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MONSANTO CHEMICAL COMPANY
ORGANIC CHEMICALS DIVISION
ST. LOUIS 24, MISSOURI

February, 1961

END USES FOR AROCLOR COMPOUNDS

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END USES FOR AROCLOR COMPOUNDS

GENERAL

You remember some time ago you cooperated with us in supplying information about where your customers are using Aroclor compounds and the reasons why they were using them. This survey covered all accounts that purchased over 5,000 pounds of Aroclor annually. Your aid in this project was deeply appreciated. We have now compiled these results and this is the way it stacks up. We hope this will be useful to you in suggesting new uses or applications for the Aroclors and increasing your sales of these products.

SURFACE COATINGS are the largest single outlet for the Aroclor compounds. The adhesion, cost, chemical resistance, and flame resistance of these Aroclors are of tremendous importance.

The ADHESIVES Industry also consumes large quantities of Aroclors. In the adhesive field the adhesion, cost, and flame retardancy are the three most commonly mentioned reasons for the use of these products.

The PLASTICS Industry also consumes sizeable quantities of Aroclors depending upon the type of end application. The reasons most commonly mentioned for using the Aroclors are adhesion, cost, flame retardancy.

The miscellaneous category includes all types of applications, some of which are large, some of which are very small. However, we have outlined these applications in the attached sheets.

The attached write-ups are for your own use only, and not to be shown to customers. You will note we have shown four categories in order to give you an idea of our volume in each field. The break down on these is shown below.

Large	500,000 pounds and over
Good	250,000 - 500,000 pounds annually
Fair	100,000 - 250,000 pounds annually
Minor	Less than 100,000 pounds annually

You will note a practical potential figure. This is an indication of the number of times we could probably expand our participation in this field with effort.

We have shown products used. These are in descending order of use in the field of application.

We have shown the number of customers for each particular application and the number of bulk and truckload customers to give you a better understanding of the field; as well as the number of times a reason for using the Aroclors appeared in this particular field.

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In addition to giving you a summary page on the entire field, we are backing this up with a list of patents that have appeared in each field and slants from your call reports. We hope this will aid you greatly in getting a better understanding of the Aroclor field, plus aiding you in your sell-more Aroclor program.

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SURFACE COATINGS

TYPE	VOLUME	POTENTIAL	AROCLOR PRODUCTS USED	# Customers	# Bulk or TL Cost	Adhesion	Cost	Oxidation	Chem. or Corrosion Resistance	Flame Resistance	Melt Point	Viscosity	Extraction	Water Resistance
Chlorinated Rubber	Large	1.5	1252, 5460, 1260, 1248, 1242	31	5	7	13	4	13	6	1	5	4	-
Nitrocellulose	Large	2	1254, 5460, 1260, 4465	13	1	4	12	2	--	1	-	-	1	1
Polyvinyl Chloride	Large	3	1254, 5460, 1260	7	3	2	3	-	4	4	-	-	-	-
Styrene-Butadiene	Good	6	5460, 1254, 1242	10	1	2	2	-	-	3	-	1	-	1
Epoxy	Fair	5	1242, 1260, 1254 1248, 1268, 5460	7	0	3	6	-	3	2	-	1	1	-
Silicone	Minor	5	1242, 5460, 4465	3	0	-	-	-	-	-	-	-	-	-
Polyvinyl Acetate	Minor	5	1260, 1254, 5460	4	0	4	3	-	-	2	-	-	-	-
Asphalt	Minor	10	1254, 1248, 1260	3	0	2	1	1	1	1	1	1	1	-
Phenolic	Minor	5	5460, 4465	3	0	2	1	-	1	2	-	-	2	-
Alkyd	Minor	10	1254, 5460	2	0	1	1	-	1	1	-	1	-	-
CA/Bu	Minor	15	4465, 5460	1	0	-	1	-	-	1	-	-	-	-
Ethyl Cellulose	Minor	20	1260	1	0	-	-	1	-	-	-	1	-	-

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CHLORINATED RUBBER

Chlorinated rubber (Parlon) is used in many fields of applications. Of the thirty-one accounts, we find that chemical resistance coatings, and masonry paints are the two most common uses. However, traffic paints, marine type paints, and shingle coatings also get a good play in this field.

A FLAME-RESISTANT, WATERPROOFING impregnating compound for asbestos cloth used in locomotive cabs contains chlorinated rubber, an Aroclor compound, and a wax. U.S.P. 2,145,235 by Robert E. Cryor assigned to Union Asbestos and Rubber Company, Chicago, Illinois.

Liquid Aroclor Compounds plus chlorinated rubber and pigments are used in a coating to protect and COLOR CONCRETE. U.S.P. 2,306,570 by Edward W. Scripture Jr., Skaker Heights, Ohio.

NITROCELLULOSE COATINGS

We find that our Aroclor compounds are being sold in Nitrocellulose lacquers for the following applications.

1. Electrical Appliance cable finish for dielectric properties of the finished cable.
2. Heel lacquers for women's shoes.
3. Lacquers for fiber seat covers for automobiles.
4. Overprint varnishes.
5. Wire cable coatings.
6. Metallic lacquers.

While Nitrocellulose is an old product, there are constantly new applications for the use of Aroclors popping up in this field.

POLYVINYL CHLORIDE

In totaling up the amount of Aroclors sold in polyvinyl chloride surface coatings, we were surprised to find that it was so large. Among the interesting applications are flame proof acoustical tile finishes and metal coatings where the Aroclor contributes adhesion.

A COATING FOR BARRELS and similar metallic surfaces composed of a vinyl chloride/vinyl acetate copolymer, an Aroclor compound, plasticizer and pigments. U.S.P. 2,111,395 by Otto J. Hartwick assigned to Pittsburgh Plate Glass Company, a corporation of Pennsylvania.

A METAL COATING that can be later pressed and formed has a finish lacquer over it for chemical resistance composed of polyvinyl chloride and an Aroclor compound dissolved in suitable solvents. U.S.P. 2,293,420 by Geory Wick, seized by Alien Property Custodian.

AN ELECTRICAL INSULATING MATERIAL for exposed bus bars comprised of a vinyl chloride/vinyl acetate copolymer, Tricresyl Phosphate, an Aroclor compound, and stabilizer. U.S.P. 2,183,811 by Edward C. Homan assigned to Irvington Varnish and Insulator Company, Irvington, New Jersey.

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AN IMPREGNATING AND INSULATING MATERIAL for filling interstices for embedding or covering objects is composed of a small amount of polyvinylcarbozole and a large amount of an Aroclor compound. U.S.P. 2,227,637 by Rudolf Engelhardt assigned to I. G. Farbenindustrie Aktiengesellschoft, Frankfort-on-the-Main, Germany.

A METAL COATING composition capable of being bent after baking is composed of a vinyl chloride/vinyl acetate copolymer and an Aroclor compound dissolved in suitable solvents. U.S.P. 2,115,214 by Clifford Jay Rolle assigned to Ault and Wiborg Corporation, New York, New York.

STYRENE-BUTADIENE

In Styrene Butadiene coatings, which are commonly used in masonry paints, and metal paints we find one unique characteristic of the Aroclor compounds is their improved anti-tarnish characteristic compared to Chlorinated Paraffins when metallic pigments are used.

RANDY GRAHAM reports the reason they switched from Chlorowax to Aroclors 1254 and 5460 in their Pliolite S-5 traffic paint was because Chlorowax 70 precipitated from the formulation. When the paint was applied the precipitated Chlorowax was pressed out of the film and it affected the drying time. He talked with Goodyear about this problem and they ran a series of tests. Their findings verified test results which he had obtained where precipitation of Chlorowax took place. He said Goodyear's new technical bulletin will probably call for Aroclors in Pliolite formulations for traffic paints.

POXY RESINS

As you know, we have a big push on for the use of Aroclor compounds in epoxy plastics and surface coatings. Shown below are three references which may be of value to you.

JOE HENNINGER contacted Mr. _____ to follow up his purchase of 300 pounds of Aroclor 5460 in late November. This material is being used in epoxy resin coatings. Mr. ____ said that he very much approves of the flaked material over the old Aroclor 5460 which he had previously evaluated.

ED FORDING reports a customer using Aroclor 1254 in self-extinguishing epoxy coatings. The Aroclor 1254 produces an excellent gloss with a great depth.

They are currently using Aroclor and Mod Epox in an epoxy terrazzo. JOHN ELWOOD says that this is a relatively new product with them and seems to be going over very well. They expect their purchases to increase greatly in 1961.

POLYVINYL ACETATE

In polyvinyl acetate coatings the Aroclor compounds are used primarily in concrete or stucco paints plus one account that is using them in a paper coating.

ASPHALT COATINGS

In the asphalt coating field the Aroclor surface coatings are used primarily to impart flame retardancy and good corrosion resistance

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JOHN LONSBERG has an account that uses Aroclor 1254 in connection with coatings on pipes, underground and above ground.

PHENOLIC SURFACE COATINGS

Phenolic surface coatings seem to find their greatest play in masonry and marine coatings.

JIM COMPTON reports that a p-tert-amyl phenolic type marine varnish containing 40 parts of Aroclor 1268 showed up very well in exposure tests of fourteen months at 45° angle in Florida. The Aroclor 1268 is used to give a velvet-like appearance to low-gloss varnish, probably by recrystallization of Aroclor as varnish dries. Varnish is 50% solids with 50 parts mineral spirits, 50 parts turpentine, 50 parts Celite 110, 6 parts Bentone, 40 parts Micromica (C-300 English Mica Company) and 3 parts anti-skinning agent. Also used is Cobalt drying agent and zirconium dry catalyst. Expected use is a varnish for cedar or redwood.

ALKYDS

JOHN ELWOOD has an account that uses Aroclor 1254 and 5460 in an alkyd in combination with a wax for the flame proofing of Christmas Trees.

The use of Aroclor compounds increases the adhesion of SHORT OIL varnishes. National Paint, Varnish, and Lacquer Association. Science Section Circular #555, 100-103 (1938)

MISCELLANEOUS

In looking over the miscellaneous category, which is too minor to report, we find that Aroclors are being used in both ETHYLCELLULOSE and CELLULOSE ACETATE BUTYRATE for CABLE LACQUERS.

WALLY HILLIARD reports he has a customer using Aroclors in a floor wax in combination with other waxes because of the melting point of the Aroclor 5460.

FRANK GUIGNON reports he has a customer that uses Aroclor 5460 as a sole binder with metallic pigments because of the excellent resistance of the Aroclor compounds with regards to anti-tarnishing properties on the pigments.

The use of Aroclor compounds in ALLYL STARCH emulsions including preparation and hardness is discussed in U.S.D.A. ---- Circular AIC - 351 (1953).

BILL DAMRON has a customer using Aroclor 1254 in a new non-flammable thermoplastic icicle for Christmas Trees.

A WATERPROOFING composition for wood is composed of Aroclor 5460 plus other ingredients dissolved in solvent. The coating drys to a tack-free, easily-painted surface. U.S.P. 2,549,127 by Donald D. Pew assigned to Stopall Waterproofing Manufacturers Inc., Kalamazoo, Michigan.

AN ANTI-STATIC coating for plastics is made of acrylic polymers and an Aroclor compound dissolved in suitable solvents. U.S.P. 2,640,817 by Eleanor G. Sheridan, Luther L. Yeager, and John Bjorksten assigned to Nash-Kelvinator Corporation.

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JAKE ARBOGAST gave figures on availability of Montars. This is all going into sealing compounds for automotive use.

The technology employed by one of WALLY SCHALK'S accounts was so unlike other aspects requiring plasticizer usage, he was at a loss to recommend plasticizers. Instead, he sent the customer one of our Aroclor booklets. Subsequently, the customer requests samples and informed Wally that the Aroclors imparted some rather unusual and some highly desirable artistic effects to this system.

JOHN LONSBERG has an account that uses Aroclor 4465 in a special floor paint which is mixed with an abrasive to give non-slip properties. The majority of this is for government use at present.

AN AEROPLANE PROPELLER ICE PREVENTING coating composed of polyisobutylene and an Aroclor compound. U.S.P. 2,434,208 by Richard S. Gaugler and Hugh W. Guenther assigned to General Motors Corporation, Dayton, Ohio.

A SEALANT OR COATING for sealing an anodized oxide coating formed on aluminum is made by dissolving 1%-5% of an Aroclor compound in a suitable solvent. U.S.P. 2,698,262 by Frederic Balmar, Versailles, France.

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ADHESIVES AND SEALERS

TYPE	VOLUME	PRACTICAL POTENTIAL	AROCLOR PRODUCTS USED	# Customers	# Bulk or TL Customers	Adhesion	Cost	Oxidation	Chem. or Corrosion Resistance	Flame Resistance	Melt Point	Viscosity
POLYVINYL ACETATE EMULSION	Large	2	1232, 1254, 1248, 1221, 1242, 1260	19	7	17	19	1	1	3		5
POLYVINYL ACETATE HOT MELT	Large	4	1248, 1254, 5460	4	2	3	3	-	-	-	1	-
RUBBER	Good	5?	1254, 1262, 5460, 1260	7	1	6	6	-	-	5	-	-
RUBBER (THIOKOL)	Good	3	1254, 1260, 1221	2	1	-	1	-	-	1	-	1
ASPHALT	Minor	20	Montar, 1254, 5460	3	0	1	1	-	-	-	-	-

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OLYVINYL ACETATE EMULSION ADHESIVES

The Aroclor compounds are widely used in emulsion adhesives. If you will remember we used to make Ortho-Nitrobiphenyl. When this product became unavailable, we ran a program to try to replace it with Aroclor compounds. In this we were highly successful. The Aroclor compounds offered the advantage of being liquid, low in color, and easy to mix into the vinyl acetate emulsion. We find customers using them for adhesives, for cartons, envelopes, industrial equipment, and paper board boxes.

POLYVINYL ACETATE HOT MELT

Here is a large field that is growing rather rapidly. This type of hot-melt adhesive is used to bind the quarter paper, back novels, Reader's Digests, etc. It has offered real economies to the publisher because of its rapid set characteristics. The solid Aroclor 5460 is used to make a formulation that is non-tacky at room temperature and is a fluxing aid. The liquid Aroclor plasticizes the composition.

A SEALING COMPOUND for cans to contain alcohols is comprised of a vinyl chloride/vinyl acetate copolymer, an Aroclor compound, Santicizer B-16, and suitable solvents and pigments. U.S.P. 2,392,412 by John E. Robinson and Paul W. Millilot, Jr. assigned to American Can Company.

RUBBER ADHESIVES

We were surprised to find out the amount of Aroclor compounds that are being sold in rubber adhesives. Here the low cost, the adhesion and flame retardancy of the Aroclor is of prime importance. With regards to end applications, we find that Aroclors are being used in rubber adhesives for rug backings, flooring adhesives, and tape mastics. In addition, one company is making an emulsion adhesive based upon polyisobutylene and Aroclor.

RUBBER (THIOKOL)

Here is another sleeper. The quantity that we are moving in this field once again caught us by surprise. Evidently, the Aroclor compounds are one of the few materials that give high compatibility and flame retardancy with the Thiokol material. The primary end use is in sealing compounds for aluminum windows, industrial applications, curtain wall construction, etc. The normal range of application will be anywhere from 10 parts of Aroclor up to 50 parts of Aroclor.

FRANK GUIGNON has a customer currently working on a polysulfide synthetic rubber development. The end product will contain about 50% Aroclor 1221. The finished product is to be used for flexible molds, electronic potting, and building sealants. Aroclor functions as a plasticizer in the formulation.

MISCELLANEOUS

The Aroclor compounds are used in a variety of miscellaneous adhesive applications. The following references may prove valuable talking points at specific accounts.

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A SEALING COMPOUND for the joints of conduits and contains effective form -67°F to 212°F is made by mixing approximately equal parts of amorphous graphite and an Aroclor compound. U.S.P. 2,471,010 by Laurence L. Rector, Fort Worth; and Charles L. Cron, Houston, Texas.

A SEALING AND ANTI SEIZE pipe joint compound is made of powdered graphite, an Aroclor compound, and a small amount of solvent. U.S.P. 2,508,596 by Clarence H. Cox, Clayton, Missouri.

A BOOKBINDING hot-melt adhesive composed of a viscous linear polyamide resin and an Aroclor compound (40%-65% chlorine). U.S.P. 2,612,463 by Rodney G. Brown assigned to E.I. DuPont de Nemours and Company, Wilmington, Delaware.

LEATHER and SHOE heat activated adhesive composed of Butadiene-Acrylonitril rubber copolymer, basic zinc carbonate, a vinyl chloride/vinyl acetate copolymer, and a solid Aroclor compound dissolved in a suitable solvent. U.S.P. 2,685,572 by John L. Perkins and Edwin E. Sylvester assigned to B. B. Chemical Company, Boston, Massachusetts.

METAL FOIL adhesives that can be applied hot or cold comprised of 25% of a liquid Aroclor compound, 50% of a solid Aroclor compound and 25% of a para coumarone-indene resin. U.S.P. 2,096,110 by Harry Kittredge and Sylvester J. Broderick assigned to Foilfilm Inc., Dayton, Ohio.

A HEAT ACTIVATED adhesive showing resistance to cold flow composed of approximately 100 parts of paraffin wax, 96 parts of Aroclor 5460, 45 parts of coumarone resin, and other ingredients. U.S.P. 2,376,778 by Ernest L. Kallonder assigned to Dennison Manufacturing Company, Framingham, Mass.

PUTTY made with the Aroclor compounds are non-hygroscopic, flame resistant, have excellent adhesion and remain flexible, soft and usable indefinitely. U.S.P. 2,743,188 by Samuel N. Hunter assigned to Hunter Metallic Products Corporation, East St. Louis, Illinois.

JOHN OREM reports that Jack has evaluated many plasticizers and finds Aroclor 1254 to be about the best with the epoxy systems. He has formulated a soft epoxy plasticized with about 30% of Aroclor 1254. Its use would be for a socket sealer. The epoxy cures at 350°F in one hour with an amine curing agent; will set up at room temperature in two days. Jack finds this formulation very stable in the presence of high heat of about 350°.

A thermosetting OPTICAL cement composed of dialkyl phenyl phosphonate and a viscous liquid Aroclor compound. U.S.P. 2,678,586 by John J. Lugert assigned to Eastman Kodak Company, Rochester, New York.

POLYSTYRENE WALL TILE EMULSION ADHESIVE composed of polystyrene emulsion, clay, Aroclor compounds, and other ingredients. The resultant adhesive has excellent adhesive characteristics and is waterproof. U.S.P. 2,486,756 by John F. Murphy and Russell Omadahl assigned to Monsanto Chemical Company, St. Louis, Missouri

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PLASTIC APPLICATIONS

TYPE	VOLUME	PRACTICAL POTENTIAL	AROCLOR PRODUCTS USED	# Customers	# Bulk or TL Customers	Adhesion	Cost	Flame Resistance	Extraction	Chem. or Corrosion Resistance	Viscosity
EPOXY	Fair	5	1248, 1262, 5460	2	1	-	-	-	-	-	-
PVC PLASTISOL	Fair	3	1254, 5460, 1262	7	0	4	5	6	-	1	1
PVC COMPOUND	Minor	3	5460, 1254, 1268, 1260	3	1	-	2	2	1	-	-
PHENOLIC	Minor	10	2565, 1268	2	0	1	1	1	-	-	-
CELLULOSE ACETATE BUTYRATE	Minor	15	5460, 1254	2	0	1	2	2	1	-	-
POLYESTER	Minor	40	1268, 5460	3	0	-	-	3	-	-	-
SARAN	Minor	20	1254	1	0	-	-	-	-	-	-
CHLORINATED RUBBER	Minor	5	1232, 1254	1	0	-	-	-	-	-	-

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PLASTIC APPLICATIONS

The low cost flame resistance and adhesion characteristics of the Aroclor compounds were most commonly mentioned in the plastic applications.

EPOXIES

Once again we are pleasantly surprised to find the volume of Aroclor that was moving in epoxy resin applications. Specific details on how these products were being used and the type of end applications were not available. The plasticization and the flame retardancy plus chemical resistance were the three most important reasons.

One of NORM JOHNSON'S accounts is planning to manufacture a coil from a flame retardant epoxy formulation utilizing Aroclor 1260. This flame retardant epoxy formulation has passed their customer's requirements in initial testing.

BILL DAMRON reports the customer is using Aroclor 1254 in a self-extinguishing laminated phenolic and epoxy application for printed circuit work.

POLYVINYL CHLORIDE

In the PVC plastisol field and in the compound field we find sizable volumes of Aroclors being used. The solid Aroclors are used in compounding primarily for processability while the liquid Aroclors are used in plastisols for viscosity stability and flame resistance. Also, in plastisols the solid Aroclors are used because of their low volatility and excellent adhesion.

Vinyl resins modified with Aroclor compounds are usable in making molds for thermosetting resins. U.S.P. 2,525,177 by William Lockwood assigned to Calresin Corporation of Culver City, California.

CURT SINGLETON passed along one of Bill Grosse's tip items. The tip of using 40 PHR of Aroclor 1268 was successful in a problem they have had wherein a prospect wanted a plastisol for dipping gloves but wanted a velvet feel to the coating.

Aroclors are used in foamed plastisols to control the blowing of the foam and in glove dipping to impart chemical resistance.

PHENOLIC MOLDING

In phenolic molding the Aroclor compounds are utilized as flow aids in grinding wheels and in brake linings.

CELLULOSE ACETATE BUTYRATE

In cellulose acetate butyrate the Aroclors are commonly used in hot melt applications. Here we would recommend adequate ventilation, of course. The solid Aroclor melts at the dipping temperature, but does not cause excessive tackiness when the part is cooled.

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A HOT MELT coating comprised of high butyryl cellulose esters and Aroclor compounds. U.S.P. 2,481,687 by Martin Salo and Harold F. Vivian assigned to Eastman Kodak Company, Rochester, New York.

A TRANSLUCENT PAPER BASE is made by impregnating the paper with a hot melt containing a high percentage of an Aroclor compound plus resin and overcoating with plasticized hot melt. U.S.P. 2,635,970 by Martin Salo and Harold F. Vivian assigned to Eastman Kodak Company, Rochester, New York.

MISCELLANEOUS COMPOUNDS

Of course, the Aroclor compounds are widely used in a lot of miscellaneous resins. Some of these applications involve only one or two customers of rather insignificant nature. However, we thought the following references might be of interest to you.

POLYVINYL BUTYRAL resins modified with Montars show good heat and humidity stability. U.S.P. 2,506,014 by Francis J. Curtis assigned to Monsanto Chemical Company, St. Louis, Missouri.

POLYSTYRENE molding products made non inflammable with a solid Aroclor compound possesses good electrical properties. U.S.P. 2,454,255 by Joseph R. Mores assigned to Monsanto Chemical Company, St. Louis, Missouri.

A FUNGICIDAL HOT MELT INSULATING compound composed of resins, an Aroclor compound, a fungicide and other materials. U.S.P. 2,556,451 by Howard E. Smith assigned to Insul-X Corporation, Brooklyn, New York.

BILL MADDOX reports that Aroclor 1268 is, apparently, doing quite a job thus far---used as a flame retardant in their silicone rubbers.

A customer of LEE JOHNSON is using regularly a combination of Aroclor 1254 and Aroclor 1268 in asphalt as a flame retardant. The combination of Aroclor and asphlat is eventually coated onto paper.

Aroclor compounds are used in the colloid layer of PRINTING FORMS U.S.P. 2,291,673 by Fritz Albers and Edward Schloemann assigned to General Analine and Film Corporation.

A HOT MELT coating for webs of paper or textiles composed of polyethylene, terpene resins, an Aroclor compound, and paraffin. U.S.P. 2,453,644 by Walter C. Steinkraus, Chicago, Illinois.

One of BILL DAMRON'S customers said Aroclor 1254 was used because of its fire resistance into resin material products. They are using it in two applications: wax paper coatings for paper converters and manufacturing liquid wax compounds for treating electrical component parts.

A RUBBER composition with good mechanical properties and improved fire resistant properties is made by adding 20 parts of chlorinated rubber to 80 parts of Aroclor 1260. Heat until the rubber is dissolved. Cool and add to 100 parts of rubber plus fillers and curing agents. U.S.P. 2,143,470 by Wilhelm Becker and Albert Kock assigned to I.G. Farbenindustrie Atkiengesellschaft, Frankfort-on-the-Main, Germany.

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A HEAT RESISTANT INSULATION compound composed of rubber and Aroclor compounds show good properties. U.S.P. 2,416,955 by Samuel J. Rosch assigned to Anaconda Wire and Cable Company, a corporation of Delaware.

Aroclor compounds are used to plasticize POLY p XYLENE compounds and filaments. U.S.P. 2,763,630 by James K. Hubbard assigned to E.I. DuPont de Nemours and Company, Wilmington, Delaware.

Aroclor 1260 is used in a low flammable, STERILIZABLE HAIR BRUSH made from Ethylcellulose. U.S.P. 2,326,811 by David R. Wiggam and William Koch assigned to Hercules Powder Company, Wilmington, Delaware.

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MISCELLANEOUS

APPLICATION	VOLUME	PRACTICAL POTENTIAL	AROCLOR PRODUCTS USED	# Customers	# Bulk or TL Customers	Adhesion	Cost	Extraction Resistance	Melting Point	Flame Resistance	Moisture Resistance	Oxidation Resistance
HOT MELT WIRE COATING	Large	1.2	5460, 5060, 4465, 1260	4	3	-	1	-	-	3	1	-
CARBONLESS CARBON PAPER	Large	1.5	1262	1	1	-	-	-	-	-	-	-
CASTING WAX	Good	4	5460, 4465, 1254	7	1	-	2	1	2	-	-	-
CARBON IMPREGNANT	Minor	3	5460, 1268	2	0	-	-	2	-	-	2	-
TACK RAGS	Minor	1.5	1262, 1254	1	0	-	1	-	-	-	-	1
ASPHALT ROOFING	Minor	15	Montars 3,4,5	1	1	-	1	-	-	1	-	-
CLOTH IMPREGNANT	Minor	10	1254, 5460, 1268	2	0	-	-	-	-	1	-	-
INSECTICIDE CARRIER	Minor	10	5460	2	0	-	-	-	-	-	-	-
PRINTING INK	Minor	30	5460, 1254, 1221	3	0	-	-	-	-	-	-	-
PIGMENT GRINDING	Minor	30	1254, 4465	2	0	-	-	-	-	-	-	-
PIGMENT CARRIER	Minor	30	1248	1	0	-	-	-	-	-	-	-
AIR FILTER MEDIUM	Minor	5	1254	1	0	-	1	-	-	1	-	1
DUST SUPPRESSANT	Minor	30	1254	1	0	-	-	-	-	-	-	-
FLOW STUDY	Minor	3	4465	1	0	-	-	-	-	-	-	-

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The miscellaneous applications for Aroclor cover a wide variety of applications.

HOT MELT WIRE COATINGS

In this application the market, while huge, is limited to a few companies that seem to control the bulk of the business. Here the Aroclors are blended with wax and phosphate esters to make hot melts that are then used to flame-proof cables. Unfortunately as vinyls increase in volume in the electrical trade, the application for Aroclors as an impregnant decrease.

CARBONLESS CARBON PAPER

This is an application that is patented. However, we have many other requests for Aroclors in carbon paper applications, some of which seem to be showing a fair deal of success.

CASTING WAX

The investment casting field is one that has been reborn. It is sometimes called the "lost wax" technique. We have made a sizable survey and you will be hearing more about this later. As it now stands, however, you can see we have a good many customers and the current volume is good. The flame resistance, the high impact strength, short melting point, and other desirable characteristics imparted by the Aroclors will enable us to give you a full story as soon as we are able to contact a few more people and verify their requirements.

AN ELECTRICAL INSULATING material is made by impregnating the base material with a mixture of styrene monomer and an Aroclor compound followed by polymerization. U.S.P. 2,147,824 by John Krauss Webb assigned to International Standard Electric Corporation of New York, New York.

CLOTH IMPREGNANT

Aroclors are used to impregnate felts for the Navy, for sound deadening characteristics in ships; they are also blended with wax to impregnate asbestos cloth to impart electrical properties. Other applications for Aroclors as impregnants are as follows:

SILICA TEXTILE materials that have been leached and then coated with a solution of Aroclor 5442 show improved abrasion resistance. U.S.P. 2,686,954 by Leon Parker assigned to the H.I. Thompson Company, Los Angeles, California.

RANDY GRAHAM has a customer currently using a mixture of Aroclor 5460 and Aroclor 1254 as an impregnant for welding cloths which are used in fabrication plants. He said that he actually flame proofs these cloths so that when sparks from welding hits the cloth no holes are burnt through. He is currently selling this to a steel company for their welding rooms which use these canvas cloths as walls to cut down on the amount of flying molten metal which occurs when welding. It might be that it could be extended to pup tents and the tent industry and maybe added in combination with some waterproofing chemical.

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GEORGE STEWART recommended the use of Montars to a customer who felt some of the air-conditioning companies such as Carrier plan to specify FIRE-RESISTANT ASPHALT FELT in 1961 for use in all air conditioning equipment.

A composition to give good resistance to both flame propagation and after flow is made by a combination of Aroclor compounds plus aldehyde condensation resins. U.S.P. 2,461,538 by Earl K. Fisher assigned to Interchemical Corporation, New York, New York.

A flameproofing composition is based on a mixture of a thermally unstable chlorinated resinous material, zinc carbonate, and other ingredients plasticized with a flameproofing plasticizer such as an Aroclor compound. U.S.P. 2,378,714 and U.S.P. 2,326,233 to Martin Leatherman, Hyattsville, Maryland.

INSECTICIDE CARRIERS

There has been a number of government articles which appeared on the use of Aroclors to extend the life of volatile insecticides for non-food prompt uses. Shown below are a series of references which may be of interest to your insecticide potentials:

Chlorinated Polyphenyls to improve Lindane Residues. W. N. Sullivan and I. Hornstein in Journal of Economic Entomology Volume 46, February 1953, Pages 158-159.

Improving Deposits for controlling insects outdoors. W. N. Sullivan, Irwin Hornstein, A. H. Yeomans, and Ching-Hsi Tsao, Journal of Economic Entomology, Volume 48 No. 2, Pages 153-154.

Aroclor 5460 extends life of Aldrin and Lindane but not DDT. Thought more volatile first two slowly escapes to surface. Thought DDT is marked by Aroclor 5460. Residual Effectiveness of Mixtures of Organic Phosphorous Insecticides with Chlorinated Terphenyls. Irwin Hornstein, William N. Sullivan, and Ching-Hsi Tsao in Journal of Economic Entomology, Volume 48 No. 4, August, 1955, Pages 482-483.

Lowering the Volatility of Lindane Cuttle Sprays by Addition of Film Forming Material. Irwin Hornstein, W. S. McGregor, and W. N. Sullivan in Agriculture and Food Chemistry, Volume 4, No. 2, February 1956, Pages 148-149.

The Use of Chlorinated Polyphenyls to Increase the Effective Insecticide Life of Lindane. Edward J. Duda - Journal of Entomology Soc, 218-219, (April 1957). Aroclor 5460 and Lindane may exhibit a synergystic effect in controlling elm leaf beetle.

PRINTING INKS

How many times have all of us thought that more Aroclors should be used in printing inks. At the present time a rather small amount is consumed in this field. Although as the following references show, there is considerable interest:

PRINTING INKS for metal application are prepared by dispersing pigments in EPOXY resins and Aroclor compounds. The inks show no discoloration upon baking and provide a smooth strong film. U.S.P. 2,736,719 by Hugo

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P. Stockmayer assigned to Sun Chemical Corporation, Long Island, New York.

A WET FINISHING varnish composed of an alkyd resin in solvent modified with a liquid Aroclor compound and polymethyl silicone. U.S.P. 2,736,355 by Jerome A. Ryan assigned to the The Sherwin Williams Company, Cleveland Ohio.

For Dick Tracy fans, JIM COMPTON has a customer currently using Aroclor 1221 at about a 1% level in an invisible ink formulation used to trace cutting pattern on Chenille rugs and spreads. Recently had to switch dye ingredients and Aroclor 1221 would not work with new dye, but Aroclor 1262 did work.

PIGMENT GRINDING AND CARRYING

This is a natural application for the Aroclor compounds. The customer by his choice of Aroclor can develop the type of viscosity he desires. The Aroclors give rapid wetting action into most pigments.

BILL MORLOCK has an interesting application where the customer is dispersing pigment and catalyst in Aroclor for polyester applications.

Aroclor 5460 is an excellent "wax" for DISPERSING PIGMENTS in solvents. U.S.P. 2,772,982 by Vincent C. Vesce assigned to B. F. Goodrich Company, New York, New York.

Aroclors are excellent wetting agents for the preparation of METALLIC PASTE PIGMENTS. U.S.P. 2,713,006 by Samual N. Hunter assigned to Hunter Metallic Pigments, East St. Louis, Illinois.

MISCELLANEOUS

The Aroclors also find a lot of miscellaneous applications, some of which are discussed briefly below:

Solid powdered Aroclor compounds are used as a DELUSTERING AGENT for rayon. U.S.P. 2,111,449 by James W. Humphrey and John W. Pedlow assigned to American Viscose Corporation

This company using Aroclor 1248 to thicken ceramic slurry reports JOHN ELWOOD.

RAY GREENE reports a metals laboratory has a rather unique use of Aroclor 1268. It is melted and then used to fill the pores of nickel sponge. The sponge can then be machined without destroying the cell structure. After it has been fabricated, it is brought to a high temperature and the Aroclor is probably vaporized off.

A WATER SOLUBLE SOIL-POISON concentrate is made by blending an Aroclor compound, trichlorobenzene, pentachlorophenol, isopropyl alcohol, and other materials. U.S.P. 2,588,318 by Paul G. Benignus assigned to Monsanto Chemical Company, St. Louis, Missouri.

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