustrated.

BIOLOGICAL TREATMENT
EFFLUENTS TREATMENT
FILTER MEDIA
FLOCOR*
PACKING MATERIALS (ENGINEERING)
POLYVINYL CHLORIDE SHEET
SEWAGE TREATMENT

PM 20.48/1

BP CHEMICALS (U.K.) LIMITED.
Hexylene glycol.
(Bisol technical booklet, 191.)
London, The Company, 1968.
Research Library, AE & CI.

Commercial information (specifications, packages, storage, toxicity, fire hazards, and regulations), industrial applications, properties (physical constants, miscibility, solvent properties, chemical reactivity, and physiological properties) of hexylene glycol (2-methylpentane-2,4-diol) are set out. The action of hexylene glycol in hydraulic fluids, surface coatings, and polyvinyl chloride plastisols is described in some detail.

COATING COMPOSITIONS - ADDITIVES
FUEL ADDITIVES
2,4-PENTANEDIOL, 2-METHYL-
POLYVINYL CHLORIDE - ADDITIVES

PM 20.48/6

BP CHEMICALS INTERNATIONAL LIMITED BP PLASTICS DEPARTMENT
BREON PVC
TECHNIGRAM B 189
LONDON BP 1973

RDL AE&CI

Typical physical properties are tabulated of Breon transluscent PVC compounds GJ. 604A, GJ. 605A, GJ. 606A, GJ. 607A, GJ. 608A, and GJ. 609A for injection moulding.

MOULDING COMPOSITIONS - PROPERTIES
POLYVINYL CHLORIDE - PROPERTIES

PM 20.48/7

BP CHEMICALS INTERNATIONAL LIMITED
PLASTICISERS FOR PVC
LONDON BP 1973

RDL AE&CI

A compendium of information about the Bisoflex range of plasticizers of PVC. Properties are illustrated in a series of diagrams. Tabular summaries are included.

PLASTICIZERS, POLYVINYL CHLORIDE COMPATIBILITY
PLASTICIZERS - PROPERTIES
POLYVINYL CHLORIDE - PLASTICIZERS

PM 20.50/1

ACIMA CHEMICAL INDUSTRIES LIMITED, INCORPORATED
Metastab
Buchs, Switzerland, ACIMA, 1969?
Research Library, AE&CI

The properties of and specifications for organotin stabilizers (sulphur-containing dibutyltin compounds, sulphur-free dibutyltin derivatives, di-n-octyltin compounds) and lubricants for polyvinyl chloride are set out, together with the properties of and specifications for Melatin 49-10, a permanent organotin microbiocide for vinyl polymers.

LUBRICANTS - PROPERTIES
ORGANIC COMPOUNDS (TIN)
POLYVINYL CHLORIDE - LUBRICANTS
POLYVINYL CHLORIDE - STABILIZERS
STABILIZERS - PROPERTIES
TIN COMPOUNDS

PM 20.81/1

PLASTICON NV TWENTSE KUNSTSTOFFENINDUSTRIE
REINFORCED TANKS FOR STORAGE AND TRANSPORT, SPECIAL APPARATUS, PIPES A.S.O.
OLDENZAAL PLASTICON 1973
RDL AE&CI

A folder which contains a schedule of chemical resistance data in respect of Plasticon tanks, pipelines, ducts, and other equipment, as well as brochures in which containers, storage tanks, tanker vessels, and pipes made of glass fibre-reinforced polyesters with a PVC inner lining are described and illustrated. Dimensions are given.

CHEMICAL RESISTANCE
CONTAINERS (BULK)
CONTAINERS - MATERIALS (CONSTRUCTION)
CONTAINERS (POLYVINYL CHLORIDE)
ESTERS, POLY- (REINFORCED)
LINING MATERIALS
PIPES (POLYVINYL CHLORIDE)
PLASTICS (REINFORCED)
POLYVINYL CHLORIDE
STORAGE TANKS - MATERIALS (CONSTRUCTION)

APPENDIX XI

Index entries used on cards for publications concerned with PVC.

It should be noted that the system enables all subjects relevant to one or more aspect of PVC technology to be indexed with equal facility.

Index term	No of times used	Index term	No of times used
Alkylation	1	Cross-linking	4
Atmospheric pollution-control	2	Copolymers - properties	4
Acrylic acid polymers	4	Copolymers (Block)	1
Acrylonitrile polymers	2	Copolymers - molecular structure	1
Acetaldehyde	1	Corvic	6
Acrylonitrile/Butadiene/ Styrene polymers	2	Cellulose Esters	2
Amides, poly	2	Containers - materials- construction	1
amides, poly-properties	1	Containers (PVC)	3
Atmospheric contaminants	2	Containers bulk	1
Additives - determination	1	Chemical resistance	2
Analytical methods	2	Containers - plastic	2
Additives - production	1	Coating compositions - additives	1
Ageing test	2	Chain branching reactions	3
Asbestos fibre	1	Condensation, poly	1
Anti-oxidants	2	Chromatography (thin film)	1
Anti-oxidants testing	1	Combustion products	2
Acrylic acid polymers - properties	1	Concrete resin	2
NH_3 synthesis	1	Containers (polyethylene)	1
A/N production	1	Corrosion prevention	1
Auto[illegible]ves - cleaning	1	Carbonic acid, esters	1
Absorbents (UV)	1	Chromatography (gel perm.)	1
		Concrete corrosion	1
1-Butene-polymers	1	Corrosion	1
Biological treatment	9	Corrosion inhibiting agents	1
Bibliography	1	Corrosion prevention	1
Benzene-ethyl	1	Computer programmes	1
Building materials	10	Cavitation	1
Buildings - Fire hazards	1	Cellophane film	2
Blow moulding	3	Cellulose	1
1,3 Butadiene polymers	1	Containers - production	1
Buildings - damage	1	Coating	1
Buildings - units	3	Coatings	1
Blow moulding compositions	1	Coating compositions - application	1
Building - construction	2	Coating compositions - properties	1
Building - industry	1	Catalysts - polymerization	1
Catalysis (Homogeneous)	1	Chemicals production	1
Cables (electric)	1	Chemicals production - flow sheets	1
Cables - insulating materials	2	Computerized methods	1
Cables - PVC	1	Conversion tables	1
Calendering compositions	1	Carbon properties	1
Calenders	2	Chemical plant - materials construction	2
Cellulose - reactions	1		
Copolymerization	4		320

Index term	No of times used	Index term	No of times used
Combustion products	1	Filter media	10
Carpets	1	Flocor	9
Chemical plant equipment	1	Free radicals - reactions	1
Carbon black	1	Fertilizers (liquid)	1
Dyes	1	Fertilizers (nitrogenous)	2
Directory	3	Film - packaging	1
Dies - design	3	Fire hazards	4
Decomposition products	4	Fertilizers - production	2
Degradation	2	Fertilizers - survey	1
Density - detonation	1	Fibres - production	1
Diseases - control	1	Fibres - survey	1
Diseases - occupational	1	Fibres - synthetic	2
Design data	2	Fuel additives	1
Ethylene production	3	Fabrics coating	2
Europe	1	Food additives	3
Eproxidation	1	Foods packaging	5
Effluents treatment	9	Fibres - glass	4
Ethylene 1,1-dichloro polymers	2	Fibres - composites	3
Ethylene polymers	2	Fire protection	1
Ethylene/Propylene polymers	3	Fireproofing agents	4
Effluents - disposal	1	Fillers	2
Epoxy resins	3	Floating structures	1
Esters, Poly	6	Foaming equipment	1
Esters, Poly-resins	3	Fibres metallic	1
Echane 1,2-dichloro	1	Fibres - pigmentation	1
Ethyle alcohol	1	Fibres - properties	1
Ethylene analysis	1	Fibres - spinning	1
Ethylene flammability limits	1	Fibres - treatment	1
Ethylene oxide	1	Film packaging	2
Ethylene polymerisation	1	Formamide 1,1-azobis	1
Ethylene properties	1	Footwear - materials	2
Ethylene reactions	1	Footwear - plastic	1
Esters - poly (reinforced)	2	Footwear - production	1
Ethers - poly	1	Footwear - soles	1
Ethylene, tetra fluoro polymers	4	Flame propagation	1
Extruders, design	5	Flammability tests	2
Extruders, screw	7	Flovic	
Explosion hazards	1	Gas cleaning	3
Explosions (dust)	1	Gas (Flue)	2
Elastomers - properties	2	Geon	1
Extruder - plastics	4	Graphite properties	1
Explosive powder	1	Hydrocarbons - cracking	1
Elastic properties	1	Hydrocarbons - reforming	2
Esters, poly - production	1	Hydrogen chloride removal	2
Esters, poly - reactions	1	Hazards - evaluation	1
Esters, poly - properties	1	Hydrogen chloride	2
Ethylene, fluoro polymers	1	Health hazards (industrial)	2
Effluents treatment	9	High temperature properties	2
Engineering design	1	Hydrochloric acid - corrosivity	1
Fillers - modification	1	Hoppers design	1
Fluorocarbons polymers	1	Heat stability - determination	2
Foaming agents	5	Hydrocarbons - production	1
Fermentation engineering	1	Hardness standards	1
		Heat sealing	2
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Index term	No of times used
Isomerization	1
Insulating materials (electric)	2
Insulating materials - properties	1
Ionomers	1
Incinerators	3
Industrial organization	1
Impact strength improvers	3
Injection moulding	1
Insulating compositions	2
Irrigation	1
Ionization	1
Joints - expansion	1
Kinetics of reaction	1
Lining materials	3
Lubricants	2
Lacquers	
Light scattering	1
Latex	1
Lubricants - evaluation	1
Laminates - production	1
Laminates - properties	2
Lead compounds	1
Lead compounds - health hazards	1
Linings - testing	1
Methacrylic acid - polymers	2
Materials (construction)	3
Modder factory	1
Methacrylic acid/methyl ester polymers	6
Material (construction) properties	3
Moulding equipment	4
Molecular weight determination	2
Metals - corrosion	1
Mathematical models	2
Micro-organisms	1
Melamine/formaldehyde resins	1
Moulding equipment - design	1
Moulding compositions - properties	2
Materials construction - specifications	1
Mechanical properties	1
Melts - properties	1
Melt flow index - determination	1
Marketing	1
Mist removal	1
Naphtha	1
Nitriles, polymers	1
NMR	1
NMR - spectra	1
Oil refining	1
Olefines, Poly	4
Olefines, Production	1
Oxidation	2
Optical methods	1
Osmometry	1
Oxidation - auto	2
Olefines, poly - degration	2
Ordnance	1
Organic compounds (tin)	1
Petrochemicals	2
Petroleum refining	2
Petrochemical Industry	2
Plastic articles - design	1
Plastics - Heat treatment	1
Plastics properties (Mech)	6
Plastics (Thermoplastic)	19
Polymers - fracture	2
Polymers - mech. properties	2
Pipes (design)	1
Pipes (plastic)	1
Plastics - creep	2
Plastics - Processing	11
Plastics (reinforced)	15
Polyethylene	12
Polypropylene	5
1-Pentente,4-methyl polymers	1
Plastics - fillers	2
Plastics - heat resistant	2
Plastics - properties	9
Polyethylene (chlorinated)	1
Polymers - high temperature	2
Polymers - properties	13
Polyurethanes	8
Plastic sheet production	1
Plastic sheet - properties	1
Plastics - additives	8
Plastics - calendering	1
Plastics - raw materials	2
Plastics - waste disposal	3
Polymer degradation	13
Polymerization	9
Polymers - depolymerization	2
Polymers - reactions	5
Protein	1
Packaging materials	13
Plastics - crack propagation	1
Plastics - crazing	1
Plastics - stresses	3
Polymers - deformation	6
Polymers - molecular structure	9
Polymers - properties (physical)	5
Polymers - relaxation	4
Polymers - transitions	3
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Index term	No of times used
Polymers - viscoelastic properties	1
Pipes - joining	2
Pipes (PVC)	4
Plastics processing equipment	4
Plastics welding apparatus	2
Polymers - conjugated	1
Polymers - cross-linked	3
Polymers - organometallic	1
Polymers - photosensitive	2
Polymers - stabilization	6
Pasture improvement	1
Plastics production	5
Plastics expanded	6
Plastics - moulding	4
Plastics - printing	1
Phenol	
Plastics - ageing	2
Plastics - permeability	1
Plastics - weathering	2
Polymers - addition	1
Phenol formaldehyde resins	1
Plastics	3
Plastics - technology	2
Plastics - testing	7
Plastics - performance	1
Plastics - survey	1
Polyethylene (low density)	4
Plastographs	9
2,4-Pentomediol 2,Methyl	1
Polymers, production	3
Patents - surveys	1
Patents - indexes	1
Polymerization - mass	1
Pigments - properties	3
Plasticizers - properties	9
Plastisols	4
Powder coatings	1
Plastics production - hazards	1
Plastics production equipment	2
Polymer melts	5
Phthalic acid esters	2
Plasticizers - toxicity	1
Plastics films - printing	2
Plastics films - welding	2
Plastic sheet - moulding	1
Polymers - analysis	4
Polymers - dielectric properties	1
Polymers - graft	1
Polymers - high impact strength	1
Polymers rheological properties	3
Polyethylene analysis	1
Polymers - crystallinity	2
Polymers - molecular orientation	1
Polypropylene analysis	1
Plastics - biodegradation	7
Polysaccharides	1
Polymers - irradiation	4
Pipes - testing	1
Plastic articles - testing	1
Plasticizers	1
Pipes - extrusion	1
Polymers - molecular weight distribution	2
Plastics - corrosivity	1
Plastics - flammability	5
Plastics hazards	1
Plastics - pyrolysis	1
Polyethylene decomposition	1
Process evaluation	1
Polyethylene degradation	5
Polyethylene stabilization	2
Polymers (high molecular weight)	4
Plastics stabilization	2
Pyrocatechol	1
Polymers - discolouration	1
Polymers - inorganic	1
Polymers - pyrolysis	1
Polyethylene - oxidation	1
Polymers - oxidation	2
Plasticizers/PVC compatibility	5
Polymer solutions - properties	5
Polymerization - kinetics	2
Plastics - waste recovery	1
Powders - properties	1
Propellants - properties	1
Plastics - extrusion	1
Polyethylene - melt fracture	1
Polyethylene - rheological properties	1
Polypropylene - properties	5
Powder compaction	1
Powders - rheological properties	1
Polymers - plasticization	1
Plasticizers - analysis	1
Plasticizers - production	3
Plasticizers - evaluation	2
Polyethylene - expanded	2
Polyurethanes - expanded	5
Polypropylene - expanded	1
Polymers - foaming	1
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Index term	No of times used	Index term	No of times used
Plasticizers - testing	3	Pipe-water transport	1
Polyethylene fibres	1	Pipe-plastic	3
Polypropylene fibres	1	Polyethylene sheet	1
Packaging regulations	3	Pipes - welding	1
Plastic films - coating	1	Plastic film - joining	1
Plastic films - orientation	2	Plastic film - welding	1
Plastic films - production	4	Plastics - joining	1
Plastic films - properties	2	Plastics - welding	2
Plastics - identification		Polyethylene weathering	1
Polyethylene film	4	Polyethylene - welding	2
Polypropylene film	4	Polypropylene - oxidation	1
Packaging - automatic	1	Polypropylene - stabilizers	1
Packaging - economics	1	Plastics - coating	1
Packaging - shrink	1	Plastics - development	1
Plastic - film-testing	1	Plastics - industry	1
Plastic - film permeability	1	Production planning	1
Plasticizers	1	Plastics production - economics	1
Polymers - fractisation	1	Plastics - degradation	1
Perspex	1	Plastics - fire-proofing	2
Plastic sheet - corrugated	1	Plastics - stabilizers	1
Plastic sheet - properties	1	Polypropylene - stabilization	1
Plastics - compounding	2	Polymer - blends	1
Polyethylene - blow moulding	1	Polymer - blends properties	1
Paper - coated	1	Polymer - metal containing	1
Plastics - pigments	1		
Plastics - flexibility	1	Raw materials - economics	1
Polymers - melt flow properties	1	Radiation processes	1
Plastics - pest resistance	1	Reaction mechanism	1
Plastics - termite resistance	1	Rubber synthetic	2
Polyethylene - viscoelastic properties	1	Rubber blends	1
Plasticizers - composition	1	Rheological properties	2
Peroxides - properties	1	Rheology	1
Polymerization - inhibition	1	Rubber - expanded	2
Plastic sheet (thermoplastic)	1	Rubber - properties	1
Polyethylene processing	1	Resins - properties	1
Phosphates - production	1	Symposia	46
Polyethylene production	1	Survey (market)	5
Polymerization - reaction mechanism	1	Survey (literature)	7
Polymerization - suspension	1	Styrene polymers	12
Plastics - chemical resistance	3	Stress-strain curves	1
Plastics - heat sealing	3	Science history	1
Polyethylene properties	5	Sewage treatment	8
Polyurethane properties	2	Silicones	2
Physical properties	1	Styrene	1
Plastic articles - design	1	Storage tanks - materials construction	1
Polyethylene (hd)	2	Sulphur dioxide	1
Pipe-fittings	1	Soaps, metal	1
Pipe-joints	1	Safety regulations	1
Pipe-lines	1	Stabilizers (toxicity)	2
Pipe-gas transport	1	Spectrometry (NMR)	2
Pipe-installation	1	Sulphones - poly	1
Pipe-materials construction	1	Stress - determination	1
Pipe-soil drainage	1	Stabilizer systems	1
		Styrene polymers - analysis	1
		Stabilizers - properties	4
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Index term	No of times used	Index term	No of times used
Stabilizers - heat	1	Waste products (industrial)	1
Stabilizers - light	1	Wall covering	3
Styrene polymers - expanded	4	Wire insulation	1
Styrene polymers - film	3	Welding	1
Solubility	1	Welding flaws	1
Stability tests	1	Welding tests	1
Solvents - organic	1	Water pollution	1
Stress/strain measurement	1	Water (river)	1
Sinter coating	1	Weathering	1
Sinter coating - compositions	1	Water treatment chemicals	1
Sulphuric acid - production	1	Welding - high frequency	1
Stabilizers - evaluation	2	X-ray diffraction methods	1
Stabilizers - UV light	1	Yield stress	2
Substrates	1		
Stabilizers	1		
Scrap metal recovery	1	Total:	5066
Technology - history	1		
Toxicity determination	1		
Toxicology	1		
Torephthalic acid, poly-ethylene esters	2		
Thermal analysis	1		
Torque determination	1		
Tin compounds	1		
Thermodynamic properties	1		
TiO_2	1		
Trade names	2		
Test methods	2		
U/F Resins - expanded	1		
VC - production	3		
VC polymers	7		
VC - polymerization	8		
Vinyl acetate copolymers	3		
VC copolymers	6		
Vinyl polymers	5		
Vinyl acetate	1		
Vinyl acetate polymers	5		
Vinyl chloride	4		
Vinyl polymers - properties	1		
VC polymers - additives	1		
Vinyl film	2		
Vinyl compounds	2		
Vinyl acetate polymerization	1		
VC - properties	1		
VC copolymers - properties	1		
Viscometers	1		
Viscosity - determination	1		
Waste - incineration	3		
Water pollution - control	1		
Water pollution - determination	1		
Water supply	1		
Welvic	8		
Waste - disposal	2		
Wastage prevention	1		

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Author Scholes A K
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