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see page 357

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D. Agrawal and A. K. Vasishtha

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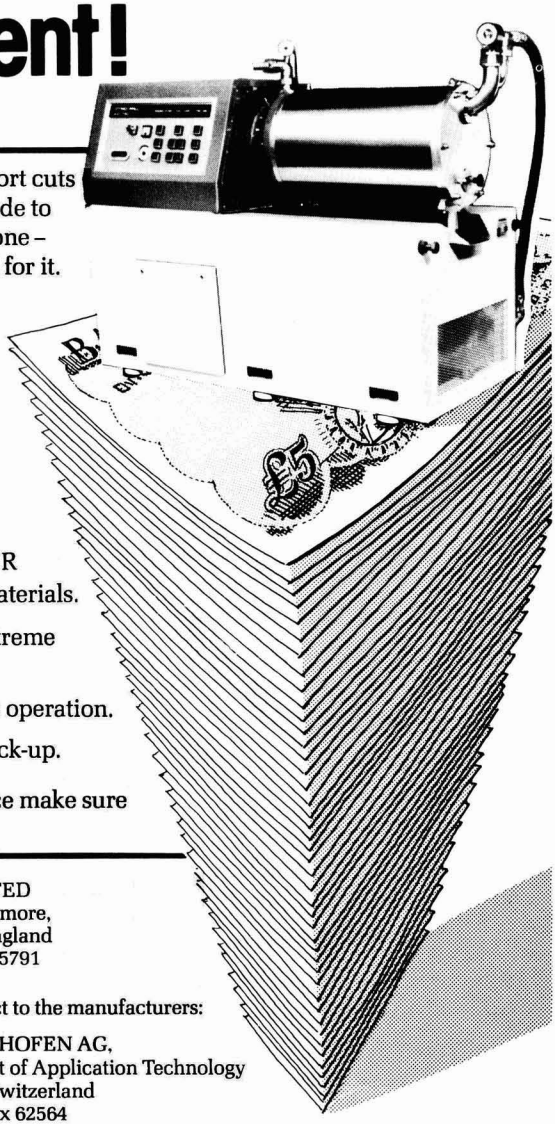

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OIL AND COLOUR CHEMISTS' ASSOCIATION
Priory House, 967 Harrow Road, Wembley, Middlesex, HA0 2SF England

J. Oil Col. Chem. Assoc., 1982, 65, 349-352

Transactions and Communications

Drier compositions for air drying coatings

By D. Agrawal and A. K. Vasishtha

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Summary

Coatings were prepared using compositions of different metallic driers to study their effects. It was observed that combinations of cobalt, zirconium and calcium or barium produced fast-drying coatings. Non-skinning and non-yellowing properties were imparted when barium and zirconium drier combinations were used.

Keywords

Types and classes of coatings and allied products

long oil alkyd finish

Raw materials for coatings

driers

barium drier
calcium drier
cobalt drier
zirconium drier

Processes and methods primarily associated with

storage, protection or preservation

skinning

Properties, characteristics and conditions primarily associated with

materials in general

viscosity

coatings during application

drying rate

dried or cured films

yellowing

Mélanges de siccatifs pour peintures séchant à l'air

Résumé

Afin d'étudier l'influence de la composition du mélange de siccatifs, on a préparé des peintures contenant des mélanges de différents siccatifs métalliques. On a noté que les peintures contenant un mélange de cobalt, zirconium et calcium ou baryum en tant que siccatifs démotrent les caractéristiques de séchange rapide. Lorsqu'il s'agit d'un mélange de baryum et de zirconium, les caractéristiques de bonne résistance au jaunissement et à la formation de peaux sont démontrées par les peintures en question.

Sikkativgemische für lufttrocknende Beschichtungen

Zusammenfassung

Um der Einfluss der Sikkativgemischzusammensetzung zu untersuchen wurden Beschichtungen hergestellt, die verschiedene Metallsikkativgemische enthielten. Es wurde notiert, dass die Beschichtungen, die ein Gemisch von Kobalt, Zirkonium und Kalzium oder Baryum erhielten, Schnelltrocknende Eigenschaften zeigten. Im Falle eines Gemisches von Baryum und Zirconium zeigten die Beschichtungen gute Vergilbungsund Hautbildungsbeständigkeiten.

Introduction

Refs, 1-10

Driers are essential components of air drying surface coatings since they accelerate the drying and curing on hardening of the vehicle. The principal driers are a group of heavy metal soaps of carboxylic acids chosen on the basis of their capacity to confer solubility on the metal compound in the vehicle system. Elliot[1], Morgan[2], and Mueller[3] have observed that driers shorten the induction period in the drying of films and accelerate the rate of oxidation. The above observations are now universally accepted. Meier and Ohm[4] proposed that the driers enter into a secondary reaction to lower the activation energy required to form and decompose the peroxides during the oxidation curing of films. According to Girard *et al*[5]. the energy of activation for oxygen uptake by the vehicle in the presence of a cobalt drier was only one-tenth of that required by the vehicle in the absence of the drier.

Table 1

Combinations of driers (per cent by weight of resin)

Composition	Cobalt naphthenate	Cerium naphthenate	Barium octoate	Zirconium octoate	Lead octoate	Calcium naphthenate
A	0.05				0.5	0.1
B	0.05	0.3				
C	0.05	0.5				
D	0.05		0.5			
E	0.05			0.5		
F	0.05			0.3		
G	0.05			0.3		0.1
H	0.05		0.1	0.3		
I			0.5	0.5		

Stewart[6] evaluated 35 metals for their activity and their utility as active or auxiliary driers. Several non-metals have also been reported in the literature[7-9], but their use is limited because of their high cost and their tendency to cause discoloration.

In spite of all the developments in the field of driers, the actual application of driers to the coatings and their formulation is more of an art than a science[10]. The present paper reports a study of drier systems for coatings based on a long oil linseed pentaalkyd resin.

Experimental

Materials

Pigment

Rutile grade titanium dioxide pigment was used in the paint formulations.

Medium

Long oil linseed pentaalkyd was prepared in the laboratory. A 50 per cent solution of this resin in white spirit was used as the medium for the paint formulations.

Driers

The following driers were used as 50 per cent solutions in white spirit: cobalt naphthenate (6 per cent), cerium naphthenate (6 per cent), barium octoate (12 per cent), zirconium octoate (6 per cent), and calcium naphthenate (3 per cent).

Preparation of paint samples

The paint samples were prepared in pot laboratory mills by pigmenting the alkyd resin solution and adding appropriate driers as shown in Table 1. The following formulation was used:

	Parts by weight
Pigment: TiO_2	25.0
Alkyd resin (50 per cent solution in white spirit)	75.0
	100.0

The varnish system consisted of the penta-alkyd mentioned above thinned to brushable consistency with white spirit. The drier combinations used were as given in Table 1.

Evaluation of drier systems

Viscosity

The paints after the addition of driers were kept in sealed containers, filled to the top, for 30 days. The viscosities were then measured at 30°C using a Ford Cup No. 4.

Skinning tendency

The skinning tendency of the paint systems was studied by keeping the samples in open cylindrical (4 inch diameter) containers for one week after which the condition of the surface was noted.

Drying time

Drying time was studied for both varnishes and paint systems by brush applying the samples onto metallic panels and noting time taken for surface drying and tack-free drying.

In the case of varnishes, samples of the fastest drying and slowest drying preparations were refluxed for 30 hours at 80°C. The drying times for the refluxed samples were then noted to find out the effect of this treatment.

Yellowing tendency

The yellowing tendency of the paint samples were studied by keeping dried paint panels in diffused light in the laboratory for 30 days.

Results and discussion

The drier compositions used in this study are given in Table 1. In all, nine different compositions were prepared and they were accordingly coded by letters (A-I). The drying characteristics of the different white paints and varnishes are given in Table 2. The other important and relevant properites of the paints, such as viscosity, and skinning and yellowing tendencies, are recorded in Table 3.

Table 2

Drying characteristics of paint and varnish systems

Composition	Paint systems		Varnish systems	
	Surface drying (min[5])	Tack-free drying (min)	Surface drying (min)	Tack-free drying (min)
A	50	390	35[a]	330[b]
B	45	390	25	320
C	40	380	30	315
D	45	370	30	315
E	30	350	25	300
F	35	375	20	210
G	25	340	15[c]	200[d]
H	30	350	20	225
I	30	360	20	290

[a]70 min, after refluxing, [b]420 min, after refluxing, [c]50 min, after refluxing, and [d]330 min, after refluxing.

Table 3

Storage and yellowing properties of paints

Composition	Storage properties of paints		Yellowing tendency of paint films
	Viscosity* Ford Cup No. 4 (seconds at 30°C)	Skinning tendency	
A	84	slight skinning	slight yellowing
B	92	skinning	yellowing
C	100	heavy skinning	deep yellowing
D	83	skinning	yellowing
E	93	skinning	yellowing
F	95	skinning	yellowing
G	90	skinning	yellowing
H	91	skinning	slight yellowing
I	87	no skinning	no yellowing

*The viscosity of the resin without any drier was 66 seconds at 30°C.

Settling

All the paints prepared had a tendency to settle as no anti-settling agent was used in order that the effects of the driers on the paints would not be altered.

Drying characteristics

The shortest time to surface drying and tack-free drying from both the paint and from the varnish systems occurred when using composition G. This was formulated with cobalt, zirconium and calcium driers. Although the cobalt and zirconium combinations were also used in E and F, they did not show as fast a drying tendency as G, in which calcium was an additional component. Composition H, in which the calcium was replaced by barium, also gave comparable results in drying. On the other hand, the cobalt, lead and calcium containing composition A took the longest time to dry. These results show the importance of the combinations of metals used in the drier formulations rather than the properties of individual metals alone.

Significantly, the varnishes were faster drying than the paints in all cases. This can be explained by the tendency of the pigment in the paint to adsorb the drier. The drier, as a metal soap, has all the characteristics of a wetting agent. Whereas the anion being oil soluble will orient itself to the vehicle, the metallic cation in the drier molecule will orient toward the pigment at the pigment vehicle interface. Hence, it is quite likely that the drier will become weakly bonded to the pigment.

A significant loss of drying properties was observed in the varnish systems when compositions A and G were refluxed for 30 hours. This suggests the possibility of the formation of complexes of the metal with the vehicle during this treatment. Douglas[11] also reported loss of drying rate on ageing, and in the present case the ageing process could have been accelerated by the heat treatment given to the varnish samples under examination.

Viscosity

The viscosity increased in all cases on the addition of a drier composition. The lowest increases, however, were observed with the use of compositions D and A, which had cobalt and barium, and cobalt, lead and calcium combinations respectively.

Skinning tendency

The greatest skinning tendency was shown when using composition C, having a combination of cobalt and cerium. Since both cobalt and cerium are known to produce hard surfaces after drying, a heavy skinning tendency with these driers is expected. Significantly, no skinning was observed when using composition I, which was cobalt-free and had a combination of barium and zirconium driers. All other drier combinations showed a tendency to skinning, the least being with composition A, formulated with cobalt, lead and calcium driers.

Yellowing tendency

Maximum yellowing was observed with the use of composition C, having a cobalt and cerium combination. On the other hand, the cobalt-free barium and zirconium combination composition I, was not associated with yellowing at all. Compositions H, formulated with cobalt, barium and zirconium, and A, containing cobalt, lead and calcium, showed only a slight degree of yellowing. All other samples showed a significant tendency to yellow.

Conclusions

To sum up the results of this investigation, it can be stated that faster drying coatings can be produced by using a combination of 0.05, 0.3 and 0.1 per cent of cobalt, zirconium and calcium driers respectively (composition G). Comparable results in drying can be obtained by using barium in place of calcium (composition H). This combination could be more suited to conditions of high

humidity since barium is known to be less sensitive to high humidity than calcium.

Coatings where a non-yellowing tendency and non-skinning are of paramount importance can be formulated by using a combination of barium and zirconium driers.

[Received 8 October 1981

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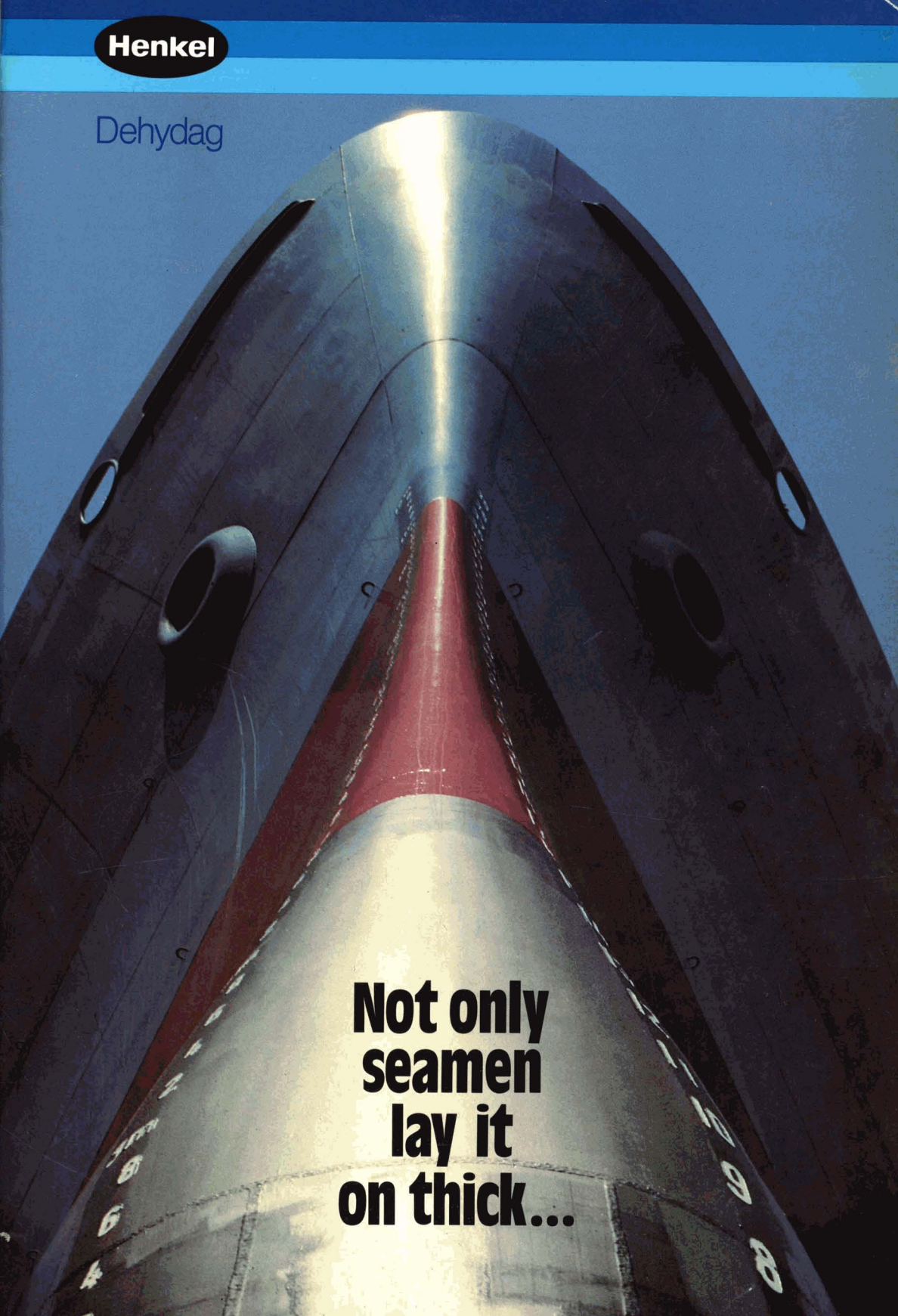

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J. Oil Col. Chem. Assoc., 1982, **65**, 353-356

The automotive refinishing paint market in the UK and continental Europe*

By G. Collingham

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Summary

The refinishing market can be divided into two parts. The car sector is concerned with the repair of accidental damage and with the renovation of cars in use, and the commercial vehicle sector in addition to the repair of damage also includes the painting of new vehicles in a company's livery and periodic repainting when required by maintenance schedule. The paper is concerned mainly with the car sector.

The structure of the market and the demand for supplies is analysed in both the UK and some continental countries with the conclusion that the UK has more and generally smaller spray shops than on the continent. The increasing necessity for elaborate equipment for spraying and stoving will tend to increase the number of larger operators and reduce the number of small ones. Sophisticated equipment is expensive and can be economic only when there is a large through-put.

Concern is expressed regarding the future of the industry due to rising costs and the consequent reduction in car usage. A plea is made that refinishers should consider the future and plan their development in the light of the conditions in the next few years.

Keywords

Miscellaneous terms

cost
market analysis

Types and classes of coatings and allied products

automotive finish

Le marché des vernis pour réparation de carrosseries au Royaume Uni et en Europe continentale

Résumé

Le marché des vernis pour réparation de carrosseries peut être divisé en deux parties. Un secteur est consacré à la réparation des dégats à la suite des accidents et aussi de la remise à neuf des voitures au cours de leur vie en service. L'autre secteur comprend la réparation de dégats et d'ailleurs la finition des véhicules neufs en les couleurs distinctives des clients et le repeinturage de tels vehicules à mesure des besoins du plan de manutention. Cet article trait en générale du secteur des voitures particulières.

On analyse la structure du marché et de la demande pour les produits dont il s'agit, à l'égard du Royaume Uni et de certains pays de l'Europe. On conclut qu'il y a au Royaume Uni un nombre plus grands d'ateliers de peinture-carrosserie qu'en Europe, mais qu'en générale ils sont plus petits. Le besoin croissant de matériel compliqué pour le pistolage et l'étuvage favorisera l'augmentation du nombre de grandes entreprises de peinture-carrosserie et provoquera en revanche une diminution des moins importantes. Le matériel évolué est coûteux et il est rentable seulement dans le cas où il existe une cadence élevée d'utilisation.

On a des soucis á l'égard de l'avenir de l'industrie en vue des dépenses toujours en hausse d'automolbilisme et, par conséquent, la dimintuion de l'utilisation de voitures. On fait un appel aux peintre-carrossiers de considérer soigneusement l'avenir et de projeter leur développement selon les conditions probables dans les quelques années à venir.

Der Markt für Autoreparaturlacke im Vereignigten Königreich und im europäischen Festland

Zusammenfassung

Der Reparaturlackmarkt lasst sich in zwei Teile trennen. Der PKW-Sektor befasst sich mit der Reparatur der Unfälle folgenden Schaden und auch mit der Renovierung der Autos im Laufe ihres nützlichen Lebens. Der LKW-Sektor befasst sich, ausser der Reparatur der Schaden, mit dem Anstreichen der neuen Wagen in den kennzeichnenden Geschäftsfarben und mit dem regelmässigen Wiederanstreichen davon, falls es von einem Instandshaltungsplan erforderlich sei. Deiser Artikel befasst sich hauptsachlich mit dem PKW-Sektor.

Die Marktstruktur und die Nachfrage für Bedarf im Vereingnigten Königreich und in einigen europäischen Landen werden analysiert und man schliesst, dass es, im Vergleich zu Europa, mehere aber kleinere Autolackereien im Vereinigten Königreich gibt. Die zunehmende Bedürfnis nach entwickelter Spritz- und Einbrennausrüstung wird neigen die Anzahl der grösseren Unternehmer zu vermehren und der Kleineren zu vermindern. Hochentwickelte Ausrüstung is teuer und zeigt sich rentabel nur wenn es einen wichtigen Verwendungsgang gabe.

Wegen der ansteigenden Autofahrenkosten und der folgenden Benützungverminderung der Autos wird Besorgnis über die Industriezukunft festgestellt. Die Autolackierer werden gebeten die Zukunft zu überlegen und angesichts der Bedingungen der nächsten Jahre gewisse Plane für ihre Entwicklung zu entwurfen.

*Paper presented at Thames Valley Section's Vehicle refinishing seminar held on 22 October 1981.

Introduction

The automotive refinish market can be considered to comprise the demand for vehicle paints that does not derive directly from original vehicle manufacturers. It consists of two major segments: car finishes and commercial vehicle finishes, although of course there is some interaction between them.

Demand in the car sector is dependent on two major parameters, the number of traffic accidents involving body-work damage to cars, and the level of refurbishment of cars in use. To date, the latter factor appears to have been largely dependent on activity in the second hand car market which in turn is dependent on new car registrations. The relative importance of these two parameters changes quite significantly from country to country depending on climatic conditions, national temperament, the policy of insurance companies, disposable income and the average age of the vehicle parc (vehicle population).

The commercial vehicle sector, whilst being dependent on accident repair and refurbishment, has an additional demand in that many new vehicles, particularly large vehicles, require an additional finish in company livery that is not satisfied by the original manufacturer.

To keep the subject as simple as possible, however, it is my intention to concentrate mainly on the car sector.

Market structure

Demand for automotive refinish paint throughout Europe derives from a highly fragmented market of spray shops, the geographical density of which tends to follow the variations in population density. In all countries the market is poorly defined in terms of published quantitative information, particularly from official sources, because these establishments, even the largest, tend to be relatively small when compared with the overall distribution of industrial concerns. Hence, suppliers find it necessary to depend to a very large extent on their own market research and market intelligence to build up a view of the market structure, product usage and competitive activity. For example, our current estimate of the UK market, places the total number of spray shops at about 22,000 with an average of between three and four employees per establishment. Of these, only some 3,000, less than 15 per cent, are members of the Vehicle Builders and Repairers Association (VBRA).

The very nature of the business dictates that a high degree of concentration is unlikely, but the UK market does appear to have a larger proportion of very small spray shops than the majority of European countries.

The concentration process began in Europe during the period of high growth of the industry during the late 60s and early 70s. At this time the more ambitious companies were prepared to invest in spray booths and low bake ovens to improve the quality of their work and the speed of throughput. In addition, in many countries official or quasi official regulatory circumstances have made it more difficult for "unqualified" persons to set up in business than in the UK, though of course backyard "moonlighters" exist in all markets.

To satisfy the fragmented demand there is a requirement for a complex distribution network in all countries.

In the UK, the majority of refinishing paint distributors are small independent businesses, although a few important chains of national and regional distributors do exist. The important characteristic, however, is that the majority of these outlets are in business to service the automotive trade and also supply other materials and tools, in addition to paint for accident repair and refurbishing.

In certain other markets, Italy for example, the converse is found, with distributors being primarily paint specialists and servicing the decorative, building and automotive sectors. In these instances, materials and tools not strictly related to paint and its application tend to be serviced through alternative distribution channels.

The fragmented nature of the market is also carried through into product demand, primarily as a result of colour. At this time, there are well over 5,000 car colours, excluding variants, represented on the UK market; a number which has risen dramatically over recent years, partly due to the increased share of the market taken by imported vehicles and partly due to fashion trends.

For example, in the late 50s, the principle motor manufacturers, all UK based, carried considerably less than 100 current colours. By the late 60s/early 70s the number had risen to over 200 with overseas manufacturers starting to make their impression with around a quarter of the colour introductions. In 1980 nearly 600 new colours were recorded from 32 principal manufacturers, with overseas interests representing nearly three-quarters of the total.

This explosion in the number of colours has created considerable pressure at all levels on the refinishing business. At one time it was possible to service the market effectively with factory mixed colour. The rapid increase in the number of colours, however, carried implications of massive and unacceptable increases in stockholding for manufacturers and distributors alike. The result was the development of "mixing schemes" by paint manufacturers to allow colours to be mixed at the point of demand from formulations and standardised tinters.

The volume of colour required for any refinishing paint job on a car, even a complete respray, is small. Small paint shops cannot justify the capital expenditure required to install a mixing scheme.

The result is a highly diverse order pattern placed on distributors, with each order being of small volume. In addition, intense competition between distributors gives rise to a high level of service, with twice-daily deliveries being the norm in many urban areas.

In the European markets, however, the average size of workshop has meant that investment in a mixing scheme has been easier to justify and hence the level of penetration is much greater. This in turn has yielded increases in productivity and relative profitability.

Under these circumstances distribution takes on a different pattern. End-users tend to purchase more from a single supplier and these purchases are more routine, based on "topping up" for tinters in the same way as with primers, thinners etc. Gone is the need for a specific colour purchase for each vehicle processed. As a result, service levels can be reduced whilst still retaining customer satisfaction.

The other area of major capital expenditure in the paint shop is in a spray booth/low bake facility. The difference in this area between the UK and other markets is even more dramatic than with mixing schemes. Even amongst VBRA members, penetration today is still only 16 per cent, whereas in say Austria or Switzerland the level of penetration is over 80 per cent.

This situation has had, in turn, a dramatic effect on the ability of the refinishing industry to take full advantage of the major developments in refinishing paint technology that occurred in the 1970s, principally the introduction of products based on or incorporating two-pack acrylic materials.

The particular advantages of two-packs are that overall they need less time to complete the job (particularly when low baked), and fewer coats are required due to their better build and opacity. Other advantages seen by the final customer are their better gloss and durability. However, to work with them safely and efficiently, good dust-free spray booths and effective protection of the operator through the use of airline breathing apparatus are required.

Another major development in refinishing topcoats has been the rapid increase in recent years of clear-over-base (COB) metallic systems. In order to obtain a good match in colour and appearance on cars originally finished in this way, refinishers are obliged to also apply a special metallic basecoat followed by a coat of clear lacquer. By the end of the decade it is predicted that this system will have almost completely superseded conventional metallics throughout the vehicle parc. Today, the only type of lacquer that will provide truly adequate performance in this type of system with regard to durability and delamination is the two-pack acrylic. Is the UK market correctly positioned to satisfy the marketing pull that this represents?

In the area of primers also, two-pack acrylic materials are coming to the fore, particularly in the form of advanced technology wet-on-wet systems. By cutting out an intermediary flatting stage in the refinish process, time savings of up to 20 per cent can be achieved.

In this respect Figure 1 demonstrates the effect on productivity that the combination of a spray booth/low bake facility together with modern two-pack acrylic primer and top coat can bring to an average European workshop processing 15 cars per week, compared with the conventional cellulose system used by the majority of the UK market today.

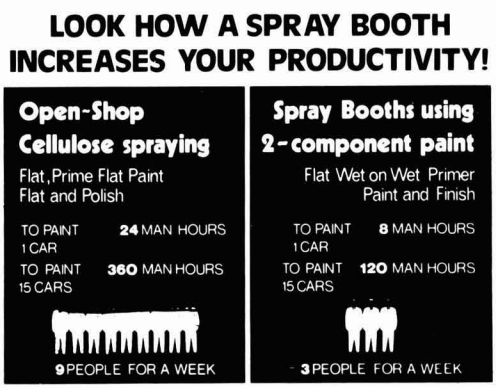

Figure 1.

The future

Which way to the future? Do the short term effects we see around Europe due to the current recession and rapid escalation in energy prices presage the market place of the future?

It is my thesis that they do and that it is beholden upon everyone in the industry to be cognizant of the pointers and to react accordingly for the future well-being of the industry.

As I mentioned earlier, one of the key underlying forces of this market is the overall size of the vehicle parc and the number of new car sales in any one year.

What of the trend for the overall European market? There is certainly no room for great optimism in the long term, with a market indicating saturation in the relatively near future at a level little more than 10 per cent greater than the market today.

This, however, is the overall picture; what about individual markets within Europe? There are certainly differences, but the overall message is that growth is slowing down.

The short term prognosis for the UK is rather better than the average, with one significant component of growth today and tomorrow being multiple car ownership.

Perhaps we should look at Sweden as a possible model for the future. The level of car ownership in Sweden today is certainly the highest in Europe, and the indications are that saturation has already occurred. How has the market reacted?

Firstly, due to the high cost of labour in Sweden, a situation that has existed for many years, concentration in the automotive refinishing market has probably progressed further than elsewhere.

Capital expenditure has been high and in many places one finds that painting is carried out in specialist facilities, often quite separate from the body shop, to increase the throughput to a level sufficient to justify the investment.

This reduction in the number of spray shops, however, has given the insurance companies the opportunity to increase their level of control. To operate profitably with insurance work, painting operations have to be very efficient. It was this market that gave birth, with the direct involvement of the insurers, to the new two-pack acrylic, non-sand sealers discussed earlier.

Pressure is also placed on suppliers in such an environment. The luxury of the small independent distributor offering a high level of service is being sacrificed owing to market forces which demand lower prices. The only way this can be effectively achieved is by lower levels of service through direct supply, particularly to the larger users, which encourages even greater concentration.

Demand has also been reduced as a result of a reduction in kilometers driven and lower speeds leading to a lower level of accidents; a situation which the last round of oil price increases appears to have also brought to the UK. The marketing response of suppliers, both paint manufacturers and body shops, has been to attempt to stimulate greater demand from the consumer in terms of both refurbishment and customisation. Greater emphasis is also being placed on upgrading materials usage in the commercial vehicle sector, as this segment is seen to have preferential growth potential, at least in the short to medium term.

For customer companies, image is also important and as livery design becomes more sophisticated, metallics (conventional and COB) are increasing in importance for both trucks and buses.

These are classical characteristics of the mature market, where the maturity stage can be divided into three phases.

1. *Growth maturity* – total sales continue to grow slowly because of some late buyers entering the market, i.e. multiple car ownership by the family.
2. *Stable maturity* (saturation) – sales consisting almost entirely of replacement demand – Sweden is an example of this today.
3. *Decaying maturity* – the absolute level of demand declines as customers move towards other products or substitutes.

Our markets have not yet reached this third phase, but the first signs are being signalled, and the decay of the refinishing paint market as we know it today will probably commence due to the growing use of plastics in car construction.

Peugeot have publicly announced that by 1985, they expect 40 per cent of the exterior body shell to be plastic.

Renault and the Fiat group are also heavily involved in rapidly increasing the plastics content of their cars. So are British Leyland. The pressure is on – the marketing pull again – to develop the 100 mpg production family car.

Renault launched the Renault 5 Turbo at the 1981 Frankfurt Motor Show – on this car the only panels in steel were the doors! This specialist sports model is effectively a test bed in the market to gain experience for volume penetration of the future.

Fiat already use 15 per cent by weight of plastic in their cars: more than any other European manufacturer. In their new experimental VSS car the percentage has been increased to 26.2. The basis of the car's construction is a zinc coated passenger cage to which the plastic components are either bonded or bolted.

The implications for the refinisher and body shop of these developments – even though we will probably not see them in volume for five years or more – are enormous. Improved corrosion resistance and increased resistance to accident damage are bound to come hand in hand with these developments. For example, the front end of the Fiat car is constructed in polycarbonate which they claim will deform in the event of limited impact without incurring permanent damage.

However, that is the future (the decline stage when substitute products are chosen); what of today, when we have reached the latter stages of growth maturity and are entering the saturation phase?

Already, the paint companies are seeking to stimulate the growth in demand by advertising campaigns concentrating on increasing the size of the refinishing market.

Other classic moves are the trade deals, gifts and contests that we see beginning to develop more and more. The struggle is on for market share to ensure long term survival. Again, another almost inevitable development in markets in the mature and post mature phase is a reduction in the number of suppliers.

Conclusion

In conclusion, therefore, I return to my original thesis of know your market and the probable implications of technology push and marketing pull forces to develop your strategy.

Will you be prepared for your companies to have minimum growth in the future followed by stagnation and decline in line with the industry at large, or will you strive to develop your positions through adaptation of your own technological stance?

Let's be honest. How many of you have really thought beyond the situation of today to consider where you should be in five years and what you will need to do to still be in business? Have you talked to your paint suppliers on how you will tackle the consumers' needs of the future? Or, are you saying, like most of the industry in this country seems to be saying, "we will meet the problem when it comes"? Please think now, that time might be too late!

Of one thing I am sure, the industrial structure and product usage of today are unlikely to provide the best solutions to problems of the future.

In my own company we spend considerable time and effort on market research, in listing the pluses and minuses of our competitors – products, processes, people, etc. – and in assessing the technological developments of our industry and the future needs of our customers, because we certainly intend to be one of the survivors.

If you intend to be there too, all I can counsel is to make sure you are well informed, analyse your position, develop a strategy and take appropriate action.

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Living with lead legislation*

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Summary

The reasons for the recent enactment of the Control of Lead at Work Regulations will be discussed and the extent to which these regulations affect the paint industry will be highlighted. Surveys of the airborne lead in the work place have been made and the results will be discussed in relation to the assessments required under Regulation 4 of the Control of Lead at Work Regulations.

Keywords

Raw materials for coatings
prime pigments and dyes
lead pigment
driers
lead drier
Equipment primarily associated with
manufacturing or synthesis
dust collector
Processes and methods primarily associated with
application of coatings and allied products
spraying
Properties, characteristics and conditions primarily associated with
the environment
industrial atmosphere
Specifications, standards and regulations
government specifications
Miscellaneous
health and safety
paint manufacture
lead pollution

Comment faire face à la législation sur le contrôle de plomb

Résumé

Les raisons pour l'adoption tout récente des Control of Lead at Work Regulations (règlements sur la concentration permissible de plomb à l'atmosphère au pied d'oeuvre), seront discutees et la significance de ces règlements à l'égard de l'industrie de peintures sera soulignée. On a fait des sondages de la concentration de plomb présente en l'atmosphère des ateliers et les résultats seront discutés par rapport aux mesures exigées par le Règlement 4 des Control of Lead at Work Regulations.

Wie man mit der Verordnung über die atmosphärische Bleikonzentration zu Rande kommen kann

Zusammenfassung

Die Gründe zu der neuen Einführung der Control of Lead at Work Regulations (Verordnung über die Kontrolle der atmosphärischen Bleikonzentration in Werkstätte), werden diskutiret werden, und der Umfang der Wirkung auf die Lackindustrie dieser Verordnungen wird betont werden. Bestimmungen der in der Werkstättatmosphäre vorkommende Bleikonzentration durchgeführt worden sind und die Resultate werden in Bezug den unter der Verordnung 4 der Control of Lead at Work Regulations verlangten Messungen diskutiert werden.

Introduction

The most recent legislation on lead to be introduced is the Control of Lead at Work Regulations 1980.

When any new legislation is introduced the natural reaction is to wonder why it is necessary to clamp down on these particular compounds, and it raises the question of whether to stop using them. There has been no reduction in threshold limit values for lead compounds – or as they are now called lead-in-air standards. The regulations do in fact tidy up the jungle of legislation which has arisen since 1903. Many of the older regulations dealing with specific industries were outdated and have been revoked. The new regulations have been designed to cover all lead workers in Great Britain.

The problem with lead compounds is that they are

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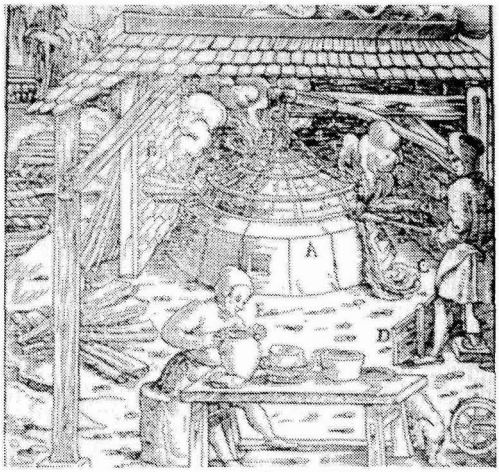


Figure 1. Agricola woodprint

potentially toxic if ingested, and this point has been known for a very long time.

In Figure 1 the woodprint made in 1556 illustrates the advice given to lead-workers by the earliest physicians to eat lots of fatty foods and butter.

For many centuries the daily diet was considerably contaminated with lead from both vessels used in food preparation and by the practice of adulterating food with lead. Lead compounds were used to give colour and flavour to food and drink. Examples of these are given in Table 1.

Today most industrialised countries have legislation to prevent the addition of lead compounds to food, but even so the diet is responsible for 90 per cent of man's intake of lead!

The lead industry is still a significant industry as can be seen from the statistics in Table 2 for the production of refined lead. Table 3 shows the uses of this refined lead in the UK.

It is believed that some 15,000 workers in the UK are involved in lead processes and operations using lead compounds, although not all are exposed to occupationally significant levels of lead. This widespread use of lead resulted in industrial lead poisoning becoming a serious cause of ill-health and notifiable cases are well documented. The cases of lead poisoning since 1971 are shown in Table 4.

Table 1

Contamination of foodstuffs by lead

Lead from pipes	– Contaminated cider and rum	1702
Lead oxide	– Sweetening wine	1820
Lead oxide	– Colouring cheese	1820
Black lead	– Food colouring	1848
Lead chromate	– Colouring mustard and snuff	1855
Lead carbonate and lead acetate	– Colouring cakes and sweets	1855

Table 2

Refined lead production in 1977

	Thousand tonnes
World total	4436
Europe	1380
United Kingdon	241

Table 3

UK uses of lead in 1977

	Thousand tonnes
Batteries	68
Lead tetraethyl	55
Sheet and pipe	47
Cables	31
Lead chromate	5
White lead	2

Table 4

Notifiable industrial diseases in the UK

	1971	1973	1975	1977
Notifiable industrial diseases	324	214	166	177
Cases of lead poisoning	123	59	27	12

It is interesting to note that the incidence of lead poisoning is now relatively small and most of these cases occur in demolition and scrap metal recovery industries. Over the last decade there have been only isolated cases of lead poisoning in the paint industry.

Nevertheless, lead compounds have a potential toxicity and industry therefore has a responsibility to ensure the safety of its workforce. The concept of safety is appealing but elusive. In this world there is probably no substance – not even water – that is absolutely safe; there are only degrees of risk. Experience with cigarettes and car seat belts shows that warnings and exhortations of hazards have little effect, and so legislation has been introduced in an attempt to minimise personal exposure. Table 5 shows the current UK legislation.

Table 5

UK legislation

Health and Safety at Work etc. Act 1974
SI 1978 No. 209 Labelling of Dangerous Substances 1978
SI 1980 No. 1248 Control of Lead at Work Regulations 1980

The aim of the Control of Lead at Work Regulations is to ensure that a thorough assessment of the risks of exposure to lead is carried out on a continuous basis and that, if necessary, relevant precautions or control measures are adopted. At the very least, even where exposure to lead is insignificant compliance will involve the demonstration that this is the case.

Lead is used quite widely in the paint industry. Litharge,

for example, is a catalyst in varnish manufacture, lead naphthenate is still widely used as a drier. There are numerous lead pigments ranging from the very soluble red lead and white lead, to calcium plumbate and lead silicates and the insoluble lead chromes.

These compounds can present a potential toxic hazard due to their chemical or physical form and this point cannot be over-stressed. Soluble lead compounds such as lead naphthenate can be absorbed through the skin. Likewise, animal tests have shown that on ingestion the extent of lead absorbed was found to depend on the soluble lead content; white lead being more hazardous than insoluble lead pigments.

The particle size of lead pigments is also clearly important. If fine dust particles of known diameter are allowed to fall in the air their settling rate can be measured, as shown in Table 6. The larger particles will fall quite rapidly.

Table 6

Settling rates

Particle diameter (μm)	Rate of fall in air (m/sec)
500	3
100	3×10^{-1}
50	75×10^{-3}
10	3×10^{-3}
5	75×10^{-5}
1	36×10^{-6}
0.5	10×10^{-6}
0.1	36×10^{-8}

Fine dust particles in the respirable size range of 2-8 μm do not fall in air; the slightest air currents will prevent the particles settling. It is therefore sensible to identify any procedure liable to give rise to dust clouds, which could create a potential hazard.

Every effort must be made to reduce occupational lead poisoning and as knowledge increases more attention has been given to blood lead levels. For a variety of reasons there is little definitive information which directly indicates the suitability of a given lead-in-air standard, but there is much experience to show that absorption of lead in amounts resulting in blood lead concentrations below 80 μg/100 ml will not lead to adverse effects to health. Figure 2 shows how the blood level increases with increasing lead-in-air values.

Data obtained in an electric accumulator factory showed that 0.15 mg/m³ of lead in air correlated with a mean blood lead level of 60 μg/dl. This level of lead in air has been laid down as the standard in the new regulations.

To answer the question: "to what extent will these regulations affect the paint industry?" a lead-in-air survey of four companies was carried out. The object was to ascertain what airborne lead levels were generated during the various processes and procedures used in making and applying paint. These levels must be considered in relation to the current lead-in-air standard of 0.15 mg/m³.

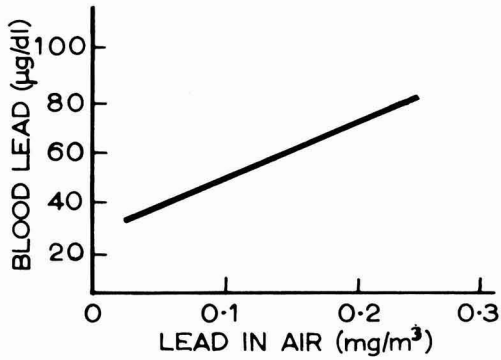


Figure 2.

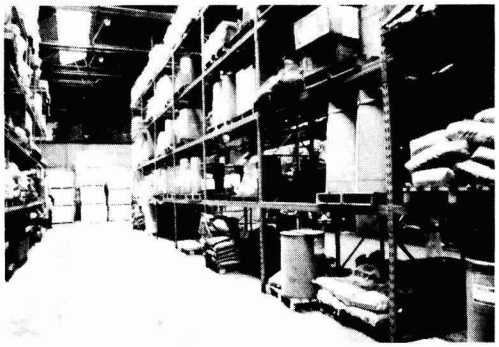


Figure 3. Warehouse

The warehouse (Figure 3) or raw material store is the obvious starting point. Static tests were carried out at four companies and the results are given in Table 7.

Table 7

Warehouse activities

Warehouse activities	Static tests	
	Duration (mins)	Pb (mg/m³)
Factory A	120	0.01
	30	<0.01
Factory B	183	<0.01
	97	0.05
Factory C	375	0.008
	205	0.005
Factory D	133	<0.001
	133	<0.001

The warehouse activities involved assembling the bags of pigment and weighing out pigment into other containers. In all cases there was some local air extraction and the airborne lead levels were generally found to be very low.

Figure 4. Vented weighbooth

Figure 4 shows an excellent design of weighbooth which was recently installed to meet the demands of the HSE inspectorate.

The movement of bags of pigment or open pigment containers can create dust clouds, and so the concentration of lead in the air was measured around fork-lift truck operators who are often employed to transport pigment from one location to another. Typical measurements are given in Table 8.

Table 8

Internal transport

Internal transport	Static tests	
	Duration (mins)	Pb (mg/m³)
Factory A	15	0.10
Factory B	21	0.13
Factory C	36	0.37
	129	0.03
Factory D	49	0.06

Some of these tests showed quite high levels of lead, albeit over a rather short period of time. Nevertheless, it highlights one source of lead dust generation.

Another inevitable source of dust generation occurs when sacks of pigment are emptied into mills or mixers, and clearly local extraction produces beneficial results. Rather than measure only the initial dust cloud, the whole operation of charging pigment into mills was measured. Personal and static tests were used as shown in Table 9.

Relatively low levels of lead in air were recorded in all these activities. However, when emptying sacks of pigment it is inevitable that the operator gets contaminated, either on his clothing or in his hair. It was interesting, therefore, to measure the lead levels during activities subsequent to handling the pigment and Table 10 shows these readings.

Once again it is found that the airborne lead levels are very low, in some cases not detectable once the operator is removed from direct contact with the dry pigment.

Table 9

Charging mixers and mills

Charging mixers and mills	Personal tests		Static tests	
	Duration (mins)	Pb (mg/m³)	Duration (mins)	Pb (mg/m³)
Pug mill	70	0.01	80	<0.01
High speed disperser	25	<0.01	111	<0.01
High speed disperser	96	<0.01		
Paddle stirrer	17	<0.01	21	0.05
Paddle stirrer	44	0.07	21	0.05
Paddle stirrer			209	0.01

Table 10

Subsequent activity

Charging mixtures and mills	Personal tests		Static tests	
	Duration (mins)	Pb (mg/m³)	Duration (mins)	Pb (mg/m³)
High speed disperser	18	<0.01	19	0.02
Subsequent activity	38	0.01	232	<0.01
Ball mill	11	0.284	22	0.006
Subsequent activity	238	ND		
Ball mill	13	0.120	96	0.003
Subsequent activity	72	0.023		

ND = Not detectable

Figure 5. Charging high speed dispersers

While on the subject of loading mills, Figure 5 shows a very good arrangement for local extraction over a high speed disperser. This has the benefit that dust and solvent are drawn away from the operator.

In summary it can be said that the measurements confirm that the dry pigment handling side should not produce significant levels of lead in air provided reasonable care is taken. Although high short-term levels are recorded when emptying sacks etc., the eight-hour time weighed average generally gives results below 0.075 mg/m³. In other words these particular processes may be

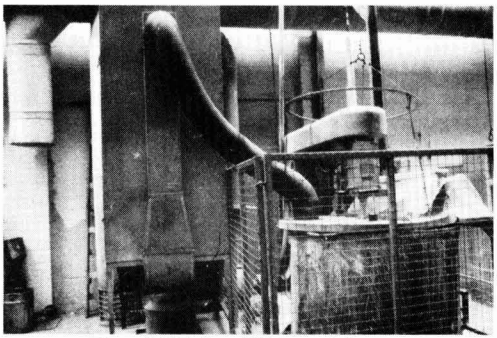


Figure 6. Sideview of high speed disperser

regarded as involving insignificant exposure for the purposes of the Control of Lead at Work Regulations.

Extensive data on blood lead levels have recently been acquired for the workforce of one particular large paint factory. The blood levels ranged from 14 μg/dl for a warehouse man to 36 μg/dl for a ball mill loader and again provides confirmation that the hazard from using lead-based paint raw materials is insignificant.

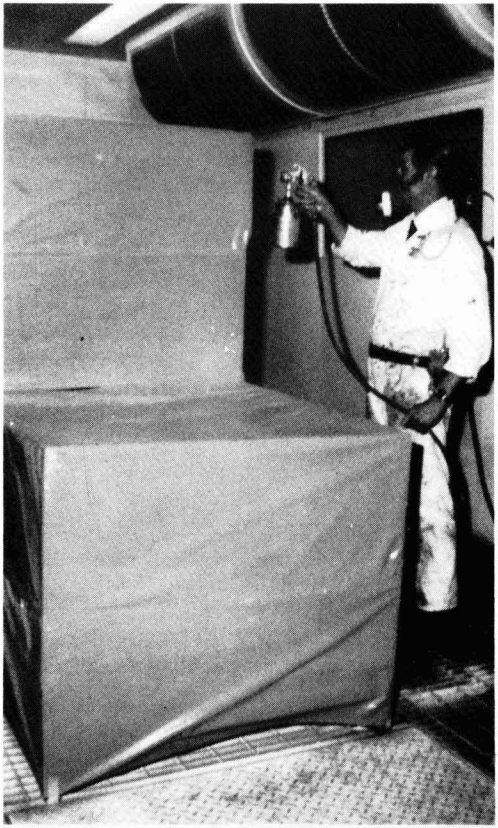


Figure 7. Vehicle mock-up

This leads to another interesting area; that of spray application of lead-based paint. If the quality control laboratory or indeed paint users apply the paint by spray they inevitably generate airborne lead. In order to simulate typical conditions which might occur say in vehicle paint application, we built a vehicle (Figure 7) and then measured lead-in-air levels while different paints were applied. These measurements are given in tables 11 and 12.

Table 11

Paint spraying in water-wash booth	Personal tests		Static tests	
	Duration (mins)	Pb (mg/m^3)	Duration (mins)	Pb (mg/m^3)
Preactivity			92	0.0002
			92	0.0008
"Lead-free" paint (operator A)	29	0.080	35	0.005
			35	0.010
Subsequent activity	44	0.013	26	ND
			26	ND

ND = Not detectable

The preactivity in Table 11 refers to the ambient atmosphere prior to any spraying. The so-called "lead-free" paint was a decorative gloss finish containing only lead naphthenate driers. This paint generated a significant amount of lead during the actual spraying operation, but the extraction rapidly reduced this figure when spraying ceased.

Table 12

Paint spraying in water-wash booth	Personal tests		Static tests	
	Duration (mins)	Pb (mg/m^3)	Duration (mins)	Pb (mg/m^3)
"High-lead" paint (operator A)	32	0.232	36	0.012
			36	0.013
"High-lead" paint (operator B)	37	0.420	37	0.019
			37	0.019
Subsequent activity (operator B)	175	ND		

ND = Not detectable

Vehicle refinish paints based on lead chromate were then applied by two different operators. A personal monitor on operator "A" revealed a lead-in-air level of 0.232 mg/m^3. Operator "B" spraying the same paint produced a lead level nearly twice as high. The reason for this difference could easily be seen. Operator "B" was a less skilled paint sprayer, who stood in closer proximity to the vehicle thereby encountering more spray-back from the vertical panels. The static tests support these results but also demonstrate the effectiveness of the extraction system of the water-wash booth. Personal tests on operator "B" showed again that once spraying ceased the potential hazard also ceased.

These tests during spray application are interesting for two reasons. Firstly, they demonstrate that the lead-in-air values are dependent on the total lead content of the paint, the volume of paint sprayed in a given time, the type of

spray equipment and the operator's skill together with the efficiency of the extraction system.

Secondly, preliminary data on blood lead values of spray operators suggest that the presence of a high lead-paint-in-air concentration does not produce high blood lead levels. Although only data from two companies are available so far, it appears that when lead chrome pigments are encapsulated in resin they are less easily absorbed by the body. The author would be very interested to hear whether anyone else has found low blood lead figures for paint spray operatives.

Although paint manufacture is likely to be regarded as involving insignificant exposure to lead, it still comes within the scope of the regulations and so an assessment must be carried out, as laid down in Regulation 4. The Code of Practice gives very useful guidance on the interpretation of these regulations and clearly indicates which of the regulations will apply.

Table 13

Non-significant exposure

Non-significant exposure (<0.075 mg/m^3 as Pb)
Reg. 3 – Non-company employees
Reg. 5 – Information and training
Reg. 9a – Washing facilities
Reg. 10 – Eating, drinking, smoking
Reg. 11 – Cleaning
Reg. 12 – Spread of contamination

If exposure is regarded as insignificant the regulations listed in tables 13 and 14 will apply.

Regulation 3 states that an employer has a duty to protect not only his own employees but any other people involved with lead work on that site.

Regulation 5 says the employer shall ensure his employees are given adequate information and training as to the risks involved and the precautions which should be observed.

Regulation 9a indicates that washing facilities must be available for all workers dealing with lead compounds. The Code of Practice indicates the number and size of wash basins etc.

The object of Regulation 10 is to reduce the risk of ingestion of lead by ensuring that employees do not eat, drink or smoke in places contaminated by lead.

Regulation 11 states that the employer shall take adequate steps to ensure the workplace is clean, and this covers a wide number of items from protective clothing to respiratory protective equipment, to washrooms and canteens. The code suggests the use of mobile vacuum cleaners rather than brushes for removing lead dust.

Regulation 12 advocates the virtue of containing the lead dust problem at source and preventing any spread of the hazard, whether it be as a water-borne emission or simply by ensuring contaminated clothing is left at work.

Table 14

Additional regulations

Non-significant exposure additional regulations
Reg. 6 – Control measures
Reg. 13 – Use of control measures
Reg. 14 – Maintenance of controls
Reg. 17 – Record keeping

In addition, Regulation 6 indicates that control measures should be introduced to ensure that lead-in-air concentrations do not exceed the lead-in-air standard. This regulation is important as it implies that it is essential to contain the hazard by enclosing vessels and using local extraction. It is quite unsatisfactory to simply supply respiratory protective equipment to the workforce and assume the responsibility has been shifted to them.

Regulation 13 places a duty on employees to make full use of the control measures and to report any defects in them.

Regulation 14 states that the employer must ensure the control measures are maintained in an efficient state.

Regulation 17 places a duty on employers to maintain adequate records for at least two years on all assessments relating to personnel, equipment and monitoring, etc.

Table 15

Significant exposure

Significant exposure (0.075-0.15 mg/m^3 as Pb)
Reg. 8 – Protective clothing
Reg. 9b – Changing facilities
Reg. 15 – Air monitoring
Reg. 16 – Medical surveillance

It has been indicated that it is unlikely that personnel employed in paint manufacture will be classified as having significant exposure *en bloc*. However, it could happen that individual workers such as those employed in paint spraying for long periods of time may have significant exposure. For those individuals, Table 15 lists the regulations that would apply.

Regulation 8 – protective clothing. In many cases protective overalls will be adequate, but gloves and hats may be of benefit in very dusty operations.

Regulation 9b – adequate changing facilities. Lockers for clean clothing and separate storage for contaminated clothing are required.

Regulation 15 on air monitoring and

Regulation 16 on medical surveillance state that if employees are exposed to significant amounts of lead, their exposure must be monitored at specified intervals.

For exposure above the lead-in-air standard (>0.15 mg/m^3 as Pb), Regulation 7 on respiratory protective equipment will apply.

This Regulation 7 applies to those workers who are exposed to lead concentrations in excess of the lead-in-air standard. The objective of employers should of course be to reduce lead-in-air levels by means of control measures, but in certain cases, e.g. plant breakdowns or cleaning of bag filters, etc., there will be times when lead-in-air levels are high. Respiratory protective equipment should be provided in these cases, and arrangements must be made to clean and maintain them properly.

It has been mentioned that the objective is to reduce lead-in-air levels and one method involves the use of a mobile extraction unit, as shown in figures 8-11.

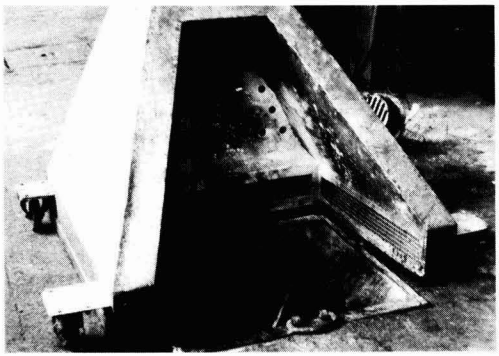


Figure 8. Front view

This unit has given excellent results when placed around ball mill loading chutes. The dust cloud is drawn away from the man and through the flexible ducting to the bag filters.

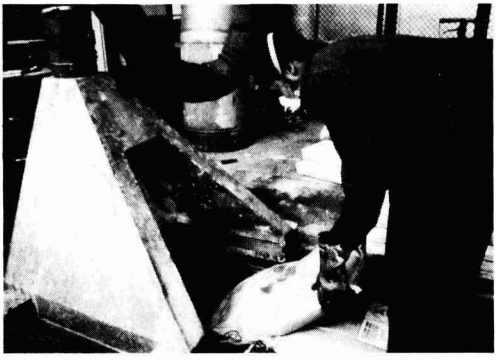


Figure 9. Loading ball mill

After loading the mill the unit can be disconnected for use in another location.

Briefly, Regulation 4 of the Control of Lead at Work Regulations states that "where any work may expose persons to lead ... the employer ... shall assess that work to determine the nature and degree of the exposure to lead."

With regard to this regulation, it is the employers' duty

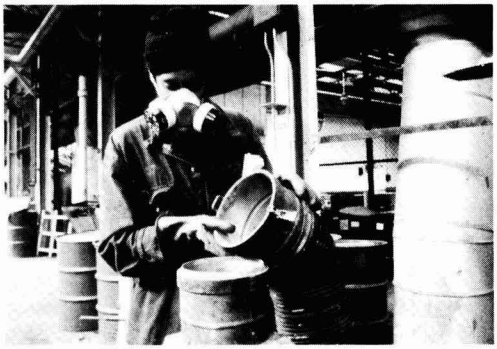


Figure 10. Disconnection

to produce a written assessment of the actual hazard to personnel on the site and this is not as difficult as it first appears. In order to carry out the assessment, one has to ask what lead compounds are in use and in what daily quantities. The physical form and solubility of the lead compound is clearly important. The location of the hazard will usually indicate which personnel are most at risk. One important factor often neglected is the period of exposure to the hazard, but this is all-important as the lead-in-air standard is expressed as an average concentration over an eight-hour day. Many activities such as loading mills and spraying test panels usually involve only short periods of time.

Air monitoring need not be carried out at the initial assessment if exposure to lead can be accepted as significant or insignificant on the basis of guidance given in the Code of Practice. Paragraphs 13 and 14 of the code are of particular relevance to the paint industry, quoting examples of work associated with lead where there is liable to be insignificant exposure to lead. They include manufacture of paints involving low soluble lead compounds, and spraying of paint with less than 5 per cent soluble lead.

Other factors of relevance to the assessment are past records of atmospheric measurements on site and of medical surveillance.

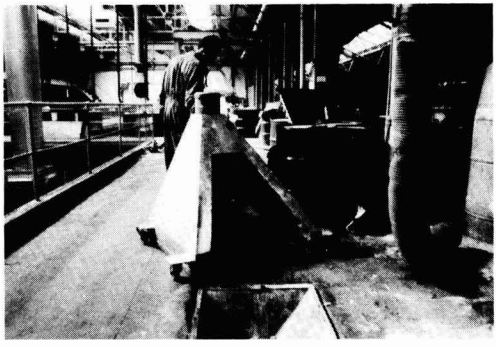


Figure 11. Removal of Unit

Conclusion

It is the author's view that having visited many paint companies to carry out lead-in-air measurements, there is very little hazard from lead compounds provided sensible precautions are adopted and good industrial hygiene is observed. The low incidence of lead poisoning proves this point.

Acknowledgements

The author wishes to thank Berger Paints and International Paints PLC, Industrial Coatings Division, for their assistance in making facilities available and giving their permission to use the results, and gratefully acknowledges the assistance of Mr F. A. Chapman, Hygienist of ICI PLC Organics Division.

[Received 22 October 1981

Appendix

Manufacturers and users of lead chrome paints might like to know that a booklet entitled "Lead Chrome Paints – The Facts" is now available. This booklet contains practical guidance on the implications of recent legislation and provides factual information that will enable lead chrome pigments and paints to be handled in a safe manner.

Copies of this free booklet are available on request from: Mr R. G. Handley, Publicity Department, ICI PLC Organics Division, PO Box 42, Blackley, Manchester M9 3DA.

Next month's issue

The Honorary Editor has accepted the following papers for publication. They are expected to appear in the October issue:

Dispersion – the neglected parameter *by W. Carr*

Refinishing today – legislation, implied and statutory *by K. P. Kozma*

PMR spectra of vinyl monomers based on undecanoic acid *by A. V. B. Sankaram, N. G. Kulkarni, N. Krishnamurti and P. C. Chatterjee*

Styrene copolymerisation of isomerised tobaccoseed (Nicotiana tobacum) oil and its alkyd *by M. S. Saxena, P. K. Jain and A. K. Vasishtha*

Radiation polymerisation as a tool for the surface coatings industry *by J. L. Garnett*

Further information on any of the publications reviewed may be obtained by circling the appropriate *Reader Enquiry Service* number on the form at the back of the *Journal*. Enquiries will be forwarded to the publisher.

reviews

Modern Coating Technology. Radiation Curing, Electrostatic, Plasma and Laser Methods

Edited by C. Colbert
Noyes Data Corporation, New Jersey
pp. xi + 317, 1 March 1982, US $48

This compilation of US patent data is publication No. 201 in the well-known Chemical Technology Review Series, and is based on an interesting concept. The sole source of data is US patent applications.

The value of the book will therefore depend very much on the degree of specialist knowledge that is required. For any organisation that is starting work in these areas, it could provide a valuable data-source of very recent industrial activities, but organisations already active in this area are not likely to derive much benefit. Furthermore, the restriction to US patents over an 18 month period, and the exclusion of European and Japanese sources, restricts the value and prevents the book from being the comprehensive source of data that active workers require.

Despite these provisos, the data are well presented, devoid of the jargon and fluff that so often obscure patent applications and certainly much more assimilable than a normal patent.

Chapters are presented as firstly the main chemical types, e.g. urethane acrylate, acrylics and epoxy resins, secondly on applications to various substrates, e.g. glass, plastics, paper, textiles, and thirdly on application and coating methods, e.g. electrostatic coatings, plasma and laser techniques, vapour deposition and metal coatings. There are useful short indexes by company, by inventor, and by patent number, but not by chemical. The book is well bound (hardback) and very clearly printed, and the editor and publisher are to be congratulated on a first class job in selecting, processing and publishing the data so quickly.

To use the terminology of *Which*, this book is "Good but Pricey", and can be recommended to any organisation keenly interested in radiation curing and related techniques, needing an additional synopsis of the US state of the art, and which has US$48 left in its budget.

Reader Enquiry Service No. 21 — *L. Valentine*

Surface Analysis Pretreatment of Plastics & Metals

B. M. Brewis
Applied Science Publishers Ltd, London and New Jersey
pp. 268 + XVI, price £24

D. M. Brewis has collected a series of ten independent papers on surface analysis of treatments on metals, polyolefins and polytetrafluorethylene.

Analytical techniques described include auger x-ray photoelectron spectroscopy, optical and electron microscopy, ion spectroscopy and the chemical analysis of polymer surfaces. The metals treatments are those for aluminium and steel.

The object is to give the technologist an appreciation of the methods available for achieving the satisfactory bonding of surfaces by adhesives, and in this context fully justifies the criterion.

To complete the book there are chapters on theories of adhesion and the thermodynamics of wetting.

This is a very informative book with an academic bias, but will be of considerable use to all engaged in the field of analysis and adhesives.

Reader Enquiry Service No. 22 — *D. S. Newton*

Further information on any items mentioned below may be obtained by circling the appropriate *Reader Enquiry Service* number on the form at the back of the *Journal*. Enquiries will be forwarded to the organisation concerned.

news

Scott Bader acquisition of SRL completed

The Scott Bader Group has announced that its acquisition of Synthetic Resins Ltd (SRL) has been completed.

The acquisition of SRL, Scott Bader says, makes it the leading manufacturer and supplier of surface coatings products in the UK, particularly to the paint and printing ink markets.

SRL was previously a wholly-owned subsidiary of Unilever plc when the possibility of the deal was first announced eight months ago, Scott Bader was to take over the working capital of SRL and pay £1m for the fixed assets of the company.

Reader Enquiry Service No. 31

CIL consolidates

Compounding Ingredients Ltd (CIL) has consolidated all its activities at its production headquarters near Preston, Lancashire. The full address is Unit 217, Walton Summit Centre, Bamber Bridge, Preston PR5 8AL, Tel: 0772 322888, Telex: 677621 CIL G.

CIL set up its 30,000 sq ft manufacturing facility at Walton Summit in 1977 since when the number of products manufactured in-house has risen to over 90 per cent of all goods sold by CIL.

Consolidation of the whole CIL operation under one roof is also said to provide a springboard for expansion plans to be implemented during the 1980s in production and development areas.

CIL has an annual turnover in excess of £2 million.

Reader Enquiry Service No. 32

news

The oldest Perkin-Elmer instrument

As part of the celebrations to mark Perkin-Elmer's 25th anniversary of manufacturing analytical instruments at Beaconsfield, the company is organising a competition to find the oldest operational Perkin-Elmer instrument in the UK.

The owner of the oldest instrument still in regular use will have it replaced by its modern Perkin-Elmer equivalent plus three years' warranty free of charge.

To obtain an entry form and further details of the competition contact: Department 968, Perkin-Elmer Ltd, Post Office Lane, Beaconsfield, Buckinghamshire HP9 1QA, Tel: 04946 6161.
Reader Enquiry Service No. 33

ICI expansion in colours

ICI says it plans to strengthen its position as a world supplier of dyes, pigments and auxiliaries through the proposed acquisition of the colours business of the French chemicals company, PCUK – Produits Chimiques Ugine Kuhlmann. Linking the biggest UK and French manufacturers of these products, this development would increase ICI Organics Division's colours sales by 50 per cent, placing ICI among the world's top four dyestuffs businesses, with an annual turnover in excess of £250 million.

Subject to approval by the French Government, to whom formal application has been made following preliminary discussions, the integration of the two colours businesses would start as soon as possible. Employee representatives on both companies have been informed of the proposals.

With an established position in the French market through ICI France SA, this move into French colour manufacture would significantly strengthen ICI's base in Western Europe and, worldwide, would open up opportunities for strong development of export sales for the PCUK products through the ICI international selling organisation. Exports already account for 85 per cent of ICI's UK dyes production and the proposed acquisition underlines ICI's commitment to customers in the textile, paint, printing ink, plastics and other industries in 80 countries.

The effect of combining the product ranges would be to add PCUK's well-established direct, pre-metallised and chrome dyes to ICI's leading ranges of reactive, disperse and indigo dyes. Together with combined interests in vat, acid and basic dyes, the total range would enable ICI to meet the colour requirements of customers in every sector of the textile industry as well as marking ICI's re-entry into leather coloration.

In pigments, ICI's major international interests in phthalocyanine green and vat pigments, especially for the paints and car finishing industries and supported by important ranges of inorganic pigments, would be expanded by PCUK's phthalocyanine blue and azo pigments, significantly complementing ICI's product ranges for the printing ink industry.
Reader Enquiry Service No. 34

ITRI open days

This year represents the 50th anniversary of the International Tin Research Council and to mark the occasion the Institute (the Council's executive body) is holding a series of open days at Perivale from 5-8 October. Associated with these open days, a series of afternoon seminars is being held.

For further information contact: Colin J. Evans, International Tin Research Institute, Fraser Road, Perivale, Greenford, Middlesex UB6 7AQ, Tel: 01-997 4254.
Reader Enquiry Service No. 35

new products

Aluminium pretreatment

W. Canning Materials Ltd has produced a new protection and pre-paint treatment process for aluminium and aluminium alloys.

According to W. Canning: Alibond 802 produces a chromate/oxide coating on the surface of aluminium and its alloys which greatly improves the adhesion and flexibility of paint and powder finishes. It also prevents the chemical reactions between the metal and paint which sometimes cause blistering. On unpainted aluminium it provides good corrosion resistance, offering an effective, low-cost alternative to anodising or phosphating. The process is simple to operate, easy to control and can be used in either immersion or spray systems.

Developed by Canning Materials from its own chromate passivation technology, Alibond 802 is claimed to produce levels of adhesion and corrosion resistance on aluminium equal to those of phosphate coatings.

The performance characteristics of the new chromate are expected by the manufacturer to gain wide application for the product, especially in the automotive and allied industries.
Reader Enquiry Service No. 36

Instrument for measuring voltages of electrostatic equipment

150 kV fieldmill voltmeter

A battery powered instrument for the measurement of the operating voltages of electrostatic equipment is being produced by Industrial Development Bangor Ltd.

The new instrument has the ability to make measurements on both continuous (dc) and peak 50/60 Hz alternating voltages of up to 150 kV with zero current drain. The voltage hold off is well over 150 kV and the circuitry is protected to avoid the risk of damage in the event of flashover.
Reader Enquiry Service No. 37

High-gloss overlacquer

Swale Chemicals has announced production of a two-part high gloss overlacquer. The solvent and resin system is based on alcohol, which is the only solvent, and the synthetic resin system does not contain polyurethane.

The new lacquer is suitable for application by gravure, flexography and varnisher with suitable drying facilities. It has been developed for use in printing systems which are capable of achieving a substrate temperature of 70°C for varnishers and 85°C for gravure and flexography, a lower temperature range than is normally possible with coatings exhibiting a similar degree of high gloss.
Reader Enquiry Service No. 38

New socket ball valve

Vale Engineering Ltd is manufacturing a new stainless steel socket ball valve specifically for the paint and chemical industries. Claimed to be one of the cheapest on the market and based on a straightforward design concept, the valve minimises collection pockets which can lead to the contamination of product.

The new valve has pressure ratings of up to 70 bar for most applications, including liquids, gases, steam, powders and granules, and 100 bar under certain operating conditions.
Reader Enquiry Service No. 39

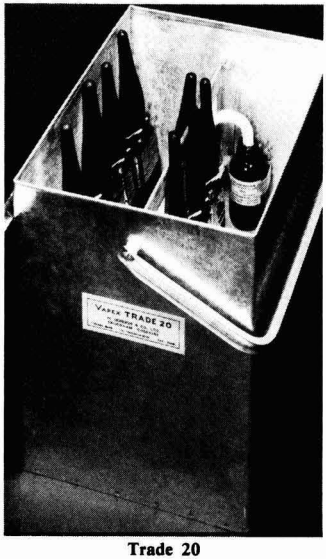
Painting galvanised steel

Tambour has introduced two new paints for the often troublesome task of painting galvanised steel.

The two paints are: firstly, Uniseal-Zn, which is a two-component modified epoxy primer. Tambour claims it has excellent, lasting adhesion to zinc surfaces and poses no time limit to top coating.

Secondly, Polycoat, this is a non-oxidising vinyl paint which is claimed to have outstanding adhesion to every type of galvanised surface. It serves as a primer for top coats such as vinyl or chlorinated rubber, or as a self-priming top coat for galvanised (and other) steel surfaces.

Reader Enquiry Service No. 40



Trade 20

Paintbrush storage

Trade 20 is a new storage system for paintbrushes that have been used with oil-based paints and varnishes. It can hold up to 20 brushes and can accommodate up to a 4 inch brush size. The system employs what is described as an innovative and economical vapour system that keeps paintbrushes soft, pliable and ready for immediate use.

Its makers say this new storage system will lead to considerable savings in time, brushes and solvent. The brushes are suspended in special clips, preventing the formation of bent bristles and rusty ferrules.

The central vaporiser panel is supplied with special fluid from a 60 ml reservoir bottle which normally gives up to a month's operation. Refill fluid is supplied in 250 ml tins.

Reader Enquiry Service No. 41

New blue and violet preparations

Poor colour acceptance is often a problem for paint manufacturers who try and utilise many of the new resins coming onto the market. The high strength pigments tend to give the most problems. The colour develops unevenly during application, particularly where the applied sheer is uneven, e.g. when brushing. Two of the worst colours are blue and violet and up until now paint manufacturers have either had to use uneconomic weak dispersions or add additional wetting agent, thus reducing wash fastness of the final paint.

Hoechst has introduced two products which it claims have combined excellent stabilisation with much improved compatibility. They are both smooth flowing pastes in spite of their very high colour strength.

Reader Enquiry Service No. 42

New rheometer series

RML has announced a new and uprated Series II Rheometer. The electronics have been redesigned to include digital readout of applied torsional force and angular velocity. The control console is fitted with outputs for coupling to a chart recorder, programmers and interfacing with computers.

The unique angular displacement system has been improved to give more accurate measurement in the visco elastic region and for yield value determination.

The continuous rotation measuring system has also been up-graded using a pulse tachometer, which gives increased accuracy and simplifies the viscosity calculations. The air motor and bearing have been upgraded to give greater stability to the base line and improved linear response.

Reader Enquiry Service No. 43

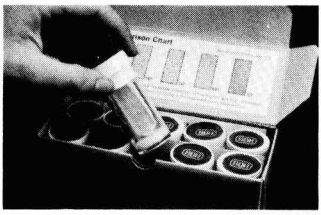
Impact testing

The Stone Hammer Blow Testing Instrument, Model 508, is new from Erichsen and was developed in co-operation with the Verband der Automobilindustrie, Frankfurt. It is used to assess the ability of single and multiple layers of paints and similar coating materials to stand up to the impacts caused by small bodies of low mass hitting the specimen at high speed – as experienced on road and rail vehicles and other equipment used in the transport field.

The principle of the test is as follows: a defined number of impact bodies of defined shape, material and surface quality is made to impinge for a defined period and with a defined energy at a defined angle of impact onto the specimen. The result of these impacts can be assessed in a subsequent corrosion test.

Reader Enquiry Service No. 44

news



Panatest Dipslides

Bacteria detection in emulsions

Panatest Dipslides is a new system designed to determine the total bacterial count of plastic emulsion paints and other industrial emulsion systems.

The tests are said to be simple to perform and the results easy to interpret using the supplied comparison chart. Unlike the classical petri dish method, Panatest Dipslides enable emulsions to be tested in the working environment, providing a self-contained method for evaluating bacterial contamination without the need for laboratory facilities.

Reader Enquiry Service No. 45

Paint strippers

Three new Pyrostrip materials have been added to Pyrene's range of paint strippers for the removal of the very latest paint systems:

Pyrostrip 50 is a phenol-free, water-dilutable paint stripper based on methylene chloride. Dilution can be up to 50 per cent by volume, depending on the paint type and the required stripping time.

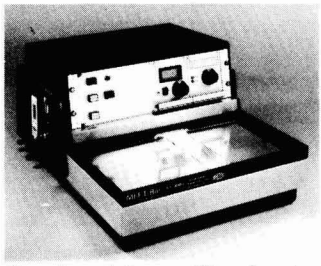
Pyrostrip 60, which is also phenol-free and based on methylene chloride, performs best on epoxy-based and acrylic paint systems and utilises a water seal to reduce fumes and evaporation. As with Pyrostrip 50, this stripper is suitable for most metal substrates except magnesium and magnesium alloys.

Pyrostrip 70, a hot aqueous system, tackles the new cathodic electropaint systems, which are among the most difficult to remove. Used neat, at 80 to 100°C, stripping times can be less than five minutes.

All three new strippers can be used in conjunction with mild steel plant and equipment.

Reader Enquiry Service No. 46

news



Sheen's minimum film forming temperature bar

Minimum film forming temp.

Sheen Instruments is now marketing a minimum film forming temperature bar for emulsion compositions, which can take 12 simultaneous measurements.

Minimum film forming temperature (MFT) is related to glass transition temperature (T_g), which is applicable to all polymeric materials. Various thermal gradient bars have been used for MFT measurement with limited accuracy and repeatability.

The instrument now being marketed by Sheen is said to be an easy to use, reliable apparatus with a copper platform, and which is operated at any six selected gradient temperature bands spanning air drying and stoving emulsions.

The temperature indicator has a display in degrees centigrade to a resolution of 0.1°C with a ten way selector switch to monitor bar temperature in ten steps across the platform. The measurement is concluded in a controlled, dry atmosphere.

Reader Enquiry Service No. 47

literature

French/English glossary

Gerard Pierson and Maurice Voituriez have published a French-English, English-French glossary of paint, varnish and printing ink terms.

Priced at £5, the pocket sized (17 cm × 12 cm) booklet contains 64 pages and is available from: Maurice Voituriez, 63 rue Lafontaine F 75016 Paris, France.

Reader Enquiry Service No. 48

In-plant safety

The British Safety Council has issued a free comprehensive booklet on its in-plant safety training courses.

One of the main advantages of companies having training on site is that more people can be trained at one time without the expense of travel and accommodation for the delegates, and the amount of time off the job is minimised.

Another advantage is that the courses can be specially designed to meet the specific safety requirements of each company or factory.

The booklet contains all the in-plant courses run by the Safety Council, their length and which members of the workforce should attend them, with a synopsis and list of all the topics covered.

The Safety Council believes that only by implementing a planned accident prevention programme can companies operate safely and meet the growing requirements of safety legislation, and that the education and training of management and workers must be continuous if accidents – non-injurious as well as injurious – are to be reduced.

Reader Enquiry Service No. 49

China clay for latex paints

ECC has made available a leaflet on its calcined china clay, PoleStar 200P, which is designed to exhibit optimum performance in water-based latex paints.

Reader Enquiry Service No. 50

Nynas oils

Now available on request from A. Johnson & Co. Ltd is a new 12-page full colour brochure with details on the extraction, refining and application of the Nynas range of naphthenic oils, for which A. Johnson are sole distributors in the UK and Ireland. Nynas base and process oils, commonly known as pale oils, are used in the manufacture of inks, paints, rubber and specialised chemicals, and also rolling, cutting and hydraulic oils.

The leaflet gives the latest estimates of oil reserves still to be tapped from Lake Maracaibo and the Orinoco Basin in Venezuela, the world's primary source of naphthenic crude oil, showing them to be greater than the total recoverable reserves of paraffinic oils in the Middle East. AB Nynas Petroleum, one of Europe's largest producers and suppliers of naphthenic oils, has established long-term trade agreements with Venezuela, using its own tankerage to transport crude oil to Nynas' main refinery in Nynashamn, Sweden. Details are given of the future expansion plans for the Nynashamn refinery, together with a comparison chart of the advantages of naphthenic oils over paraffinic oils in several typical applications.

Reader Enquiry Service No. 51

meetings, etc.

Paintmakers Association seminar

The Paintmakers Association, in conjunction with the Glasgow Chamber of Commerce, is to hold a "Seminar on labelling". The seminar will be held on 6 October 1982 at the Holiday inn, Glasgow commencing 9 a.m.

Further information is available from: Mr W. E. G. Moffat, Paintmakers Association, Alembic House, 93 Albert Embankment, London SE1 7TY, Tel: 01-582 1185.

ICorrST meetings

The Institution of Corrosion Science and Technology is holding a meeting: "Corrosion prevention – on the move" on Wednesday 27 October 1982 at Ladbrook Mercury Hotel, Leyland, Lancashire. Further details are available from: F. B. Windsor, Secretary NW Branch ICST, England, Hughes, Bell Co. Ltd, Valley Works, Monton Road, Eccles, Lancashire.

The ICorrST are also holding a meeting: "Coatings and surface treatments for corrosion and wear resistance" from 12-15 April 1983 at Newcastle upon Tyne Polytechnic. Further information is available from: Prof K. N. Strafford, School of Materials Engineering, Newcastle upon Tyne Polytechnic, Newcastle NE1 8ST, Tel: 0632 326002.

people

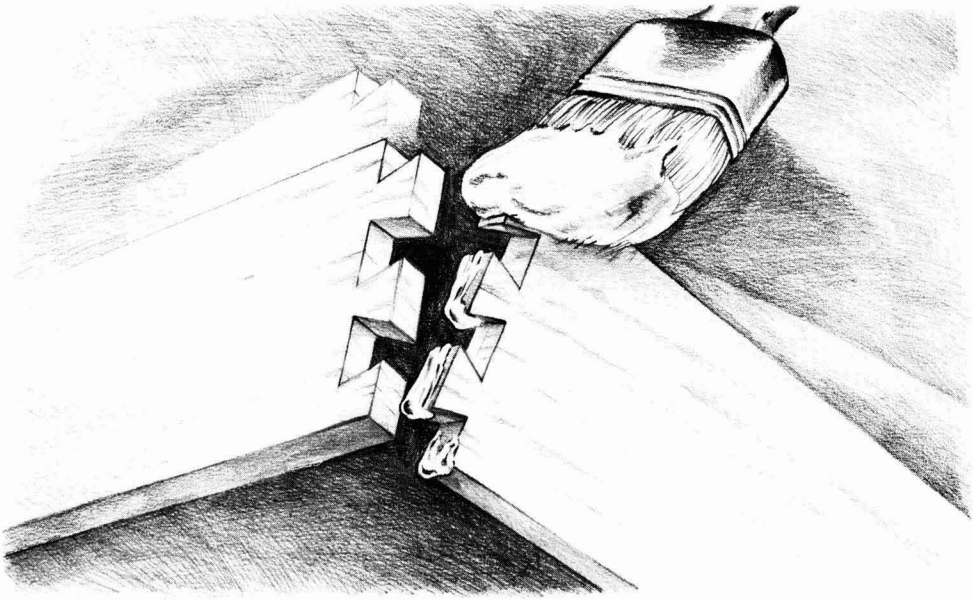
Peter V. Robinson, President of the Paint Research Institute (PRI), has announced that **Dr Seymore Hochberg**, industrial consultant and former research fellow with the Du Pont Co., has been appointed executive director of PRI. He will assume his new duties on 1 January 1983 and will serve as a consultant to PRI until that date.

Dr Hochberg, who recently retired from Du Pont following a 36-year career at the Marshall Laboratory in Philadelphia, succeeds **Dr Raymond R. Myers**, who will retire as research director of PRI at the end of this year.

Continuing its policy of controlled expansion, OBS Machines Ltd of Milton Keynes has appointed **David Robinson** to further develop sales and provide after sales service to customers in its northern region.

David, who is 35, began his career working as a chemist for the Swiss Sandoz company, and his key area of responsibility was the development and evaluation of pigments and dyestuffs. He was similarly employed after a move to Bayer, and then joined International Colour Systems to work on computerised colour measurement systems for the paint industry. David lives in Leeds.

Riedel-de Haën



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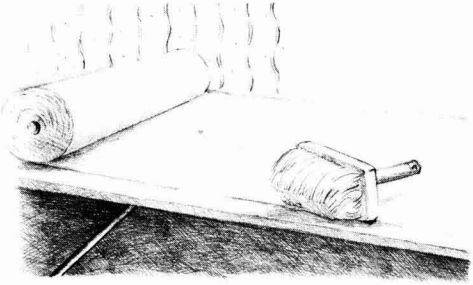

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Also suitable for use on packaging materials.
DYNAPOL LH 812 and LH 818 are fully compatible with the high molecular polyesters of the DYNAPOL L range. Their properties may be modified and rendered suitable for specific applications by combined use of DYNAPOL L/LH grades. Main applications: coilcoating lacquers, decorative lacquers for packagings; also suitable for UV printing methods.

DYNAPOL polyesters at a glance:

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Form supplied	Granules	Granules	Granules	Granules	Solution	Solution
Hydroxyl No.	10	5–10	5–10	5–10	15	35
Molecular weight	15000	18000	16000	14000	7000	3000
Glass temperature	70 °C	70 °C	50 °C	40 °C	40 °C	30 °C

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For information on membership of OCCA, enquiries should be sent to the Association's offices, see front cover for address.

occa news

News of members

Mr J. Toovey

Mr Toovey, Chairman of the Scottish Section, has had to resign this position as he will be moving to London where he will take up an appointment in the export sales department with Tioxide International as from 1 September 1982.

Mrs Anne Gibson, Vice-Chairman, will take over from Mr Toovey at the end of August.

Bristol Section Annual Skittles Match with BPVLC

John Green, President of Birmingham PVLC, is shown on the left after having been presented with the Alkyd Cup by Graham Fowkes, Bristol Section Chairman, OCCA, on the right. The occasion was the Annual Skittles Match between BPVLC and Bristol Section held at the Hobnails Inn, Little Washbourne, Near Tewkesbury, 27 May 1982 – Bristol Section OCCA lost again!

Mr Jerome, President of the Federation of Societies for Coatings Technology, and Mrs Jerome were presented with two Wedgewood vases to commemorate their presence at the Annual Skittles Match held on 27 May 1982. Mrs Jerome is shown receiving the presentation from Mr J. R. Green, President of the Birmingham PVLC

Manchester Section

Northern Sections' Golf Tournament

Thursday 10 June 1982 was the date, Pannal Golf Club, Harrogate the venue, for the 3rd Annual Northern Sections' Golf Tournament organised by the Manchester Section for the West Riding, Hull, Newcastle and Scottish sections. The main prize to be awarded was the Tony McWilliam Trophy which had been won in the two previous years by the Manchester Section.

Twenty-eight members and their guests arrived between 12 and 2 to partake of both solid and liquid refreshment before driving off in this Singles Stableford with three player groupings. The weather was near ideal, the course condition excellent and the quality of golf infinitely variable.

Gordon Robson, Vice-Chairman of the Manchester Section, was at the 19th hole to welcome all the competitors and to witness all the congratulations and commiserations that the game of golf generates. After the consumption of a generous three-course dinner the prize-giving was commenced (after prior score analysis by Norman Seymour) with the following results:

1. Tony McWilliam Trophy

   Winners – Manchester Section
   Brian Carrol
   Ron Alexander
   Norman Seymour
   Ron Ashton
   Stuart Heyes
   Jack Godson
   Total Points – 185

   West Riding – Total Points – 153
   Newcastle – Total Points – 92

2. Guest scores
   Colin Purdy – 37
   Melvyn Wright – 36
   Gordon Herrick – 35

Therefore, whilst the Manchester

Brian Carrol (left) receiving the Tony McWilliam Trophy on behalf of the Manchester Section from Gordon Robson (right) with Norman Seymour (at back) looking on

occa news

Section have completed their hat-trick in winning this tournament, they sincerely look forward to serious competition in the 1983 event provisionally arranged for Thursday 9 June 1983 at Pannal. The participation of golf playing chairmen from the various sections would be as welcome as all the excellent prizes generously donated for this year's event by both companies and individuals.

F.B.W.

Report of Council meeting

A meeting of the Council took place at 2.00 p.m. on Wednesday 14 July 1982 at the Great Northern Hotel, King's Cross, London N1 9AN. The President (Mr D. J. Morris) was in the chair and 23 members attended. The President extended a welcome to Mr D. R. Bannington (Representative, London Section), Mr R. Saunders (Representative, Bristol Section), Mr L. J. Brooke (Elective Council Member) and Mr H. J. Clarke (Elective Council Member).

It was reported that the Hon. Editor's new Advisory Committee would be composed of Mr S. R. Finn, Mr N. H. Seymour and Dr T. A. Banfield, together with the Director & Secretary. The Council were formally notified of the election of Messrs L. J. Brooke, F. Hellens and H. J. Clarke as Elective Council Members at the AGM on 16 June 1982.

The dates for forthcoming Council meetings, the appointment of committees and working groups of Council for the session 1982-83 and the Association's representation on other organisations were agreed.

The preliminary arrangements for the York Conference were in hand and members who knew of potential lecturers or could suggest subjects for papers were asked to send these in to the Director & Secretary as soon as possible.

Reports were received on the Savoy Dinner Dance (28 April 1982) and the Council Reunion Luncheon and Lecture held with the AGM on 16 June. Reports of both these events appeared in the July and August issues respectively. It was noted that a past President, Mr L. H. Silver, had been honoured by the award of an OBE in the Queen's Birthday Honours list and that the senior past President, Mr G. Campbell, had just left hospital after an operation for an arthritic hip.

The council had before them information on the innovations at the OCCA-34 Exhibition as reported in the July issue of *JOCCA* and congratulated the Director & Secretary and his staff on mounting the Exhibition in the adverse economic climate. They were pleased to learn that the audited attendance revealed visitors from 32 overseas countries and that some of the 16 lectures, arranged as an extension of exhibition facilities, had attracted audiences of up to 70.

Discussion took place on the arrangements to be made in 1983 regarding the Exhibition.

The list of members still in arrears with their 1982 membership subscriptions was tabled. It was noted that this was comparable with previous years and that new applications to join the Association were still being received as shown in the lists published in *JOCCA*.

The Hon. Editor reported that he had accepted a number of papers for publication in *JOCCA* and drew attention to the Exhibition Review in the July issue which had concentrated on new aspects of the Exhibition.

Members were reminded that they should encourage any members eligible for the Jordan Award of £100 to submit their names for consideration before the end of the year.

Council learnt with interest details of the present stage of technical training and education in both the paint and printing ink industries. The Director & Secretary reported that the Professional Grade Committee had admitted eight members to Associateship and had received dissertations for assessment from two candidates for the Licentiateship grade.

Under section reports, it was noted that Mr J. Toovey – who had been elected as Chairman of the Scottish Section in April – had had to resign as he had been moved by his company to London; Mrs A. McA. Gibson would replace Mr Toovey as Chairman of the Section and a new Section Representative would be appointed in due course.

Mr David Morris, a former Chairman of the West Riding Section now resident in Nigeria, had called at Priory House and discussed the future of the Nigerian Branch with the Director & Secretary. The Branch rules were now ready for approval, which was given.

The Joint Programme for sections in the United Kingdom and Ireland would be printed as a supplement to the *Bulletin* in the August issue.

The President reported on his visit to the Convention of OCCA Australia and explained the suggestion now made for a simple form of organisation to bring OCCA International into being. The Council approved the proposal. It was further reported that representatives from the New Zealand and South African divisions (Mr R. Bettison and Mr R. Rouse respectively) together with a past President of OCCAA (Mr J. Foxton) had met members of the Council's Working Group on OCCA International at the Exhibition and that Mr P. Birrell (representing Ontario Section) had earlier in the year also met members of the Working Group. Other than the discussion on OCCA International (which basically involved the Association and OCCAA) the main aspect of Association activity considered had been the desire of the New Zealand Division to have optional receipt of *JOCCA* and the financial arrangements to be made if any of the other overseas sections wished to follow this procedure. Proposals were made which all the overseas sections would consider and would report back to the Director & Secretary, if possible, before the October meeting of Council. It was hoped that the President of OCCAA, Mr B. J. Lourey, would attend the Association's Conference at York in June 1983.

At the conclusion of the meeting, the President made a presentation to Dr H. R. Hamburg, who had retired as Hon. Treasurer at the AGM after six years' service.

There being no other business, the President thanked members for their attendance, particularly in view of the rail strike, and declared the meeting closed at 4.35 p.m.

The publications listed below and their prices are obtainable from: BSI Sales Counter, 195 Pentonville Road, London N1 9ND (personal callers). BSI Sales Department, 101 Pentonville Road, London N1 9ND (orders by post). Telephone: 01-837 8801. Telex 23218.

bsi news

British Standards reviewed and confirmed

1336: 1971 PVC/3
Knotting

Standards withdrawn

3900: part D2: 1967 Gloss specular reflection. Superseded by BS 3900: Part D5: 1980.

*82/50672 DC Methods of test for paint media Amendment No. 1 to Part 2. Determination of saponification value (ISO 3681/DAM 1) PVC/3 (ISO 3681-1976 has not yet been implemented as a British Standard because of deficiencies which this draft amendment may overcome)

*82/50673 DC Methods of test for paint media. Amendment No. 1 to Part 3. Determination of acid value Titrimetric method (ISO 3682/DAM 1) PVC/3

(ISO 3682-1976 has not yet been implemented as a British Standard because of deficiencies which this draft amendment may overcome.)

*82/50755 DC Methods of test for paint media Part 8. General tests for aqueous dispersions of polymers and copolymers (ISO/DIS 7143) PVC/3

New work started

Protective coating of iron and steel structures and light section steel against corrosion

Will update the content of BS 5493 and include the revised and updated matter at present in DD 24

Resistance of surface finishes to heat

Will revise BS 3962: Parts 2 and 3 with the intention of replacing the potentially-hazardous oil-filled cup used in the test procedure by a safer electrically-heated cup that has recently been developed by FIRA.

International new work started

General methods of test for paint media – Aqueous dispersions of polymers and copolymers

Will specify methods of test for evaluating the aqueous dispersions of polymers and copolymers used in paints and related products.
ISO/TC 35/SC 10 through PVC/3

Methods of test for paint media – Determination of acid value – Tritrimetric method
Will amend ISO 3682 mainly to alter the method of calculating the result.
ISO/TC 35/SC 10 through PVC/3

Method of test for paint media – Determination of saponification value
Will amend ISO 3681 to alter the method of calculating the result.
ISO/TC 35/SC 10 through PVC/3

International new work started

Petroleum products – Determination of distillation characteristics. Will revise ISO 2405 and include automatic methods. ISO/TC 28 through PTC/13.

Petroleum products – Determination of aniline point and mixed aniline point. Will revise ISO 2977. ISO/TC 28 through PTC/13.

Petroleum products – Determination of vapour pressure – Reid method. Will provide a revision of ISO 3007. ISO/TC 28 through PTC/13.

New ISO standards

ISO 472:
Plastics – Vocabulary
ISO 472: Addendum 1: 1982 7 page E

ISO 4628:
Paints and varnishes – Evaluation of degradation of paint coatings – Designation of intensity, quantity and size of common types of defect
ISO 4628/1: 1982 General principles and rating schemes, 2 page, B
To be published as a revision of BS 3900: Part H1
ISO 4628/2: 1982 Designation of degree of blistering, page, D
To be published as a revision of BS 3900: Part H1
ISO 4628/3: 1982 Designation of degree of rusting, 7 page, E
To be published as a revision of BS 3900: Part H1
ISO 4628/4: 1982 Designation of degree of cracking, 4 page, C
To be published as BS 3900: Part H4
ISO 4628/5: 1982 Designation of degree of flaking, 4 page, C
To be published as BS 3900: Part H5

new members

The following elections to membership have been approved by Council. The Section to which each new Member is attached is given in italics.

Ordinary Members

ABOROWA RICHARD OJO, BSc, Berger Paints Nigeria Ltd, PMB 21052, Ikeja, Nigeria
(General Overseas – Nigerian Branch)

AFOLABI, MOSES OLUSOJI, BSc, Berger Paints Nigeria Ltd, PMB 21052, Ikeja, Nigeria
(General Overseas – Nigerian Branch)

BABATUNDE, ABIMBOLU A. S., BSc, Berger Paints Nigeria Ltd, Technical Section, PMB 21052, Ikeja, Nigeria
(General Overseas – Nigerian Branch)

BAMUYIWA, ADENRELE ADENIKE, MSc, Berger Paints Nigeria Ltd, PMB 21052, Ikeja, Nigeria
(General Overseas – Nigerian Branch)

BHIMJIANI, NAREN, BSc, 77 Allington Road, Karori, Wellington 5, New Zealand *(Wellington)*

BROWN, ADRIAN FRASER, BA, 25 Rossiter Avenue, Lower Hutt, New Zealand *(Wellington)*

DEWA, NDEH PAUL GONTUE, BSc, Desco Investments Holdings & Finance Co. Ltd, 19 Ahmada Bello Way, PO Box 6862, Angle-Jos, Nigeria
(General Overseas – Nigerian Branch)

new members

DORE, RICHARD OMATSOLA, BSc, Berger Paints Nigeria Ltd, Production Department, PMB 21052, Ikeja, Nigeria *(General Overseas – Nigerian Branch)*

DRURY, JAMES ROLAND, PO Box 135, Henley on Klip, 1962 Transvaal South, Republic of South Africa *(Transvaal)*

DUROSOMO, EMMANUEL BABATUNDE, BSc, Berger Paints Nigeria Ltd, PMB 21052, Ikeja, Nigeria *(General Overseas – Nigerian Branch)*

EDWARDS, DAVID LORIMER, FTC, International Paints (West Africa) Ltd, PO Box 67, Oba Akran Avenue, Ikeja, Nigeria *(General Overseas – Nigerian Branch)*

EDWARDS, IAN JOHN, BSc, Bakke Industries, PO Box 344, Paarl, 7620, Republic of South Africa *(Cape)*

FRASER, IAN EVENDON, WAPCO, Ewekoro Works, PMB 21011, Ikeja, Lagos State, Nigeria *(General Overseas – Nigerian Branch)*

GRIEVES, RICHARD, BSc, 43 Burlington Court, Ockerse & Edith Cavell Streets, Hillbrow, Johannesburg, 2001, Republic of South Africa *(Transvaal)*

HARGREAVES, IAN HENRY, 20 Birkdale, Yate, Bristol BS17 4EX *(Bristol)*

JAKOBSEN, PAUL ANFINN, 76 Hall Lane, Simonswood, Kirby, Liverpool L32 4YT *(Manchester)*

KEHINDE, AMOS OLATUNJI, BSc, Berger Paints Nigeria Ltd, PMB 21052, Ikeja, Nigeria *(General Overseas – Nigerian Branch)*

LAD, ANANI RAJARAM, Nigerian Synthetic Chemical Industry Ltd, PO Box 1187, Ikeja, Lagos State, Nigeria *(General Overseas – Nigerian Branch)*

LADIGBORU, OLADIMEJI, BSc, Berger Paints Nigeria Ltd, Production Department, PMB 21052, Ikeja, Nigeria *(General Overseas – Nigerian Branch)*

LORD, ROLAND F., Lawnside, 52 Starling Road, Radcliffe, Manchester M26 0LN *(Manchester)*

MARTIN, FIONA, BSc, 10 Sentosa Heights, Mabelreign, Harare, Zimbabwe *(General Overseas – Zimbabwe Branch)*

MENON, CHAKYAT GOPINATH, BSc, Nigerian Synthetic Chemical Industry Ltd, PO Box 1187, Ikeja, Lagos State, Nigeria *(General Overseas – Nigerian Branch)*

NADKARNI, AVINASH ANANDRAO, BSc, Nigerian Synthetic Chemical Industry Ltd, PO Box 1187, Ikeja, Lagos State, Nigeria *(General Overseas – Nigerian Branch)*

NEAL, GARRY KENNETH, BSc, 21 Nikau Road, Point Howard, Eastbourne, New Zealand *(Wellington)*

NEHETE, BALIRAM KALU, Nigerian Synthetic Chemical Industry Ltd, PO Box 1187, Ikeja, Lagos State, Nigeria *(General Overseas – Nigerian Branch)*

OKEDIJI, JOHN OLUSEGUN, BSc, Askar of Nigeria Ltd, PO Box 581, Eleiyele, Ibadan, Nigeria *(General Overseas – Nigerian Branch)*

PATEL, JANU T., BSc, 45 Pathfield Road, Steatham, London SW16 5NZ *(London)*

RIELLY, CHARLES WILLIAM, c/o Plascon Evans Paints, PO Box 4010, Luipaardsvlei 1743, Republic of South Africa *(Transvaal)*

SANNI, GODWILL OMODELE, BSc, Berger Paints Nigeria Ltd, Technical Sales, PMB 21052, Ikeja, Nigeria *(General Overseas – Nigerian Branch)*

SHEPPARD, PHILIP JOHN, BSc, Shell Chemicals Ireland Ltd, Grattan House, 68-72 Lower Mount Street, Dublin 2, Ireland *(Irish)*

TAYLOR, ALEXANDER L., The Walpamur Company (Ireland) Ltd, Cardiff Lane, Dublin 2, Eire *(Irish)*

VAN RENSBURG, MATTHEW LUKAS, 224 General Hertzog Road, Three Rivers East 1930, Republic of South Africa *(Transvaal)*

WANLISS, JOHN DAVID, c/o Plascon Evans Paints (Tvl) Ltd, PO Box 4010, Luipaardsvlei 1743, Republic of South Africa *(Transvaal)*

Associate Members

BALDWIN, GARY, 8 Puru Crescent, Wellington 3, New Zealand *(Wellington)*

BEHRENT, RAY JOHN, T & C Chemicals, Box 1521, Durban, 4000, Republic of South Africa *(Natal)*

CARSON, STEPHEN, Mobil Oil Zimbabwe Ltd, PO Box 791, Harare, Zimbabwe *(General Overseas – Nigerian Branch)*

COMLEY, DAVID JAMES, 21 Gouird Grove, Ngaio, Wellington, New Zealand *(Wellington)*

FINKE, GRAHAM GEORGE, c/o TEC Chemicals, PO Box 1366, Johannesburg 2000, Republic of South Africa *(Transvaal)*

FRUDE, MICHAEL JAMES, 78 South Karori Road, Wellington 5, New Zealand *(Wellington)*

GRAHAM, JAMES, 1 June's Lodge, 603 Ridge Road, Durban, 4001, Republic of South Africa *(Natal)*

KEYTER, PHILIP, Degussa South Africa (Pty) Ltd, PO Box 50669, Randburg, 2125, Republic of South Africa *(Transvaal)*

LATEGAN, LOUIS J. F., c/o Everite Ltd, PO Box 31166, Braamfontein, 2017, Republic of South Africa *(Transvaal)*

MULHOLLAND, WAYNE, PO Box 9294, Johannesburg 2000, Republic of South Africa *(Transvaal)*

OTIKOR, UBELEJIT, Berger Paints Nigeria Ltd, PO Box 681, Port Harcourt, Nigeria *(General Overseas – Nigerian Branch)*

SINCLAIR, TREVOR GARTH, c/o NCP Chemical Marketing, PO Box 285, Bedfordview 2008, Republic of South Africa *(Transvaal)*

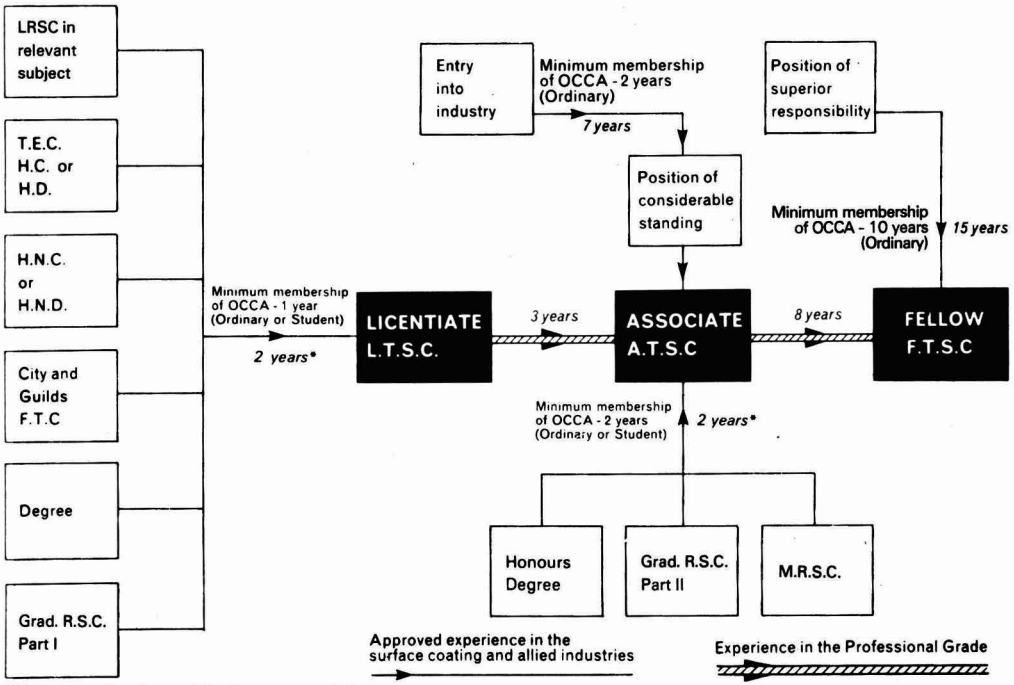
Registered Student

GILL, ADRIAN GORDON, 4 Hamerton Road, Northfleet, Kent DA11 9DX *(London)*

Optional Professional Grade for Ordinary Members

Routes to the Professional Grades

The innovation of the Professional Grade has proved to be most successful, as evidenced by the impressive list of names in the December issue of the *Journal*. For the convenience of potential applicants, a chart indicating different routes to the various grades is shown below.



*Not necessarily after qualification – see regulations.
Note: At present there is no restriction on Students up to 21; between 21 and 25 a certificate from the employer or college confirming the course being taken is required.

Regulations for admission to the Professional Grade – Amended February 1981

A. Licentiate

1. Shall be an Ordinary Member of the Association and have been an Ordinary Member or Registered Student of the Association for not less than one year.

2. Shall have attained the age of 22.

3. (a) Shall be a Licentiate of the Royal Society of Chemistry in Coatings Technology or another relevant subject, such as advanced analytical chemistry, colour chemistry or polymer science.

OR (b) Shall have passed the Higher Certificate or Higher Diploma of the Technician Education Council in Coatings Technology or other relevant subjects (or equivalent SCOTEC qualification).

OR (c) Shall have passed Higher National Certificate or Higher National Diploma in a relevant subject (or equivalent SCOTEC qualification).

OR (d) Shall hold the Full Technological Certificate of the City and Guilds of London Institute in a relevant subject.

OR (e) Shall be a graduate in a relevant subject.

OR (f) Shall have passed Part I of the examination for the Graduateship of the Royal Society of Chemistry or Council of Physics.

OR (g) Shall have passed such other qualifications as approved by the Professional Grade Commitee from time to time.

4. Shall have attained approved experience in the science or technology of coatings. It is not expected that sufficient experience would be gained in a period of less than two years in the industry. Approved experience may be gained before, during or after the qualifications in paragraph (3) above have been attained.

5. Shall be required to satisfy the Professional Grade Committee, or some other body approved by the Professional Grade Committee in a *viva voce* examination and submit a dissertation on a subject directly associated with the science and technology of Surface Coatings or allied materials previously approved by the Professional Grade Committee.

6. Shall normally be sponsored by three Ordinary Members of the Association in the Professional Grade (either Associate or Fellow at least one of whom is a Fellow). A sponsor will usually be a person who has knowledge of the career of the applicant. The candidate shall be in a position to furnish the name of a referee acceptable to the Committee, who can be contacted in confidence, if required. The referee will have a full knowledge of the candidate's technical and scientific achievements to date and could be the applicants employer.

7. Shall have paid the fee stipulated by the Council and have paid the current subscription payable by an Ordinary Member.

B. Associate, being already a Licentiate

1. Shall, since his election to the Licentiateship, have practised the science or technology of coatings for not less than three years.

Note: For the sake of simplicity, reference is made only to UK examinations etc., but equivalent qualifications overseas will naturally be accepted.

2. Shall provide evidence acceptable to the Professional Grade Committee of his increased professional skill and maturity since his election as a Licentiate.

3. Shall have published work which, in the opinion of the Professional Grade Committee, is of a sufficiently high standard OR may be required to submit a thesis or dissertation on a topic previously approved by the Professional Grade Committee OR shall hold the City & Guilds of London Institute Insignia Award.

4. MAY be required to satisfy the Professional Grade Committee or some other body as approved by the Professional Grade Committee in a *viva voce* examination.

   The nomination of a referee for a *viva voce* examination will normally be for those whose work could be of a highly confidential nature or for overseas candidates.

5. Shall normally be sponsored by three Ordinary Members of the Association in the professional grade (either Associate or Fellow) at least one of whom must be a Fellow.

   A sponsor will usually be a person who has knowledge of the career of the candidate. The candidate should be in a position to furnish the name of a referee acceptable to the Committee, who can be contacted in confidence if required. The referee will have a full knowledge of the candidate's technical and scientific achievements to date and could be the applicant's employer.

6. Shall have paid the fee stipulated by Council and have paid the current subscription payable by an Ordinary Member.

C. Associate, not already a Licentiate

EITHER

1. Shall be not less than 24 years of age.

2. Shall be an Ordinary Member of the Association and have been an Ordinary Member or Registered Student of the Association for not less than two years.

3. Shall hold the Graduateship of the Royal Society of Chemistry or Council of Physics or a University or Council of National Academic Awards degree recognised by the Royal Society of Chemistry or Institute of Physics as giving full exemption from the Graduateship examination.

4. Shall have attained approved experience in the science or technology of coatings. It is not expected that sufficient experience would be gained in a period of less than two years in the industry. Approved experience may be gained before, during or after the qualifications in paragraph (3) above have been attained.

5. Shall normally be required to satisfy the Professional Grade Committee or some other body approved by the Professional Grade Committee in a *viva voce* examination.

   The nomination of a referee for the *viva voce* examination will normally be for those whose work may be of a highly confidential nature or for overseas candidates.

6. Shall normally be sponsored by three Ordinary Members of the Association in the Professional Grade (either Associate or Fellow) at least one of whom must be a Fellow.

   A sponsor will usually be a person who has knowledge of the career of the candidate. The candidate must be in a position to furnish the name of a referee acceptable to the Committee, who can be contacted in confidence if required. The referee will have full knowledge of the candidates technical and scientific achievements and could be the applicant's employer.

7. Shall have paid the fee stipulated by Council and have paid the current subscription payable by an Ordinary Member.

OR

8. Shall be not less than 30 years of age.

9. Shall be an Ordinary Member of the Association and have been an Ordinary Member of the Association for not less than two years.

10. Shall have been engaged in practising the science or technology of coatings for not less than seven years and shall have attained a position of considerable standing in the industry, with appropriate responsibility for technical and scientific matters within the company.

    It would be helpful if he had contributed to the knowledge and understanding of surface coatings technology by lecturing or by the publication of articles. He will also have shown himself to take a keen interest in the work of the Association by being an active member of his Section and by attendance at lectures etc., whenever and wherever possible.

11. Shall normally be required to satisfy the Professional Grade Committee in *viva voce* examination of his professional competence and also be required to submit a dissertation on a subject agreed by the Committee. In cases where the subject is of a highly confidential nature the use of a referee agreeable to the Committee may be asked to examine the dissertation.

12. Shall normally be sponsored by three Ordinary Members of the Association in the Professional Grade (either Associate or Fellow) at least one of whom must be a Fellow.

    A sponsor will usually be a person who has knowledge of the career of the candidate. The candidate must also be in a position to furnish the name of a referee acceptable to the Committee who can be contacted in confidence, if required. The referee will have a full knowledge of the candidate's technical and scientific achievement and could be the candidate's employer.

13. Shall have paid the fee stipulated by the Council and have paid the current subscription payable by an Ordinary Member.

D. Fellow

Note: This is the senior award of the professional grade. The Professional Grade Committee will require substantial evidence of professional maturity in the science or technology of coatings although commercial experience will be taken into account in assessing the merits of candidates.

1. Shall be not less than 33 years of age.

2. Shall have been an Ordinary Member of the Association for not less than ten years.

3. Shall have made outstanding contributions to the science and technology of coatings or reached a position of eminence in the industry **through the practice thereof**.

4. EITHER (a) shall have been an Associate of the Professional Grade for at least eight years and shown continued development.

   OR (b) shall have not less than fifteen years' experience in the science and technology of coatings in a position of superior responsibility.

5. Shall submit, with the application, an account of experience, with due reference to scientific and technological interests, achievements and publications.

6. Shall normally be sponsored by three Ordinary Members of the Association in the professional grade, all of whom must be Fellows, (who should submit a supporting commentary to the Professional Grade Committee).

7. It would be helpful if he had contributed to the knowledge and understanding of surface coatings technology by lecturing or by the publication of articles. He will also have shown himself to take a keen interest in the work of the Association by being an active member of his Section and by attendance at lectures etc., whenever and wherever possible.

8. Shall have paid the fee stipulated by the Council and have paid the current subscription payable by an Ordinary Member.

The fees payable with the application are as follows:

Fellow–£10.00 Associate–£6.00
Licentiate–£3.00
(Plus VAT at standard rate).

Application

Completed application forms should be returned, together with the appropriate remittance, to the Director & Secretary at the Association's offices (except in the case of those Members attached to the Cape, Natal, Transvaal, Wellington, Auckland and Ontario Sections, who should address their forms to their Section Hon. Secretaries).

The Committee wishes it to be known that members rejoining the Association after a period in other industries may include length of service as an Ordinary Member before their resignation as part of the qualifying periods for entry into the Grade.

Students wishing to apply for entry into the Professional Grade must first make application in writing for upgrading to Ordinary Membership, giving the reasons for their eligibility for such regrading. Applications, together with the appropriate remittance, should be addressed as for application for admission to the Professional Grade.

Potential applicants are recommended to give the fullest possible details of their appointments, including the number and type of staff under their control, and indicating to whom the applicant is responsible, as this aids the committee considerably in its deliberations.

CLASSIFIED ADVERTISEMENTS

Classified advertisement rates: £6 per single column cm, £70 per quarter page, £125 per half page, £230 per full page. Cost of a box number is £2. Copy date: copy is normally accepted until the 15th of the month preceding publication, though it is usually possible to extend this deadline. *JOCCA* is published EVERY month. Orders and enquiries should be directed to Derrick Buddles, Assistant Editor, OCCA, Priory House, 967 Harrow Road, Wembley, Middlesex HA0 2SF. Tel: 01-908 1086, Telex: 922670 (OCCA G).

APPOINTMENTS

Technical/Sales Representative

An Agency Company with a substantial turnover in the Plastics and Surface Coatings Industries is seeking an additional Technical/Sales Representative.

The ideal candidate would have a technical background preferably gained in a practical environment such as a paint or resin laboratory followed by a period of employment in technical service and/or sales, with an upper age limit of 40 years.

We are prepared to consider applicants with suitable technical backgrounds who lack practical Technical Service /Sales experience but who can persuade us that their future career development lies in that direction.

The area to be covered is N.W. England. As the Representative will be working from home we prefer the domicile to be in the Manchester/Liverpool region.

We offer a remuneration package which will reflect the importance of the post and the qualifications of the successful candidate, it will include in addition to salary a profit sharing bonus, Pension Scheme, private medical cover and unrestricted personal use of a company car.

Interested applicants should write initially, with brief personal details to:

Miss J. Harwood,
Cornelius Chemical Co. Ltd,
Ibex House,
Minories,
London EC3

Donald Macpherson & Company Limited is the largest independent manufacturer of paint and surface coatings in the United Kingdom. This is a new position for an

Emulsion Resin Development Chemist

... to work closely with a Project Chemist on the development of emulsion and resin products. The main task will be to conduct largely unsupervised development of novel media and extension of the present product range.

You will possess, or at least be qualified to, degree standard in Chemistry or Polymer Science. Ideally you should also be able to demonstrate a high degree of self motivation gained from direct employment in the field of resin technology.

There are good salary prospects, together with the benefits of working for a large progressive organisation.

Please write or telephone for an application form to the Recruitment Officer **quoting reference R153/82.** Do not send detailed CVs at this stage.

Donald Macpherson & Co. Ltd,
Radcliffe Road,
Bury, Lancashire BL9 9NB.
Tel: 061-764 6030 Ext. 327

SITUATIONS WANTED

Paint technologist Seeks Position at Home or Abroad

A 37 year old Ghanaian with 15 years experience in paint manufacture (especially formulation and production) and an ATSC seeks employment as a Paint Technologist in a paint, varnish and/or lacquer making organisation.

The post is sought in any English speaking African or Asian country, or in Europe.

Please reply in strictest confidence to:
Box No. 514

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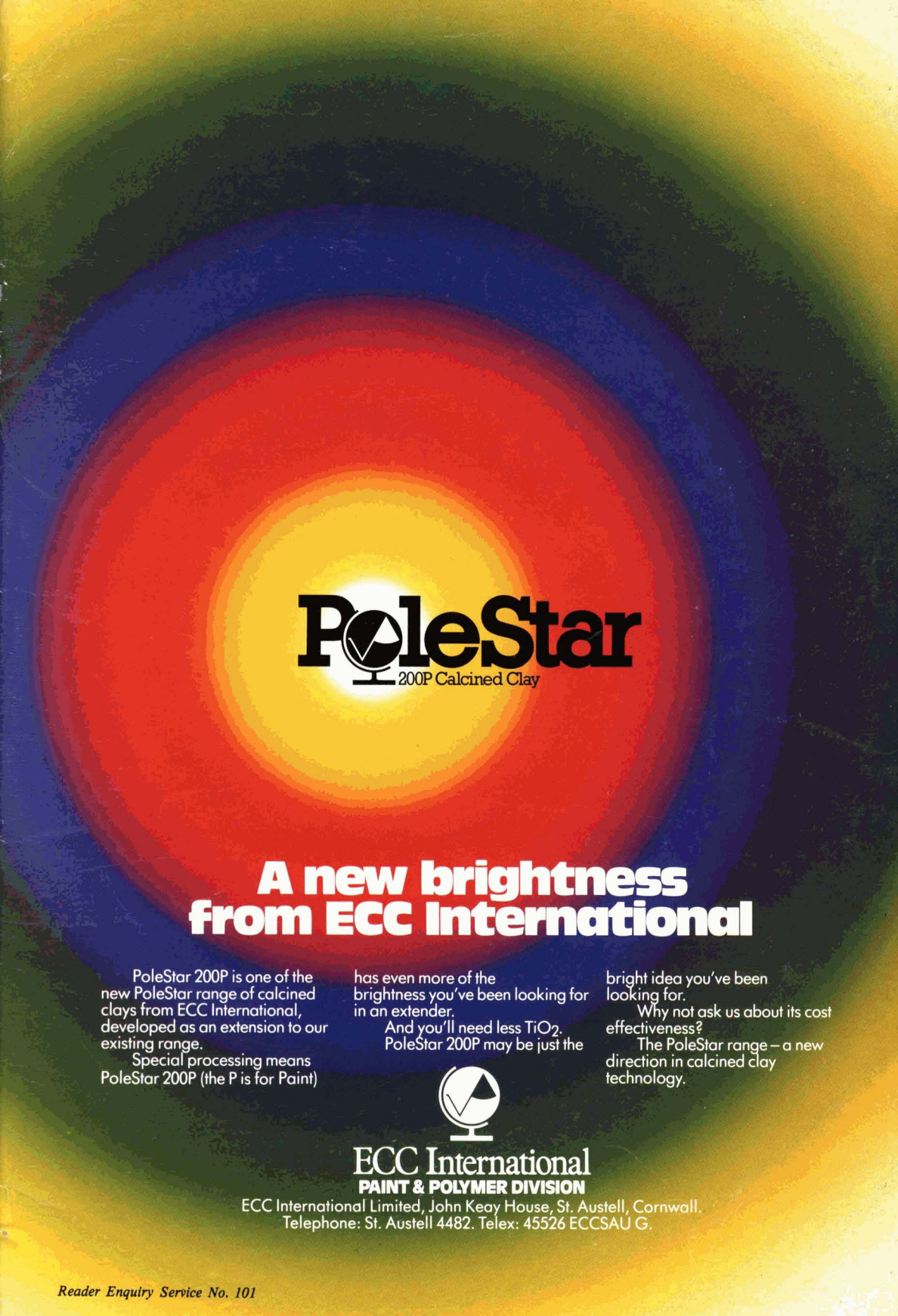

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