A S B E S T O S B U L L E T I N

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Editor: C. Z. Carroll-Porczynski.

C O N T E N T S

PART 1. ASBESTOS MINING.

CANADA.

1. NECHAKO RIVER MAP-AREA, BRITISH COLUMBIA. H. W. Tipper, Mem. geol. Surv. Can. 324, Ottawa, 1963.

Minor mineral occurrences in this area include asbestos.

2. QUEBEC. The Canadian Mining and Metallurgical Bulletin, Vol.56, No.620, December 1963, p.913.

In a report by United Asbestos Corporation Ltd., the President of the Company, Philip M. Malouf, says that mine profits have been affected by soft market prices and excessive stripping costs in the open pit. Shipments to date this year are down about 10 per cent, but the outlook for the fourth quarter is such that shipments for the year are expected to be close to those of 1962.

3. Canadian Mining Journal, December 1963, Vol.84, No.12,p.67.

Secretary-General named: Quebec Asbestos Mining. W. L. Johnson, President of Quebec Asbestos Mining Association, announces the appointment of Paul-A. Filteau as Secretary-General of the association.

The office of the Quebec Asbestos Mining Association, under the direction of Mr. Filteau is located at 580 Grand-Allee East, Quebec City.

4. ASBESTOS (MINERAL REVIEWS). H. M. Woodroofe. Canad. Mining J. 1963, 84, No.2, 121-2.

Data is given of the mining and processing of asbestos in Canada in 1962.

AFRICA.

5. TREND OF MINERAL DEVELOPMENT IN SWAZILAND. D. A. C. Purser. Swaziland Geol. Surv. Mines Dept., Bull.1961, No.1, pp. 23-28. Chem. Abst. Dec.23, 1963, 59, 15042h.

6. U.S. BUREAU OF MINES. ASBESTOS. Mineral Trade Notes Dec.1963, 57, No.6, pp. 7-11.

1962 statistics for India are given. There is a detailed report on the Republic of South Africa. World production 1958-1962 is tabulated.

7 THE GEOLOGY OF THE TOPSI AREA (AN EXPLANATION OF QUARTER-DEGREE SHEET 227A). D. Green. Rec. geol. Surv. Bechuanaland 1959/1960, Lobatsi, 1963.

In this area asbestos and coal are the main mineral occurrences.

8. REMOTE CONTROL COMPRESSOR AT PENGE. The Mining Journal. No.29, 1963, Vol.261, No.6693, p.519.

The ore is taken to the surface at the keep vertical shaft, 1436 ft. deep, making Penge the deepest Asbestos Mine in South Africa. It is also the largest producer of amosite, a type of asbestos found only in South Africa.

The deposit at Penge is 20 miles long and dips at an angle of 20 deg. to the west. From the outcrop to the present stoping area is 2000 ft. down the dip. Water is present in the dolomite series which underlie the ironstones in which the amosite is found and arrangements have been made to pump 85,000 g.p.h. Underground storage has been provided for 500,000 gals.

9. CROCIDOLITE FROM THE KOEGAS-WESTERBERG AREA, SOUTH AFRICA. J.J.C.R. Cilliers, A. G. Freeman, A. Hodgson and H.F.W. Taylor. Econ.Geol., 1961, 56, No.8, 1421-1437.

Samples of primary and weathered crocidolite from Koegas-Westerberg were analysed chemically, optically and thermally.

U.S.S.R.

10. CHRYSOTILE ASBESTOS IN SERPENTINITES OF SOUTH-EASTERN BANAT. H. Krautner. Studii si cercetari geol.Acad. R P R, 1962, 7, No.3-4, 609,632; Ref. Zhur.Geol.,1963 12B197.

Chrysotile asbestos from apodunite serpentinites of south-eastern Banat has been examined. X-ray analysis indicated that it consists of 60% ortho - and 40% clino-chrysotile. Differential thermal analysis has shown that x - chrysotile predominates, but intermediate types between x - and b - chrysotile are also present. Data of structure and optical properties are given. The paragenesis of the asbestos chrysotile occurrences is discussed.

11. FORMATION CONDITIONS OF ANTOPHYLLITE. V. S. Sobolev. Internat. Geol. Rev., 1962, 4, No.6. 635-638.

12. MAGNESIAL ALKALINE AMPHIBOLE FROM CRYSTALLINE ROCKS OF THE AZOV SEA REGION. G. Eremenko and A. A. Walter. Depovidy Akad. Nank Ukr.RSR., 1963, No.10, 1385-9.

A rare magnesial alkaline amphibole arfvedsonite was found in basic rocks which had been changed by the hydrothermal reactions in exo-contact with the alkaline massif. It is a fibrous mineral but it has little strength.

13. ORIGIN OF SOME CHRYSOTILE ASBESTOS DEPOSITS IN EASTERN ASIA. II. DEPOSITS OCCURING IN SERPENTINIZED ULTRABASIC ROCKS. Zdenek Vejnar. Sb. Geol. Ved., Loziskova Geol. 1963, No.1, pp. 7-29. (in English).
Chem.Abst. Dec. 9, 1963, 59, 13708e.

EUROPE.

14. MINERAL RESOURCES AND MINING INDUSTRY OF CYPRUS. L. M. Bear. Cyprus Rep., Min. Commerce Ind., Geol.Surv. Dept. Bull. 1963, No.1, pp. 1-208.
Chem. Abst. Dec. 9, 1963, 59, 13704e.

15. EUROPE'S LARGEST ASBESTOS MINE IN ITALY. Gummi-Asbest-Kunststoffe, 1963, 16, No.12, 1186, 1188.

The Balangero mine, near Turin is described in detail. The chrysotile asbestos-bearing deposit, in the form of veins is embedded in serpentine. The content of useful fibres is about 3 to 4%. The reserve of the asbestos-bearing rock is about 200 mill. tons. At present open-cut blasting is applied, but in future underground mining will be required. The present upgrading and processing methods are described in detail.

16. TURNER & NEWALL EXPANSION. The Financial Times, 21.1.64.

New productive ventures being prepared by Turner & Newall, manufacturers of asbestos, magnesia and allied products, may well involve during 1964 an additional capital outlay amounting to several million pounds, says Mr. R. G. Soothill, Chairman.

Mention is made of an enterprise being run conjointly with overseas interests, with the object of putting down asbestos-cement factories, mainly of moderate size in small or undeveloped countries where for a long time ahead not more than one factory of this type could be economically operated.

A development of this kind will, it is stated, stimulate the growth of demand for chrysotile fibre, which is of "such importance" on the mining side.

17 AMPOL'S WHITE ASBESTOS VENTURE. The Financial Times, January 29, 1964, p.13.

Ampol Petroleum has joined in a venture to examine the potential of producing white asbestos in Australia.

White Asbestos Mining Pty. has been registered in Sydney with a nominal capital of £A1m. It is understood the venture will be on a joint ownership basis with a Canadian group.

PART 2. ASBESTOS-CEMENT.

18 MANUFACTURE OF ASBESTOS CEMENT SHEET PRODUCTS FROM LOW-GRADE ASBESTOS. E. N. Kitaev. Stroit. Mat., 1963, 9, No.12, 36-37.

The production of corrugated asbestos cement sheets from low-grade Ural asbestos by the West German firm "Fulgurit" (Near Hannover) is described in detail, step by step. High-quality products are obtained due to the following measures applied: the asbestos is very carefully purified from dust and gang; it is thoroughly fiberised and mixed with a high-grade portland cement; the asbestos cement sheet is formed from four layers; the dehydration and densification are very thorough; the corrugated sheets are formed without applying any mechanical impact. The bending strength of the products is 200 - 250 kg/cm^2, and the bulk density is 1.6 - 1.8 g/cm^3. The application of this process in the Soviet Union is recommended; in this way 100,000 tons of fibres from low-grade asbestos could be utilised annually, giving 700 mill.tiles.

19 SOUTH AFRICAN PATENT 62/4256. DEFIBRATION OF ASBESTOS. F. L. Smidth & Co. A/S.

The process of the fiberisation of asbestos for the production of fibre-reinforced cement products includes preparing an aqueous slurry containing 10 to 50% water, and feeding the slurry continuously into a rod mill in which the fiberisation takes place as a consequence of the action of the rods on the fibres.

20 INDIAN PATENT 82,287. FIBRO-CEMENT ARTICLES. S. B. Sierea.

Fibro-cement articles are produced in chambers provided with hollow moulding bodies having water-permeable walls, accompanied, if desired, by satellite bodies. A fluid paste comprising cement, asbestos and water is injected into the chamber under pressure and rotational movement is imparted to the hollow bodies inside the mass.

21 ON THE EFFECT OF VARIOUS HEAT - AND MOISTURE - TREATMENTS ON THE PHYSICO - MECHANICAL PROPERTIES OF ASBESTOS CEMENT. O. A. Zaprosyan and N. A. Shulga. Tr. Rostovsk - n D. insh.-stroit. in - ta, 1963, No.25, 17-24; Ref. Zhur. Khim., 1963, 18M223.

If the steaming temperature is increased from 65°C to 85°C, the duration of the treatment can be reduced by 1 hr, and the required storage period by 3-4 days. This alteration slightly affects the frost-resistance of the product(which, however, is still within the limits of standard specifications); the tiles for use in the Far North should be treated at a lower temperature.

22 STUDIES OF ASBESTOS-CEMENT PIPES AND PLATES. SELECTED CHEMICAL AND MECHANICAL TESTS. P. J. Brennan and N. L. Nemerow. Mater. Res. and Stand., 1963, 3, No.3, 217-223.

Chemical tests described include the exposure to sodium and sulphate solutions, the determination of uncombined $Ca(OH)_2$ and acid solubility test. Mechanical tests included the measurements of deformation, modulus of elasticity, flexural strength, density and modulus of rupture. None of the chemical tests used could be correlated with any of the mechanical properties of pipes, although the exposure to sodium sulphate solution increased the modulus of elasticity. It has been found that the alignment of asbestos fibres had a definite effect on the bending strength of asbestos cement plates, a 65% increase in modulus of rupture was obtained with longitudinally aligned fibres.

23 JAPANESE PATENT 21991/63 CEMENT PLATES. H. Kawakami.

Cement plates are produced by thinly extending a layer of optionally coloured mortar onto the bottom of a flat mould and subsequently when the mortar begins to harden, filling the mould with a mixture of cement and sand. The inside of the mould is coated with a releasing agent prepared by dissolving wax in kerosene. The mortar is produced by mixing together cement, diatomaceous earth and calcium carbonate powder, and adding a dilute solution of magnesium chloride, and a slurry prepared from waste liquor from bean curds production and alum, white marble powder and/or asbestos fibres. Colouring agents may be added, whereby patterns like water-colour paintings may be obtained.

24 ABSORPTION OF CEMENT BY ASBESTOS FIBRES. A. K. Chatterji & R. S. Rawat. Nature May 25, 1963, 198, No.4882, pp.750-752

DEVICE FOR FIXING COUPLING ON ASBESTOS - CEMENT PIPES.

Translation from Russian.

Joining of asbestos - cement pipes for cable laying can be carried out employing various methods.

Joints made of asbestos - cement couplings and rubber sealing rings have proved very satisfactory. This method has been approved by builders and is now widely employed. However, it presents some difficulties due to necessity of ensuring the accuracy in the alignment of the ends of the pipes and in the positioning of the sealing rings on their ends. Furthermore, positioning the coupling requires considerable effort in order to overcome the resistance of the sealing rings to the compression.

Technician A. M. Stepanov developed a device for fixing couplings on asbestos - cement pipes, which resulted in increased labour efficiency and ensured the required accuracy.

The basic part of this device is a sliding block C (Fig.1) which is connected with the lever P by means of a rope. The slide block is mounted on the asbestos - cement coupling, which then is pulled on the sealing rings K by moving the lever P.

The alignment of the pipe ends is achieved by inserting into the pipe a wooden control bar W (Fig 2a), one end of which is thicker and equal to the inner diameter of the pipe. The thicken end, when positioned on the joint secures an accurate positioning of the ends. The length of the bar is chosen according to the length of the pipes to be joined and so calculated that its end H (Fig.1) protrudes from the pipe and serves as a point of support for the lever. The sealing rings are positioned on the pipes 100 - 200 mm from the end of the pipe to be joined. The rings are fixed by means of a device shown in Fig.2b.

To do this the ring is put first on this device, which is then positioned at the opening of the pipe and then the ring is moved into the right position. When moving the ring care must be taken that it moves freely and without twisting, because this would result in dislocation of the pipes and will affect the tightness of a joint.

The sliding block (Fig.3) is made from flat iron strips 4-5 mm thick. For the distance bar A, a steel rod is used. The construction can be rivetted or welded.

The sliding block is positioned on the coupling so that its catches rest against the couplings end. The subsequent filling of the joint with the cement mortar is carried out in the usual manner.

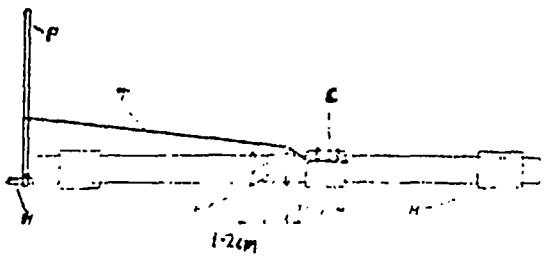


Fig.1. General view of the application of the device

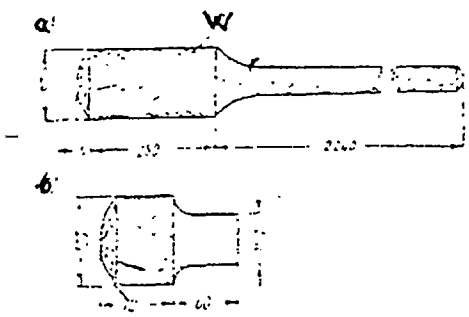
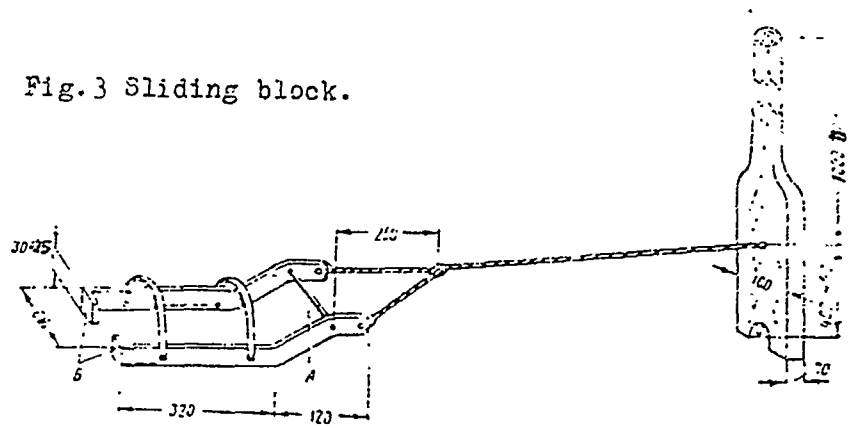


Fig.2. Auxiliary appliances for pipe joining

a - control bar

b - device for fixing the rubber rings

Fig.3 Sliding block.



26 EFFECTIVE UTILISATION OF THE BINDING PROPERTIES OF CEMENT IN THE TECHNOLOGY OF ASBESTOS PRODUCTS. T. M. Berkovich. Sb. "Novoe v Khimii i tekhnol. tsementa", M. Gosstroirdat, 1962, 219-227; Ref. Zhur.Khim. 1963, 20M199.

The process of the hardening of asbestos cement has been investigated at different thermal conditions. It has been shown that steaming under atmospheric pressure does not substantially change the phase composition of the hydration products: C_3S, C_2S, C_3A and C_4AF, as compared with the products of the hydration of minerals under normal conditions. The microstructure of the cement stone changes in that the gel content is reduced, and that of the crystalline phase increases, the dispersion of the latter being reduced. A combined process, steaming with soaking in water, increases by 15% the degree of the hydration of basic minerals. Autoclave treatment may result in the corrosion of asbestos fibres.

27 THE PRINCIPLES OF THE CHOICE OF CEMENT FOR THE PRODUCTION OF ASBESTOS CEMENT ARTICLES. E. N. Kitaev. Sb.nauchno-tekhn. inform. N.-i. in-t asbesto-tsementn. 1962, No.8, 3-35; Ref.Zhur.Khim.1963, 8M203.

It has been found that the highest production efficiency and the best quality of the products can be attained using portland cement having the following properties: C_3S content (with respect to clinker) > 55%, C_2S < 20%, C_3A 3 - 7%, C_4AF up to 16%; specific surface > 3200 cm^2/g; screening through a 0.085 screen ~93%; free lime content < 1%; SO_3 content 2.5 - 3.5%, the beginning of setting not earlier than 1½ hr.

28 THE SERVICE LIFE OF ASBESTOS CEMENT PIPES USED FOR THE TRANSPORTATION OF HYDROGEN SULPHIDE - CONTAINING WATER. E. O.Barbakadze. Tr. N.i. in-t asbesta slyudy, asbstse-mentn. izdelli i proektir. str-va predpriyatii slyud. prom-sti, 1963, No.16, 156-163; Ref. Zhur.Khim, 1963, 22M216.

Asbestos cement pipes carrying hydrogen sulphide water in the resort Matsest were investigated. The water contained 100 - 420 ml.H_2S per litre, the mineral content was 4 - 27 g/l, pH 6.75 - 6.95, temperatures 20 - 80°, pressure 3 atm. It has been found that, after 20 years in service, the asbestos cement pipes were not destroyed by corrosion, although the surface layers were affected. Especially strongly corroded were overflow pipes, only partially filled with water; their service life should be 2 - 10 years.

29 GERMAN PATENT 1,159,329. PROCESS AND APPARATUS FOR A CONTINUOUS PRODUCTION OF ASBESTOS CEMENT PLATES. C. Pasquale.

This process comprises forming a continuous asbestos cement band by joining together layers of asbestos cement formed on two felt belts. Each felt belt carries at least two layers of asbestos cement formed in known way. Sucking is applied to the asbestos cement layers before or after joining them together, and pressing is applied just before the joined asbestos cement band leaves the machine.

30 SULPHATE RESISTANCE OF ASBESTOS CEMENT PIPES. P. W. Manson and L. R. Blair. Mater Res. and Standards, 1962, 2, No.10, 828-835.

Results of the investigation of the resistance of asbestos cement pipes to sulphate corrosion are described. It has been found that the main cause of sulphate corrosion is the presence in asbestos cement of free $Ca(OH)_2$. Autoclave asbestos cement containing silica additives (which does not contain practically any $Ca(OH)_2$ was found to be much more resistant to sulphate attack than asbestos cement hardened in normal conditions.

31 ON THE COEFFICIENTS OF HOMOGENEITY AND STRENGTH CHARACTERISTICS OF ASBESTOS CEMENT. I. S. Krol. Tr. N.-i. in-t asbesta, slyudy,asbstsementn. izdelii i proektir. str-va predpriyatii slyud. prom-sti, 1963, No.16, 79-89; Ref.Zhur.Khim., 1963, 18M 224.

32 BRITISH PATENT 941,023. INSULATING PANEL MATERIAL. Jablo Plastics Industry.

An insulating panel material comprises a core of rigid expanded synthetic plastic material exhibiting closed non-intercommunicating cells, one at least of the faces of which has a rigid flat asbestos-cement sheet. The core may be made of expanded polystyrene.

33 GERMAN PATENT 1,156,214. FLAMEPROOF FACADE ELEMENTS. Glas - und Spiegel - Manufactur A.G.

A flameproof facade element comprises a heat-insulating core layer consisting of mineral fibres bound with a non-inflammable binder, an asbestos cement plate as an inner coating, a glass plate as an outer coating, and an asbestos plate inserted between the outer glass plate and the core layer. All the components are joined together by means of a flameproof cement.

34 U.S. PATENT 3,106,486. THERMOPLASTIC COATINGS FOR ASBESTOS CEMENT PRODUCTS. Richard E. Harren & Benjamin B. Kine (to Rohm & Haas Co.) (Oct.8, 1963).

It is claimed that this coating prevents discolouration of asbestos cement surfaces during autoclaving.

35 FRENCH PATENT 1,343,068. MACHINE FOR PRODUCING ASBESTOS CEMENT ARTICLES. S. Casanova.

A machine for producing asbestos cement articles is provided with a pipe system for feeding the moulds with the asbestos cement slurry. The pipe system is connected to a pump and an agitator tank. When the moulds are not filled, the slurry circulates in the pipe system.

36 BELGIAN PATENT 631,806. ASBESTOS CEMENT SHEETS. Johns Manville Corp.

Asbestos fibres used in the production of asbestos cement sheets from a mixture of asbestos, cement and water, consist of 5 - 50 parts of amosite fibres and 95 - 50 parts of chrysotile fibres. The amosite fibres have a surface of less than 0.4 mm^2., and those of chrysotile fibres not greater than 1.5 cm^2. The sheets are formed in the known way.

PART 3. ASBESTOS TEXTILES.

37 BRITISH PATENT 939,791. 16.10.63(31.8.59). HEAT RESISTANT MATERIALS. Artrite Resins Ltd. (P. R. Bloomfield.

A method is given for the production of heat resistant materials by reacting phosphonitrilic chloride polymers with an oxide of a metal such as sodium oxide, magnesium oxide, zinc oxide, calcium oxide, cuprous oxide, cupric oxide, bismuth oxide, ferric oxide or lead monoxide. The mixture of polymer and metal oxide can be moulded at a temperature of above 150°C. They can be reinforced with glass fabric or asbestos fabric.

38 FRENCH PATENT 1,340,159. DRYING FELT FOR PAPER-MAKING MACHINE. V. Austen & Co.

A drying felt for paper machines consists of several layers joined together, each bing woven with the fibres of the warp and the weft. At least the warp of the surface layer is composed of threads spun from a mixture of 15-25% polyester fibres and 75-85% of asbestos fibres. The felt is resistant to elevated temperatures, bending and abrasion effects, and to the high concentrations of chemicals employed in the production of paper.

39 BRITISH PATENT 938,036. 25.9.63(10.1.61)
IMPROVEMENT IN OR RELATING TO THE PRODUCTION OF FLEXIBLE DIAPHRAGMS AND LIKE ARTICLES. H. Crossley(Packings)Ltd., (M. Wilson).

A method is given for the production of flexible diaphragms for use in metering heads of pumps etc., where they come into contact with corrosive liquids. These are punched from unsintered polytetrafluoroethylene sheet and laminated to the required thickness, in such a way that the grain structure in the adjacent layers is staggered, sintered at 375°C., and cooled under pressure. Layers of glass fabric, metal fibre or asbestos fabric may be present in the laminate. The tensile strength and mechanical strength of the finished laminate is high.

40 BELGIAN PATENT 632,382. CONVEYOR BELT. Pneumatignes Caoutchone Manufacture et Plastiques Kleber, Columbes.

A conveyor belt comprises at least one element formed of a complex fabric comprising glass fibres and asbestos, preferably the force element on the warp and/or weft side being of glass fibres. The asbestos weft element, which has a much larger volume than the glass fibre weft element, may be arranged in such a way that there is no asbestos on the upper and lower surfaces. The element may be impregnated with a silicone or fluorinated elastomer, or may be coated with a vulcanised mixture containing an elastomer resistant to high temperatures.

PART 4. FRICTION MATERIALS.

41 RUSSIAN PATENT 154,354. ANTIFRICTION MATERIALS. I. V. Kragelskii et al.

A white filler is added to an antifriction material, based on a phenol-formaldehyde resin and asbestos, in order to reduce the coefficient of friction. A typical composition consists of 40% of a phenol-formaldehyde resin, 50% white filler and 10% asbestos. The material is prepared by mixing together the constituents, cold forming briguettes under a pressure of 300 kg/cm^2, and then forming articles from the briguettes by applying pressures of 600 - 1000 kg/cm^2 at temperatures of from 160 to 170°C. Alternatively, the articles can be made by hot-moulding the mixture under pressure. The product can be used at pressures up to 50 - 60 kg/cm^2, and temperatures of 250 to 300°C. The coefficient of friction with a metal, under dry conditions, is 0.11, and both surfaces have a long service life.

42 U.S.PATENT 3,092,595. FRICTION COMPOSITION. F. W. Smith, R.H.Gilbert & E.F.Sewell (to American Brake Shoe Co.)4/6/196

43 COPPER-ASBESTOS FOR FRICTION USES. Mater.Design.Eng. Oct. 1963, 58, No.4, p.145.

Short news note about R-1698, a matting of copper and asbestos powders bonded with synthetic resin, designed to be used in transmissions and brake drums.

44 REINFORCED LEAD BEARINGS. The Financial Times, January 24, 1964, p.11.

Bearings made of a mat of steel fibres impregnated with lead are said to have 50 to 75 per cent. longer life than unreinforced lead. The International Lead and Zinc Research Association, 292, Madison Avenue, New York, says they are particularly good under conditions of minimum lubrication.

Two types of bearings are under test. In one, the steel fibres are sprinkled on a steel backing plate, sintered to hold them in position, and a lead-tin alloy is poured on. In the other, the fibres are brazed to the backing plate with silver solder before being impregnated with the lead-tin as in the first system.

45 BRITISH PATENT 938,931. 9.10.63(8.1.60). PLAIN BEARINGS. The Glacier Metal Co.Ltd., P. G. Forrester and G. C. Pratt).

A method is given for the production of plain bearings having a bearing surface of a polycarbonate, containing at least one filler, such as a metal powder, metal oxide, a plastic material, e.g.polytetrafluoroethylene, graphite powder, asbestos or glass. The layer of filled polycarbonate is bonded to a metal backing whose surface has been rendered porous or pitted to improve adhesion.

46 BRITISH PATENT 943,146. SELF-LUBRICATING ELEMENT. J. Miguel.

A self-lubricating element comprises a conglomeration effected under heat and pressure of a mixture of powdered soft iron powder, molybdenum disulphite, thermosetting resinous binder and a filler e.g. asbestos fibres.

PART 5. REINFORCED PLASTICS.

47 FEREBESTOS. Engineering 1963, No.5077, pp. 178-179.

The uses of asbestos/synthetic resin laminates in engineering applications are discussed with illustrations.

48 IMPROVED ASBESTOS-REINFORCED LAMINATES. C. L. Rohn and N. W. Edgerton. Elect. Insulat. Conf.Mater. and Applic., 4th Conf. Washington, 1962, S l., s.a, 1-5.

The electrical conductivity of asbestos depends on the properties of the surface layers of asbestos fibres: it sharply increases when water is absorbed on the surface of the fibres. Thus the impregnation of asbestos paper with resins considerably improves its electrical insulating properties. Flexible electrically-insulating materials can be obtained by impregnating paper based on Canadian chrysotile asbestos with 45-50 wt.% of a resin. Data of electrical and mechanical properties of these products are given.

49 GERMAN PATENT 1,153,160. PRODUCTION OF ELASTIC OR TOUGH SHAPED RESINOUS PRODUCTS. Dr. Beck & Co., G.m.b.H.

Fireproof and insect-resistant materials, based on resins derived from halgen -, nitrogen - or phosphorous-containing esters and polyisocynates, contain the following additives: a) antimony compounds and, optionally, arsenic compounds, b) inorganic aggregates with m.p. above 1000°C, and c) inorganic materials sintering below 1000°C. In an example, the composition comprises inter alia a small amount of asbestos.

50 BRITISH PATENT 941,423. 941,424. MOULDING COMPOSITION. Chemische Werke Albert.

Asbestos mentioned as a filler.

51 GERMAN PATENT 1,150,523. MOULDING PREPARATIONS CONTAINING UNSATURATED POLYESTERS, BUT NO UNSATURATED MONOMERS. Farbenfabriken Bayer.

These preparations contain crystalline polyesters produced from -unsaturated dicarboxylic acids (e.g. fumaric acid), diprimary dialcohols (e.g. 1,4 -butylene glycol), and the Diels-Alder adducts of anthracene, or its derivatives with the unsaturated dicarboxylic acids. Suitable fillers include glass fibers, asbestos, jute, metal fibres, artificial fibres, chalk, slate powder etc.

PART 6. ASBESTOS JOINTING, COATING ETC.

52 ASBESTOS-NEOPRENE MAKES DURABLE GASKETS. Mater. Design. Eng. Nov. 1963, 58, No.6, pp. 167-168.

Sulphur-free sheet packing made by Keasbey.

53 GERMAN PATENT 1,156,980. PRODUCTION OF SHAPED BODIES OR COATINGS BY CURING POLYESTER MOULDING PREPARATIONS. Farbenfabriken Bayer.

These preparations comprise unsaturated polyesters, vinyl monomers capable of copolymerisation and, optionally, accelerators, fillers and/or fibres. Suitable fillers include chalk, kaolin, asbestos and glass fibres etc.

54 FRENCH PATENT 1,343,530. POLYOLEFINE COMPOSITIONS. Haveg.Ind., Inc.

These compositions comprise a solid polyolefine and asbestos, such as antophyllite. They may be used, for instance, as a high-temperature resistant coating for an electric conductor.

55 BRITISH PATENT 943,090. ADHESIVE CEMENT. Formica International Ltd.

cheap adhesive cement composition contains asbestos fibres. It is claimed that such compositions are useful for bonding boards or panels to brick walls and ceilings.

56 BRITISH PATENT 943,410. WATER-RESISTANT ADHESIVE COMPOSITION. Winn & Coales Ltd.

Asbestos mentioned as a filler.

57 EPILOTE RESINS IN COLD-HARDENING SYSTEMS. Gummi-Asbest-Kunststoffe, 1963, 16, No.10, 938, 940.

Epikote resin-base coatings are suitable for the protection of structural materials, including asbestos cement, against the atmospheric erosion, especially in towns and in the neighbourhood of factories. They are characterised especially by a good resistance against attack by alkalis.

PART 7. PLASTIC BUILDING MATERIALS AND PIPES.

58 11% MORE PLASTICS USED IN BUILDING. Chem.Eng.News 1963, 41, No.34, 17-18.

An informative analysis is given of the various uses of plastics in the Building Industry, which increased 11% in 1962 over the 1961 level. Vinyl resins show the biggest volume. Flooring, paints, insulation and panelling are important uses.

59 STATE TESTS ASBESTOS MIX FOR THIN OVERLAYS. Roads & Streets, July 1963, 106, p.122.
App. Sci. Tech. Index. Dec. 1963, 51, No.11, p.287.

60 SASK MAY BOOST ABS AND PVC PIPE SALES. Can.Chem.Processing 1963l No.7, p.60.

It is noted that a farm development scheme in Saskatchewan is testing acrylonitrile-butadiene-styrene copolymer and PVC piping for use as mainstock and drain pipes in farm houses and buildings. The effect of adopting one of these types of piping on the Canadian consumption of piping is discussed.

61 CORROSION RESISTANT FLOORING MATERIALS "PRODORFLOR" EPOXY RESIN FLOORING. Corr. Tech. 1963, 10, No.8, 199.

It is claimed that this jointless flooring and surfacer based on epoxy resins, chemically inert fillers and aggregates has excellent adherence to both old and new clean concrete surfaces, bricks, tiles and asbestos, and suitable wood surfaces. Properties of the material are briefly stated and methods of application are mentioned.

62 BRITISH PATENT 934,628. FLOORING MATERIAL. Semtex Ltd.

Asbestos mentioned as a filler.

63 BRITISH PATENT 940,548. PREFABRICATED BUILDING MATERIAL. The distillers Co.Ltd.

A prefabricated building material comprises a sheet of asbestos cement and bonded to it by means of adhesive a sheet of expanded plastic material.

64 BRITISH PATENT 941,023. PANEL MATERIALS. B. Jablonsky.

An insulating panel material consists of expanded polystyrene core to which is applied on one face asbestos cement sheet and to the other plywood or similar.

Claim is made that such panelling is particularly suitable for a sloping roof for factories and other buildings.

65 BRITISH PATENT 945,250. NON-POROUS ASBESTOS-REINFORCED PIPES. Johns-Manville Corp.

Manufacture of pipes and Pipe's joints from asbestos paper.

66 BRITISH PATENT 945,962. MINERAL FIBRE TILE. Wood Conversion Co.

A Fourdrinier mineral fibreboard in tile form can be made from a slurry containing:

Slag wool fibre	94.5	parts by weight
Amosite fibre	2.5	" "
Sulphite cellulose fibre	3.0	" "
Tapioca starch grains	13.0	" "
Wax - size	1.0	" "

67 GERMAN PATENT 1,157,127. PROCESS FOR THE PRODUCTION OF A CLEANABLE OR INSULATING COATING ESPECIALLY FOR STRUCTURAL ELEMENT. A. Kocelli and L. Alig.

These coatings are made by mixing together asbestos fibres, cement and activated bentonite and preparing an aqueous slurry, just before the application oxide colours may be added. A cleanable coating comprises suitably 40 weight parts of short asbestos fibres, 60 parts of white cement, and 10 parts of active bentonite. A thermal-insulating coating comprises 75 parts of asbestos, 15 parts of cement and 15 parts of bentonite. A sound-absorbing coating comprises 75 parts of asbestos, 15 parts of cement and 10 parts of bentonite.

68 GERMAN PATENT 1,155,874. HARDENABLE COATING PREPARATIONS FOR ASPHALT - AND/OR CONCRETE ROADS, WOOD - OR METAL SURFACES ETC. Bataafse Petroleum Mij.

These bitumen base compositions contain epoxyalkyl-substituted amino compounds and solid finely comminuted additives as anti-skid agents. In an example, a composition comprises coaltar-pitch, N,N,N'N'- tetraglycidyldiaminodiphenylsulphone and a pigment consisting of asbestos 3X with the addition of a small amount of carbosil.

69 BELGIAN PATENT 630,524. ROOFING MATERIAL. Johns-Manville Corp.

A roofing material consists of a fibrous felt and a polyisobutylene-base cover (which may contain some fillers). The fibrous felt is made of an aqueous suspension of asbestos fibres with the addition of a water-insoluble binder, preferably a rubber latex (in an amount of 2 - 25% of the weight of the felt). The felt and the cover become firmly joined without the necessity of using an adhesive. The cover may have an additional backing. The product has excellent properties including high resistance against atmospheric influence.

70 BELGIAN PATENT 633,607. COATINGS. A. Haag.

A material for coating internal walls or ceilings contain gypsum, cellulose derivatives (soluble in water), fillers and vegetable fibres. The preferred composition consists of (in %): casting gypsum 40, hydrated lime 10, quartz sand 44, wood paste (cellulose) fibres) 1.5, asbestos fibres 2.5, animal glue 0.6, methylcellulose 0.3, and polyvinyl acetate 1.0.

PART 8. ASBESTOS PAPER AND INSULATING MATERIALS.

71 BRITISH PATENT 938,615. MANUFACTURE OF IMPREGNATED FELT PAPER. M. Hebbelinek.

A felt paper made for example from asbestos fibres has a highly porous structure (up to 70% of the total volume of the paper) and can be used as a support in the manufacture of floor, wall and table coverings.

72 BRITISH PATENT 943,864. MOUNTING ELECTRICAL RESISTANCE ELEMENTS. Johns-Manville Corp.

A porous medium density millboard is produced on a wet machine from a water suspension of the following ingredients:

Asbestos fibre 5K	50% by weight
Diatomacecus earth	40% " "
Dry silica of soda	10% " "

73 GERMAN PATENT 1,157,)39. A RUBBER TUBING WITH REINFORCING ENCLOSURE. Continental Gummi-Werke.

A rubber tubing, for hot steam (above 130°C) or propellants, consists of an inner tube made of rubber or a rubber-like material, an intermediate layer of asbestos fibres enclosed on both sides by a steel wire net, and a perforated external layer made of an elastomer. The asbestos fibre layer is movable.

74 GERMAN PATENT 1,159,054. INSULATING FOIL BASED ON MICA. Licentia Patent - Verwaltungs.

An insulating foil consists of paper produced from a pulp comprising thermally and mechanically processed mica flakes and similarly treated asbestos fibres.

75 RUSSIAN PATENT 155,430. HEAT-INSULATING MATERIAL. R. F. Burba et al.

The properties, especially the strength, of heat insulating materials comprising asbestos and perlite are improved by the use of a gel binder consisting of silicates of magnesium, calcium and iron. According to the invention, the asbestos is treated with sulphuric or hydrochloric acid. A gel-type binder is produced in this way to which water glass is added, and then perlite is admixed. The mixture is moulded and dried in an oven. The treatment results in the replacement of Mg and Ca ions, on the surface of asbestos fibres, by H ions. These ions convert the water glass added into a reversible gel which, together with the Ca and Mg ions and R_2O_3 oxides, forms a strong binder. Materials required for the production of insulating material are: $1.1m^3$ exfoliated perlite, 40 kg asbestos, 4 kg. acid, 60 kg. waterglass and 600l.water. The bulk weight of the product is 165-180 kg/m^3, the bending strength is 1.8-2.5 kg/cm^2., the compressive strength is 2.5-3.5 kg/cm^2., the thermal conductivity is 0.0472 kcal/m.hr, and the coefficient of thermal expansion is 0.000158. The material can be used at temperatures of up to 700°C.

76 GERMAN PATENT 1,156,459. ELECTRICAL INSULATING BODIES RESISTANT TO HIGH TEMPERATURES AND TO THE ACTION OF ELECTRIC ARC. Suddeutsche Tsolatorenwerke.

Electrical insulating bodies for potentials above 10,000v. consist of inorganic fillers, such as asbestos, marble, flour steatite flour, Al_2O_3 and/or MgO, with the addition of 15 - 22% of a synthetic resin used as a binder. The resin contains 5 - 25% (with respect to its weight) of polymethylmethacrylate, the rest being a phenolformaldehyde resin and/or a melamine resin. The body can be advantageously coated with a thin layer of a polymeric acrylic acid ester and/or polystyrene.

PART 9. REFRACTORY FIBRES.

77 FRENCH PATENT 1,341,777. THERMAL INSULATION. Union Carbide Corp.

Heat insulating construction for temperatures above 480°c, comprises an evacuated part containing alternating layers of a fibrous material and heat-reflecting metal sheets(copper, nickel or molybdenum). Suitable fibrous materials include fibres made from quartz, potassium titanate or a ceramic material. The diameter of the fibres should be less than 20 microns.

78 BRITISH PATENT 941,240. METAL FIBROUS INSERTS. Rolls-Royce Ltd.

According to this invention a plurality of silica fibres are embedded in a metallic matrix material, e.g. aluminium (fibres being pre-stressed by tensile load prior to their embedding) in order to retard the plastic creep deformation of the matrix.

79 BRITISH PATENT 942,186. FIBROUS CARBON ARTICLE. Ministry of Aviation.

Massive fibrous carbon material comprises carbon fibres which are the thermal conversion product of organic (e.g. synthetic resin) fibres and in which the fibres have an enveloping layer or skin of carbon deposited after the thermal conversion step.

80 JAPANESE PATENTS 20613/63 AND 20614/63. GLASS YARN COATED WITH CARBON. Nippon Inorganic Fiber Ind.Co.

Glass yarn having a high tensile strength, and excellent heat resistance and chemical resistance is produced by coating high-silica glass fibres with carbon. The fibres, prior to coating are leached to remove soluble components. The carbon coating is applied by impregnating the yarn with resins, such as, acrylonitrile butyl estor resin, methylmethacrylate resin or styrene-butadiene copolymer, and by heating the coated yarn at a high temperature in an inert gas or reducing gas atmosphere. The heating may be preceded by treatment with sulphuric acid.

PART 10. MISCELLANEOUS.

81 THE DEHYDRATION OF CHRYSOTILE IN AIR AND UNDER HYDRO-THERMAL CONDITIONS. M. C. Ball and H. F. W. Taylor. Miner.Mag.(London), 33, June 1963, 467-82.

82 USE OF ASBESTOS IN DENTAL TECHNOLOGY. N. S. Mukhin. Probl.stom. (Problems of Stomatology) 1962, 6, pp.400-401. Monthly Index of Russian Accessions, June 1963, 16, No.3, p.676.

83 BRITISH PATENT 930753. THERMAL INSULATION. Johns Manville Corp.

Specified thermal insulation comprises layers of heat-resistant fibrous material and a binder (e.g. a thermosetting resin, such as PF) and porous insulating material consisting of bonded particulate filler agglomerate.

84 CERAMIC FILTERS BASED ON CASTINGS OF ASBESTOS WASTE PRODUCTS WITH THE USE OF BENTONITE AS A BINDER. K. A. Smirnova, & V. F. Ustinova. Tr. Gos. Nauchn.-Issled. Inst. Stroit. Keram. 1962, No.20, pp. 86-98.
Chem. Abst. Oct. 14, 1963, 59, 8453g.

85 BRITISH PATENT 945513. FILTER MATERIAL PRODUCTION. Compagnie de Saint-Gobain. Priority 25.3.60 (France) Pub.2.1.6.4.

A filter material is made by depositing calcium silicate on a mixture of glass fibres and asbestos to form an intimate mixture of glass fibres, asbestos and powdered calcium silicate. The ingredients may be used in aqueous dispersion containing also a flexible resin, e.g. polyvinyl acetate.

86 FRENCH PATENT 1,331,667. FIBROUS PRODUCTS. Mead Corp.

Fibrous products contain 10 - 85% fibres, such as cellulosic fibres, organic synthetic fibres, glass fibres, asbestos etc., and 15 - 90% of a resinous material. The resinous material is present in the form of a salt of a polyvalent metal, and is obtained by the precipitation of a soluble alkali metal salt of a polymer with polyvalent metal ions. The floculation of the resin is controlled by the addition of a small amount of a high-molecular-weight polyethylene oxide.

87 AN X-RAY STUDY OF ASBESTOS. G. A. Sidorenko. Sb."Mineraln. syre", No.5, M., 1962, 110-121; Ref.Zhur. Geol. 1963, 11B175.

88 CLARIFICATION AND STERILE FILTATION (WITH THE ASBESTOS FILTER PAD). Henry E. Stapowick. Am. Perfumer Cosmet. 1963, 78, No.7, pp. 21-23.
Chem. Abst. Sept. 30, 1963, 59, No. 7, 7318g.

89 FRENCH PATENT 8060 (ADDN. TO 1,326,302) FILTER PAPERS OR MASSES. Etat Francais.

Filter materials based on glass fibres and asbestos are prepared in an alkaline medium, using binders which are normally used for the preparation of glass fibre filter paper without asbestos.

PART 11. REVIEW OF JOURNALS.

"ASBESTOS", November 1963.
807 Western Saving Fund Bldg., Philadelphia 7, Pa., U.S.A.

90 MAKING THE MOST OF ASBESTOS, page 2.
91 ASBESTOS AROUND THE WORLD
ASBESTOS GOES BY BARGE ON THE NILE
VISIT TO SIEGWART PLANT, page 10.
92 A-C PIPE PLANT-REGINA, CANADA, page 16.
93 MARKET CONDITIONS, page 34.
94 PRODUCTION, page 38.
95 IMPORTS & EXPORTS, page 40.
96 INDUSTRY NEWS, page 46.

"ASBESTOS, December 1963.

97 REVIEWING 1963, page 2.
98 ASBESTOS AROUND THE WORLD
YOUNG GREEK COMPANY IS GROWING FAST, page 32.
99 MARKET CONDITIONS, page 44.
100 IMPORTS & EXPORTS, page 48.
101 INDUSTRY NEWS, page 54.

Ann. Occup. Hyg. Vol. 13, p. 1. Pergamon Press 1970. Printed in Great Britain

PREFACE

Exposure to Asbestos during brake and clutch maintenance

THE PAPERS which follow were originally presented at a Conference held at the Central Office, Ford Motor Co., Brentwood, Essex, on 26 March 1969. The Chairman of the Conference was Dr G. H. Channing, Chief Medical Officer, Ford of Britain, who opened the proceedings by outlining the events which had led to the arranging of the Conference.

Publication of the proposed Asbestos Regulations by the Department of Employment and Productivity had raised queries within the motor industry as to whether clutch and brake maintenance activities, both at the manufacturers' premises and within the repair trade, would come within the requirements of the Regulations. There was a general desire that the subject should be investigated, and any necessary remedial measures sought, in advance of the legislation so that Dealers could be advised and servicing procedures modified where this might be necessary. Investigations had been made by the Industrial Hygiene Units of the British Motor Corporation, and of Ford of Britain, and their findings would be reported to the meeting. These would be preceded by papers on the medical aspects of exposure to asbestos, and later in the programme there would be papers indicating possible solutions to the problems involved.

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