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Monsanto

ORGANIC CHEMICALS DIVISION

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166
Phone: (314) 694-1000

September 23, 1970

Subject: Aroclor Plasticizers - A new series of inert, chemically-resistant, fire-retarding plasticizers compatible with a wide variety of resins

Dear Customer:

Monsanto's withdrawal of PCB-containing Aroclors from the market has led to extensive realignment of our product line and modifications to our pricing policies. We have enclosed for your use a new product bulletin which contains data on our new Aroclor line, and also a price list for these products. I believe that you will find this new series of Aroclors an extremely valuable family of products which combines the properties of chemical stability, compatibility, adhesion, fire retardancy, and low cost which have been so useful in the past. Further, they have not shown any of the apparent environmental effects which have been attributed to PCB products.

We look forward to supplying your plasticizer needs in this area in the future. Please contact us if we can be of service to you.

Very truly yours,

Walter F. Waychoff

Walter F. Waychoff
Product Manager
Plasticizers

/dbw

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AROCLOR PRICE LIST

QUOTED IN DOLLARS/POUND

Aroclor	1,000 Gallons Minimum	24,000 Lbs. C/L or T/L	10 Drums to C/L or T/L 5-23.9 M Lbs.	3-9 Drums or 1.5 - 4.9 M Lbs.	1-2 Drums or Std. Ctr 1.4 M Lbs.
1221	.1625	.1925	.2025	.2125	.2325
5060	-	.1900	.2000	.2100	.2300
5432	.1800	.2100	.2200	.2300	.2500
5442, 5460	-	.2000	.2100	.2200	.2400
6040, 6050, 6062, 6070	.1800	.2100	.2200	.2300	.2500
6090	-	.2100	.2200	.2300	.2500

The five-gallon container price for all products will be 30 cents/pound above the one-two drum bracket. All prices are F.O.B. Anniston, Alabama.

Prices, terms and conditions subject to change without notice.

Willis S. Clark

Willis S. Clark

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AROCLOR®
PLASTICIZERS

A series of inert, chemically-resistant, fire-retarding plasticizers compatible with wide variety of resins.

PLASTICIZERS Monsanto®

"Nothing contained herein is to be construed as a recommendation to use any product in conflict with any patent. MONSANTO MAKES NO WARRANTIES AS TO THE FITNESS OR MERCHANTABILITY OF ANY PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations, and disclaims all liability for any resulting loss or damage."

Organic Chemicals Division / 800 N. Lindbergh Blvd. / St. Louis, Missouri 63166

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AROCLOR PLASTICIZERS

A series of inert, chemically resistant, fire retarding plasticizers compatible with a wide variety of resins.

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Properties as Plasticizers

The Aroclor resins/plasticizers and their blends have a very unusual set of properties which make them extremely useful products. Their most important characteristics are:

Low Cost
Highly Compatible
Chemically Stable
Fire Retardant
Excellent Adhesion

Another very useful aspect of this product line is the fact that a continuous range of properties can be achieved by using combinations of the Aroclors and their blends. Some of the physical properties which can be controlled through product selection are shown on the following pages.

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Key to Nomenclature

5400 Series

These products are chlorinated terphenyls. The last two digits indicate the chlorine content of the material, e.g. Aroclor 5460 is a chlorinated terphenyl with 60 percent chlorine. Undistilled Aroclors are available and are designated by a 5000 series vs. the 5400 series. They are somewhat higher in color but otherwise have product characteristics similar to the distilled products.

6000 Series

These products are blends of Aroclor 5460 and Aroclor 1221, a chlorinated biphenyl. The last two digits indicate the percentage of Aroclor 5460 in the blend, e.g. Aroclor 6062 is a blend containing 62 percent Aroclor 5460 and 38 percent mono chlorinated biphenyl.

Miscellaneous Blends

Other product blends containing such other materials as Santicizer 140 for improved fire retardancy, or toluene/xylene for lower viscosities will also be made available as the demand for these specialty products develops.

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AROCLORS

	5432	5442	5460
Adhesion/Tack	———	increasing	——→
Hardness	———	increasing	——→
Flexibility	———	decreasing	——→
Fire Retardance	———	increasing	——→
Volatility	———	decreasing	——→
Chlorine Content	———	increasing	——→
Viscosity	———	increasing	——→
Density	———	increasing	——→
Permanence	———	increasing	——→
Compatibility	———	decreasing	——→

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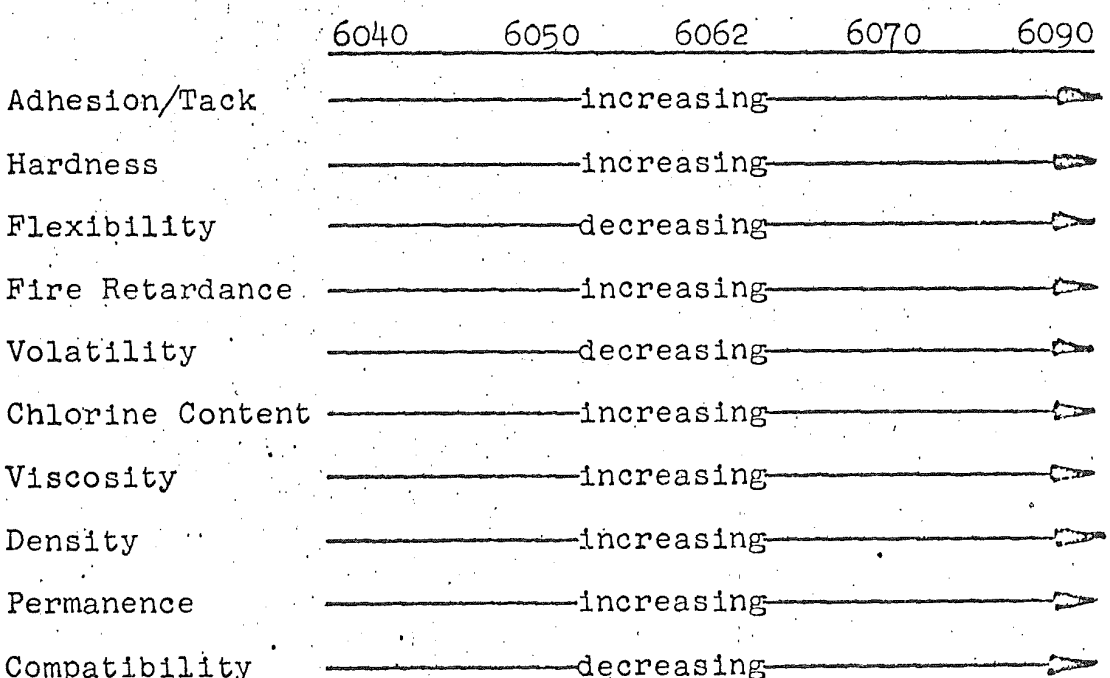
AROCLOR BLENDS



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Applications

Listed below are some of the applications where these products can be used:

Aroclor Blends

6040	Polyvinyl Acetate Emulsion Adhesives
	SBR Adhesives
	Miscellaneous applications where a high degree of flexibility is required.
6050	Chlorinated Rubber and other Resin systems for coatings.
	Inks
6062	Polysulfide Sealants/Adhesives
	Chlorinated Rubber Coatings and Adhesives
	SBR Coatings and Adhesives
	Miscellaneous applications where high chlorine content, high tack, are required.
	Inks
6070	Polysulfide Adhesives
	Chlorinated Rubber Adhesives
	Miscellaneous applications where very high chlorine content and very high tack are required.
6090	Radiation Curing Applications

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Aroclors	
5432	Polysulfide Sealants/Adhesives Chlorinated Rubber Coatings and Adhesives SBR Coatings and Adhesives
5442	Surface Coatings
5460	Hot Melt Adhesives, Surface Coatings

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PHYSICAL PROPERTIES OF AROCLORS AND AROCLOR BLENDS

	AROCLORS				AROCLOR BLENDS				
Property	Aroclor 1221	Aroclor 5432	Aroclor 5442	Aroclor 5460	Aroclor 6040	Aroclor 6050	Aroclor 6062	Aroclor 6070	Aroclor 6090
Appearance	Clear, mobile oil	Clear, yellow viscous liquid	Clear, yellow sticky resin	Clear, yellow to amber brittle resin or flakes	Clear, light yellow mobile oil	Clear, light yellow mobile oil	Clear, yellow viscous liquid	Light yellow sticky resin	Light yellow resin
Color, Maximum	*100 APHA	2 NPA (Molten)	2 NPA (Molten)	2 NPA (Molten)	2 NPA	2 NPA	2 NPA	2 NPA	2 NPA
Specific Gravity	*1.182 - 1.192 (25°/ 15.5° C)	1.263 - 1.290 (90/ 15.5° C)	1.470 (25°/ 25° C)	1.670 (25°/ 25° C)	1.330 - 1.350 (25/ 15.5° C)	1.342 - 1.362 (65/ 15.5° C)	1.405 - 1.425 (65°/ 15.5° C)	1.418 - 1.438 (90/ 15.5° C)	-
Acidity, Maximum (Mg KOH/Gm	*0.014	-	.05	.05	0.035	.035	0.035	.035	.035
Moisture ppm Maximum	-	-	-	-	250	250	250	250	-

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PHYSICAL PROPERTIES OF AROCLORS AND AROCLOR BLENDS

	AROCLORS				AROCLOR BLENDS				
Property	Aroclor 1221	Aroclor 5432	Aroclor 5442	Aroclor 5460	Aroclor 6040	Aroclor 6050	Aroclor 6062	Aroclor 6070	Aroclor 6090
Viscosity (ASTM D-88)	*38-41 (100° F SUS)	50-60 (210° F SUS)	300-400 (210° F SUS)	-	122-132 (100° F SUS)	105-115 (130° F SUS)	50-60 (210° F SUS)	82-92 (210° F SUS)	-
Flash Point ° F Minimum (Cleveland Open Cup)	286-302	-	477	None to Boiling	270	290	-	-	340
Fire Point ° F Minimum (Cleveland Open Cip)	349	-	>662	None to Boiling	300	335	-	-	550
Softening Point ° C	-	-	46-52	98-105	-	-	-	-	64-70

*Monsanto Specifications

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PRODUCT CODES AND DRUM WEIGHTS

Product	Code	Container	Net Weight Pounds	Gross Weight Pounds	Approxima Volume FT
AROCLORS					
5060	1040-450-04-009	Multi-wall Bag	50	50½	0.97
5432	1040-460-04-009	55-Gallon Metal Drum	600	648	10-3/4
		5-Gallon Metal Drum	60	65	1
5442	1040-470-04-009	40-Gallon Metal Drum	450	469	7-2/3
		5-Gallon Metal Drum	50	56	1-1/3
5460	1040-480-04-009	Multi-wall Bag	50	50-1/2	0.97
AROCLOR BLENDS					
6040	1045-040-04-009	55-Gallon Metal Drum	600	648	10-3/4
		5-Gallon Metal Drum	55	60	1
6050	1045-050-04-009	55-Gallon Metal Drum	600	648	10-3/4
		5-Gallon Metal Drum	55	60	1
6062	1045-062-04-009	55-Gallon Metal Drum	600	648	10-3/4
		5-Gallon Metal Drum	60	65	1

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PRODUCT CODES AND DRUM WEIGHTS

Product	Code	Container	Net Weight Pounds	Gross Weight Pounds	Approximate Volume FT^3
6070	1045-070-04-009	55-Gallon Metal Drum	600	648	10-3/4
		5-Gallon Metal Drum	60	65	1
6090	1045-070-04-009	40-Gallon Metal Drum	500	519	7-2/3
		5-Gallon Metal Drum	50	56	1-1/12

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Toxicity and Safe Handling

Inhalation

At ordinary temperatures, the Aroclor chlorinated polyphenyls have not presented industrial toxicological problems. The hazard of potential toxic exposure varies with their volatility: the lower-chlorinated, more volatile ones present more of a potential problem from the standpoint of both inhalation and skin contact. When Aroclor plasticizers are used at elevated temperatures, engineering controls must be applied, either by the use of closed systems or by effective local-exhaust ventilation together with general workroom exhaust.

Vapor of the liquid Aroclor plasticizers at room temperature should not be breathed in a confined space, and no vapor of any Aroclor evolved at elevated temperatures should be allowed to be dispersed into the general workroom.

Skin Contact

Continuous or repeated skin contact with the Aroclor plasticizers must be avoided by the use of gloves and protective garments, because of the possible occurrence of a condition called chloracne. Although reports of this condition caused by Aroclor are rare, it can be produced by excessive skin contact. If any Aroclor is spilled on the skin, the skin should be washed in the usual manner with a soap solution.

A burn caused by contact with a hot Aroclor should be treated like any ordinary burn. Aroclor plasticizer adhering to the burned area need not be removed immediately, unless treatment of the burn demands it, in which case either soap and water or repeated washings with a vegetable oil are recommended.

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