# Monsanto

ORGANIC CHEMICALS DIVISION

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

August 14, 1970

Dear Sir:

During the week of August 10, 1970, Monsanto is sending to all its direct customers for Aroclors in plasticizer/modifier application 1) a letter summarizing the latest information on PCBs, and 2) the most recent Aroclor technical bulletin. This bulletin replaces and supercedes O/PL-306 - Aroclor Plasticizers. In as much as some important information concerning recent FDA actions and changes to Monsanto's returned goods policy are discussed, we strongly urge you to forward copies of this bulletin and a letter to your Aroclor customers. Copies of both have been enclosed for your use.

The change in returned goods policy for our direct customers involves a two month extension of the deadlines for returning material to Monsanto. The same two month extension will apply to our distributors. A copy of our revised returned goods policy is attached.

We realize that this additional communication provides an added workload for your people. However, in view of the importance of this matter, we feel it is necessary for you as our distributor to assist in this matter.

Very respectfully,

Walter E. Schalk

Walter E. Schalk
Director of Sales
Plasticizers

/dbw

DSW 009682

# GENERAL POLICY CONCERNING DISTRIBUTORS' RETURN OF AROCLORS*

1. The following policy will be in effect covering returned goods:

   a. If unopened containers purchased after September, 1969 are returned to the Sauget, Illinois plant or the Anniston, Alabama plant prior to 10/31/70, 100% of the net purchase price will be allowed for the returned goods. No additional handling charges will be assessed. Freight from distributor's warehouse will be paid by Monsanto at truckload rates.

   b. If unopened containers purchased after September, 1969 are returned to the Sauget, Illinois plant or the Anniston, Alabama plant prior to 12/31/70, 90% credit will be allowed for the returned goods. No additional handling charges will be assessed. Freight will be paid by the distributor.

   c. If unopened containers purchased after September, 1969 are returned to the Sauget, Illinois plant or the Anniston, Alabama plant prior to 2/28/71, 50% credit will be allowed for the returned goods. No additional handling charges will be assessed. Freight will be paid by the distributor.

2. Monsanto will accept orders through July 31, 1970 and will make every effort to meet these commitments and to complete shipment as of August 31, 1970. Monsanto reserves the right to limit shipments based on its production capabilities.

*Aroclors 1232, 1242, 1248, 1254, 1260, 1262, 1268, 4465, Montar 1, Toluene/Xylene blends.

Revised 8/14/70

DSW 009683

# Monsanto

ORGANIC CHEMICALS DIVISION

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

August 14, 1970

Dear Sir:

You have received our letters of February 27, 1970 and June 1, 1970 covering Monsanto's withdrawal of polychlorinated biphenyls (PCBs) from the market. The February 27 letter reviewed some of the potential hazards of PCBs and of environmental polution in general. The June 1 letter announced that we were withdrawing all polychlorinated biphenyls used as plasticizers or modifiers from the market, and that the last shipment of these materials would be made August 30, 1970.

In as much as you may have some inventory of these materials which you might be planning to use during the period in which you change over to other products, we felt it imperative to inform you of the latest information concerning PCBs.

It was recently brought to our attention that the Food and Drug Administration has apparently established guidelines setting forth suggested maximum levels of PCBs allowable in certain foods. These levels, as we understand them, are 5 parts per million in fish and 0.2 parts per million in milk. Monsanto, therefore, strongly recommends that PCBs not be used in applications which could lead, either directly or indirectly, to the contamination of food and water supplies for humans or animals. Examples of applications which would seem particularly hazardous would be coatings for water treatment facilities, coatings for food handling equipment, or coatings for such farm items as silos and feed hoppers.

DSW 009684

It has recently come to our attention that PCBs have been found in cows milk. This adds emphasis to Monsanto's recommendation that PCBs not be used in any application where they might come in contact with or otherwise contaminate food, silage, water supplies, etc.

The latest available bulletin on our line of Aroclors is enclosed for your use. This publication replaces and supercedes bulletin O/PL-306 - Aroclor Plasticizers. The only products listed which will be sold after August 31, 1970 are 1) Aroclor 1221, a monochlorinated biphenyl which is readily biodegradable, and 2) Aroclors 5442 and 5460, both chlorinated terphenyls which have not shown themselves to be environmental contaminants. Please pay special attention to the section of this bulletin which relates to environmental hazards.

In addition to the products listed above which will remain on the market, Monsanto will sell a series of blends of Aroclor 1221 and Aroclor 5460 which will replace the polychlorinated biphenyls for many applications.

During this withdrawal of PCBs from the market, Monsanto has had in effect a modified returned goods policy stating that unopened containers less than one year old could be returned for full credit through July 31, 1970. From August 1 through August 31, 1970, 90 percent credit would be allowed. From September 1 through December 31, 1970, 50 percent credit would be allowed. The customer will pay all return freight. All of the dates in the time schedule for this returned goods policy are hereby extended an additional two months.

Monsanto realizes that the removal of these products from the market has caused a great deal of concern and expense for our customers. This is certainly regrettable. However, it appears to us that as a responsible supplier, this is the only reasonable course of action. We stand ready to assist you as we can with your reformulation work.

Very respectfully,

Walter E. Schalk

Walter E. Schalk
Director of Sales
Plasticizers

/dbw

DSW 009685

T E C H N I C A L  B U L L E T I N

# AROCLOR® PLASTICIZERS

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

**TECHNICAL BULLETIN O/PL-306A**

Monsanto

DSW 009686

STLCOPCB4001332

# AROCLOR® PLASTICIZERS

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

**TECHNICAL BULLETIN O/PL-306A**

**CAUTION: see sections entitled Toxicity and Safe Handling, and Environmental Hazzards, on page 12.**

"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**

DSW 009687

STLCOPCB4001333

## Introduction

The unique Aroclor® plasticizers are among the most versatile chemically produced materials available. One outstanding characteristic — *inertness* — makes Aroclor useful in many ways for many different applications. The major benefits offered by Aroclor include:

- Chemical Resistance
- Fire Retardance
- Compatibility with most resins
- Nonoxidation
- Adhesivity
- Low Cost

Monsanto's Aroclor plasticizers comprise a series of chlorinated biphenyls and chlorinated polyphenyls. They vary from mobile, oily liquids to white crystals and hard, transparent resins.

Twelve of the Aroclor plasticizers, each of which represents a series, are discussed in this bulletin. An understanding of the system for designation of each Aroclor should prove useful in the evaluation of the property gradations among them. The last two digits indicate the approximate weight percentage of chlorine in the product, and the first two digits indicate the type of material, as follows:

12 — chlorinated biphenyls

25 — blend of chlorinated biphenyls and chlorinated triphenyls (75:25)

44 — blend of chlorinated biphenyls and chlorinated triphenyls (60:40)

54 — chlorinated triphenyls

For nearly every Aroclor mentioned, a darker, less-pure grade exists, with about the same physical and chemical characteristics, but lower in price.

## Solubility

The Aroclor liquids and resins are readily soluble in most common organic solvents and drying oils. Although all Aroclor plasticizers are insoluble in water, the hard, crystalline materials are generally less soluble than the liquids and softer resins. Solubilities of some Aroclor plasticizers are shown in Table 1.

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TABLE 1

SOLUBILITIES OF AROCLOR® PLASTICIZERS IN VARIOUS SOLVENTS

| Solvent | Aroclor 1242 | | Aroclor 1248 | | Aroclor 1254 | | Aroclor 1268 | | Aroclor 4465 | | Aroclor 5460 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 25°C | Hot | 25°C | Hot | 25°C | Hot | Cold | Hot | Cold | Hot | 25°C |
| **Acid** | | | | | | | | | | | |
| Acetic Acid | S | S | — | — | S | S | — | — | SS | S | — |
| Oleic Acid | S | S | — | — | S | S | — | — | S | VS | — |
| Benzoic Acid | 10.0[31°C] | — | 10.0[32°C] | — | — | — | — | — | — | — | — |
| **Aldehyde** | | | | | | | | | | | |
| 40% Formaldehyde | I | I | I | I | I | I | I | I | I | I | — |
| Furfural | VS | VS | VS | VS | VS | VS | SS | SS | VS | VS | — |
| **Amine** | | | | | | | | | | | |
| Aniline | S | S | — | — | S | S | — | — | VS | VS | — |
| Pyridine | 132.5[30°C] | 440[99°C] | — | — | 114[31°C] | 425[100°C] | — | — | VS | VS | — |
| **Chloro derivatives** | | | | | | | | | | | |
| Amyl chlorides — mixed | S | S | S | S | S | S | — | — | VS | VS | — |
| Carbon Tetrachloride | S | S | S | S | S | S | — | — | VS | VS | 156 |
| Chloroform | S | S | S | S | S | S | S | S | VS | VS | — |
| Dichlorethylene | — | — | — | — | — | — | — | — | VS | VS | — |
| Ethylene Dichloride | S | S | S | S | S | S | S | S | VS | VS | — |
| Monochlorobenzene | S | S | S | S | S | S | — | — | VS | VS | — |
| Orthodichlorobenzene | — | — | — | — | — | — | — | — | VS | VS | — |
| Tetrachlorethane | S | S | S | S | S | S | — | — | VS | VS | — |
| Trichlorethane | S | S | S | S | S | S | — | — | VS | VS | — |
| Trichlorethylene | S | S | S | S | S | S | — | — | VS | VS | — |
| **Drying Oil** | | | | | | | | | | | |
| Tung Oil | S | S | S | S | S | S | — | — | VS | VS | — |
| Linseed Oil | S | S | S | S | S | S | I | S | VS | VS | — |
| **Ester** | | | | | | | | | | | |
| Amyl Acetate | S | S | S | S | S | S | S | S | VS | VS | — |
| Butyl Acetate | S | S | S | S | S | S | S | S | VS | VS | — |
| *"Cellosolve"** Acetate | S | S | S | S | S | S | — | — | VS | VS | — |
| Cottonseed Oil | S | S | S | S | S | S | — | — | S | VS | — |
| Dibutyl Phthalate | S | S | S | S | S | S | S | S | S | VS | — |

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| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diethyl Phthalate | S | S | S | S | S | S | — | — | S | VS | — |
| Ethyl Acetate | S | S | S | S | S | S | SS | SS | S | VS | — |
| Ethyl Lactate | S | S | S | S | S | S | I | S | VS | VS | — |
| Ethylene Glycol Diacetate | S | S | S | S | S | S | — | — | VS | VS | — |
| Methyl Acetate | S | S | S | S | S | S | SS | SS | S | S | — |
| Tricresyl Phosphate | S | S | S | S | S | S | — | — | SS | S | — |
| Ether: Ethyl Ether | S | S | S | S | S | S | S | S | S | — | — |
| Ether Alcohol | | | | | | | | | | | |
| *Carbitol** | $22^{4^{31°C}}$ | $30^{7^{89°C}}$ | VS | VS | $17^{3^{26°C}}$ | $25^{9^{98°C}}$ | I | S | SS | — | — |
| *Cellosolve* | S | S | S | S | S | S | I | S | S | — | — |
| Diethylene Glycol | — | — | — | — | — | — | — | — | S | — | — |
| *p,p'*-Dihydroxy Ethyl Ether | $16.9^{23°C}$ | $19^{99°C}$ | SS | SS | $8^{30°C}$ | $10^{100°C}$ | — | — | SS | — | — |
| Hydrocarbon | | | | | | | | | | | |
| Benzene | VS | VS | VS | VS | VS | VS | S | S | VS | VS | 143 |
| Gasoline | VS | VS | VS | VS | VS | VS | — | — | VS | VS | — |
| Kerosene | VS | VS | VS | VS | VS | VS | SS | S | VS | VS | — |
| Mineral Spirits | VS | VS | VS | VS | VS | VS | S | S | VS | VS | — |
| Paraffin | $2.0^{27.5°C}$ | S | $2.0^{28°C}$ | S | — | S | — | — | 5.0 | S | — |
| Pine Oil | S | S | VS | VS | S | S | S | S | S | S | — |
| Toluene | VS | VS | VS | VS | VS | VS | S | S | VS | VS | 142 |
| Turpentine | VS | VS | VS | VS | VS | VS | S | S | VS | VS | — |
| Xylene | VS | VS | VS | VS | VS | VS | S | S | VS | VS | 178 |
| Hydroxy derivatives | | | | | | | | | | | |
| Amyl Alcohol | S | S | — | — | S | S | SS | S | S | S | — |
| *n*-Butyl Alcohol | S | S | — | — | S | S | I | SS | SS | S | — |
| Ethyl Alcohol (3-A) | $23.3^{28°C}$ | $80.0^{70°C}$ | — | — | $10^{27°C}$ | $28^{75°C}$ | I | I | SS | — | — |
| Glycerine | I | I | I | I | I | I | I | I | I | I | — |
| Methyl Alcohol | $42.5^{28°C}$ | $88.5^{60°C}$ | — | — | $15^{26°C}$ | $22.2^{65°C}$ | — | — | SS | — | — |
| Phenol — 90% | $19^{4^{30°C}}$ | S | — | — | SS | S | SS | S | S | S | — |
| Ketone: Acetone | S | S | — | — | S | S | I | I | S | S | 260 |
| Miscellaneous | | | | | | | | | | | |
| Carbon Disulfide | S | S | — | — | S | S | S | S | VS | VS | — |
| Nitrobenzene | S | S | — | — | S | S | — | — | VS | — | — |
| Water | I | I | I | I | I | I | I | I | I | I | — |

I — Insoluble SS — Slightly Soluble S — Soluble VS — Very Soluble.
*Figures show grams of Aroclor per 100 milliliters of solvent at 25°C unless otherwise indicated.*

*Trademark of Union Carbide Corp.

DSM 009690

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TABLE 2

CHEMICAL AND PHYSICAL PROPERTIES OF REPRESENTATIVE AROCLOR® PLASTICIZERS AND RESINS

| *Property* | *Aroclor 1221* | *Aroclor 1232* | *Aroclor 1242* | *Aroclor 1248* | *Aroclor 1254* |
|---|---|---|---|---|---|
| *Appearance* | Clear, mobile oil | Clear, mobile oil | Clear, mobile oil | Clear, mobile oil | Light-yellow viscous liquid |
| *Color,* maximum | *100 APHA | *100 APHA | *100 APHA | *100 APHA | *100 APHA |
| *Chlorine,* percent | 20.5-21.5 | 31.5-32.5 | 42 | 48 | 54 |
| *Acidity,* mg KOH/g, maximum | *0.014 | *0.014 | *0.015 | *0.010 | *0.010 |
| *Moisture,* ppm, maximum | — | — | *50 | *50 | *50 |
| *Ave. Coefficient of Expansion,* cc/cc/°C | 0.00071 (15°-40°C) | 0.00073 (25°-100°C) | 0.00068 (25°-65°C) | 0.00070 (25°-65°C) | 0.00066 (25°-65°C) |
| *Specific Gravity* | *1.182-1.192 (25°/15.5°C) | *1.270-1.280 (25°/15.5°C) | *1.381-1.392 (25°/15.5°C) | *1.405-1.415 (65°/15.5°C) | *1.495-1.505 (65°/15.5°C) |
| *Density,* pounds per gallon, 25°C | 9.85 | 10.55 | 11.50 | 12.04 | 12.82 |
| *Distillation Range,* °C, corrected (ASTM D-20, modified) | 275-320 | 290-325 | 325-366 | 340-375 | 365-390 |
| *Evaporation Loss,* %, 100°C, 6 hours (ASTM D-6, mod.) 163°C, 5 hours | 1.0-1.5 | 1.0-1.5 | 0-0.4<br>3.0-3.6 | 0-0.3<br>3.0-4.0 | 0-0.2<br>1.1-1.3 |
| *Flash Point* (Cleveland Open Cup), °C<br>°F | 141-150<br>286-302 | 152-154<br>305-310 | 176-180<br>348-356 | 193-196<br>379-384 | None to boiling point |
| *Fire Point* (Cleveland Open Cup), °C<br>°F | 176<br>349 | 238<br>460 | None to boiling point | None to boiling point | None to boiling point |
| *Pour Point* (ASTM E-97), °C<br>°F | 1 (crystals)<br>34 (crystals) | —35.5<br>—32 | —19<br>2 | —7<br>19.4 | 10<br>50 |
| *Softening Point* (ASTM E-28), °C<br>°F | — | — | — | — | — |
| *Refractive Index,* n D-20 20°C | 1.617-1.618 | 1.620-1.622 | 1.627-1.629 | 1.630-1.631 | 1.639-1.641 |
| *Viscosity,* Seconds Saybolt Universal (ASTM D-88) 100°F (37.8°C)<br>130°F (54.4°C)<br>210°F (98.9°C) | *38-41<br>35-37<br>30-31 | *44-51<br>39-41<br>31-32 | *82-92<br>49-56<br>34-35 | 185-240<br>*73-80<br>36-37 | 1800-2500<br>260-340<br>*44-48 |

*Monsanto Specifications.

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| *Aroclor 1260* | *Aroclor 1262* | *Aroclor 5442* | *Aroclor 4465* | *Aroclor 2565* | *Aroclor 5460* | *Aroclor 1268* |
|---|---|---|---|---|---|---|
| Light-yellow, soft, sticky resin | Light-yellow sticky, viscous resin | Clear yellow sticky resin | Clear, light-yellow, resin | Black, opaque, brittle resin | Clear, yellow-to-amber, brittle resin or flakes | White to off-white powder |
| *150 APHA | *150 APHA | *2 NPA (molten) | *2 NPA (molten) | — | *2 NPA (molten) | *1.5 NPA (molten) |
| 60 | 61.5-62.5 | 42 | 65 | 65 | 58.5-60.6 | 68 |
| *0.014 | *0.014 | 0.05 | 0.05 | 1.4 | 0.05 | 0.05 |
| *50 | — | — | — | — | — | — |
| 0.00067 (20°-100°C) | 0.00064 (25°-65°C) | 0.00123 (25°-99°C) | 0.00061 (25°-65°C) | 0.00066 (25°-65°C) | 0.00179 (25°-124°C) | 0.00067 (20°-100°C) |
| *1.555-1.566 (90°/15.5°C) | *1.572-1.583 (90°/15.5°C) | 1.470 (25°/25°C) | 1.670 (25°/25°C) | 1.734 (25°/25°C) | 1.670 (25°/25°C) | 1.804-1.811 (25°/25°C) |
| 13.50 | 13.72 | 12.24 | 13.91 | 14.44 | 13.91 | 15.09 |
| 385-420 | 390-425 | 215-300 (4 mm. Hg) | 230-320 (4 mm. Hg) | — | 280-335 (5 mm. Hg) | 435-450 |
| 0-0.1<br>0.5-0.8 | 0-0.1<br>0.5-0.6 | 0.01<br>0.2 | 0-0.02<br>0.2-0.3 | 0.2-0.3 | 0.03 | 0-0.06<br>0.1-0.2 |
| None to boiling point | None to boiling point | 247<br>477 | None to boiling point | — | None to boiling point | None to boiling point |
| None to boiling point | None to boiling point | > 350<br>> 662 | None to boiling point | — | None to boiling point | None to boiling point |
| 31<br>88 | 38-38<br>99 | 46<br>115 | — | — | — | — |
| — | — | *46-52<br>115-126 | *60-66<br>140-151 | *66-72<br>149-162 | *98-105<br>208-222 | *150-170 (hold 302-338 point) |
| 1.647-1.649 | 1.6501-1.6517 | — | 1.664-1.667 | — | 1.660-1.665 | — |
| 3200-4500<br>*72-78 | 600-850 (160°F; 71°C)<br>*86-100 | 300-400 | 90-150 (266°F; 130°C) | — | — | — |

*Monsanto Specifications.

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## Density

All the Aroclor plasticizers are heavier than water, a valuable property for many applications. Densities are shown in Figure 1.

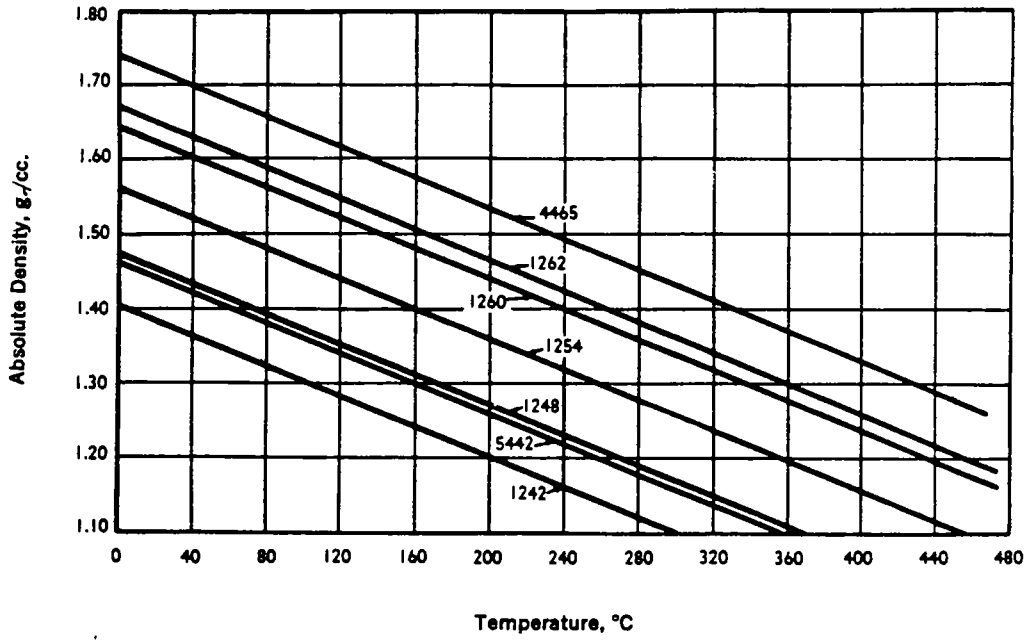


Fig. 1 — Densities of Aroclor® Plasticizers at Various Temperatures

## Specific Volume

The specific volume of Aroclor 1248 at different temperatures is as follows:

| *Temperature (°F)* | *Aroclor® 1248 Specific Volume (ml/g)* |
|---|---|
| 0 | 0.674 |
| 100 | 0.699 |
| 200 | 0.726 |
| 300 | 0.755 |
| 400 | 0.790 |
| 500 | 0.828 |
| 600 | 0.870 |

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The low vaporization loss of Aroclor plasticizers is indicated in Table 3.

TABLE 3

VAPORIZATION RATES OF AROCLOR® PLASTICIZERS

| *Plasticizer (Surface area: 12.28 sq. cm.)* | *Wt. Loss (g)* | *Exposure at 100°C (hr.)* | *Vaporization Rate (g/sq. cm./hr.)* |
|---|---|---|---|
| Aroclor 1221 | 0.5125 | 24 | 0.00174 |
| Aroclor 1232 | 0.2572 | 24 | 0.000874 |
| Aroclor 1242 | 0.0995 | 24 | 0.000338 |
| Aroclor 1248 | 0.0448 | 24 | 0.000152 |
| *Clorafin**-42-S | 0.0745 | 48 | 0.000126 |
| Dioctyl phthalate | 0.0686 | 48 | 0.000117 |
| *Dutrex*** 25 | 0.0256 | 24 | 0.000087 |
| Aroclor 1254 | 0.0156 | 24 | 0.000053 |
| *Shell Dutrex* 20 | 0.0047 | 24 | 0.000016 |
| Aroclor 1262 | 0.0039 | 24 | 0.000013 |
| Aroclor 1260 | 0.0026 | 24 | 0.000009 |
| Aroclor 4465 | 0.0064 | 72 | 0.000007 |
| Aroclor 5442 | 0.0039 | 72 | 0.000004 |
| Aroclor 5460 | 0.0032 | 72 | 0.000004 |
| Tricresyl phosphate | 0.0010 | 24 | 0.000003 |

It is concluded that the vaporization rates of Aroclor plasticizers — especially the most widely used 1254 and 1260 — compare most favorably with the similar constants of other plasticizers selected specifically for these tests because of their low vaporization rates.

*Trademark of Hercules, Inc.

**Trademark of Shell Oil Co.

DSW 009694



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The vapor pressures of several Aroclor plasticizers are indicated in Figure 2 over the temperature range 150° to 300°C.

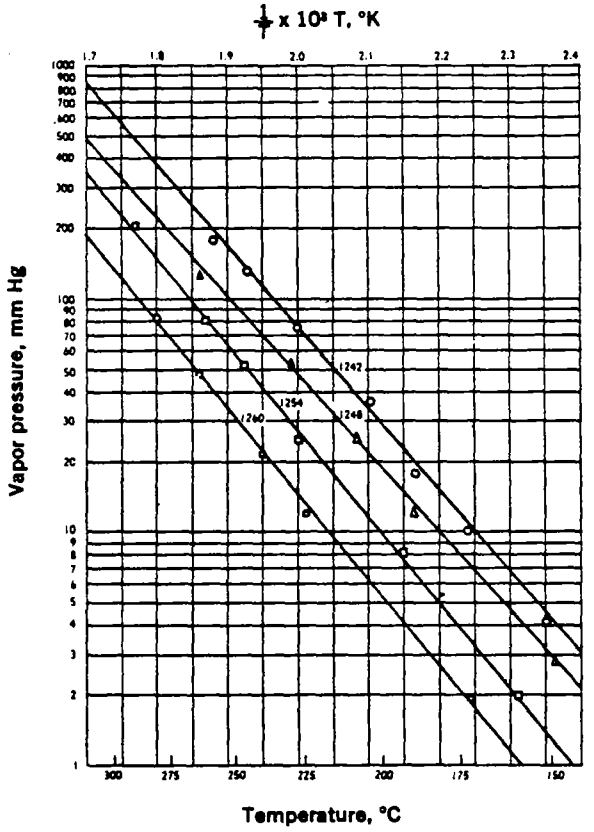


**Fig. 2 — Vapor Pressures of Aroclor® Plasticizers**

The estimated vapor pressures of several Aroclor plasticizers at 100°F shown in the following table were determined by extrapolation from the values shown in Figure 2.

***Approximate Vapor Pressure of Aroclor® Plasticizers Estimated at 100° F (37.8° C)***

| | |
|---|---|
| Aroclor 1232 | 0.005 mm. Hg |
| Aroclor 1242 | 0.001 mm. Hg |
| Aroclor 1248 | 0.00037 mm. Hg |
| Aroclor 1254 | 0.00006 mm. Hg |

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## Viscosity

The viscosities of the Aroclor plasticizers vary according to whether the base material is a biphenyl or a polyphenyl and on the degree of chlorination. In general the low-chlorinated biphenyls have the lowest viscosities (Figure 3).

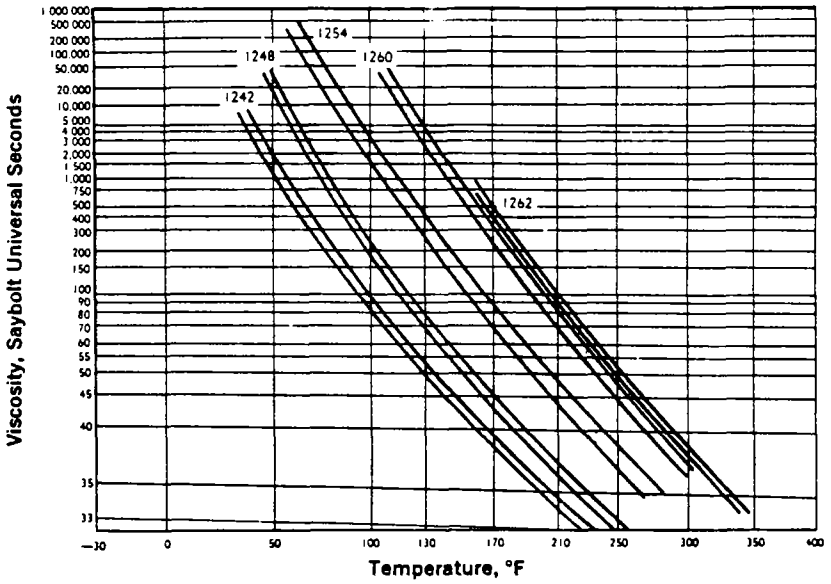


Fig. 3 — Viscosity Ranges of Some Aroclor® Plasticizers

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*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.

Inhalation tests on animals indicate that the maximum safe concentration of vapor is in the range of from 0.5 to 1.0 milligram of the lower-chlorinated Aroclor plasticizers per cubic meter of air. The threshold limit values (maximum allowable concentration for an 8-hour working day) set by the American Conference of Government Hygienists are 1.0 milligram of the lower-chlorinated Aroclor compounds per cubic meter of air and 0.5 milligram of the more-highly-chlorinated compounds, such as Aroclor 1254, per cubic meter of air.

*Skin Contact*

Schwartz patch tests on 200 volunteers showed that Aroclor 1254 was neither a primary skin irritant or a sensitizer.

Prolonged 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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***Environmental Hazards***

Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, Aroclor 1268, Aroclor 4465, and Montar 1 all contain polychlorinated biphenyls (PCB) of various types and in varying amounts. PCB residues in small amounts have been found in the environment and some studies have indicated that they may be harmful to certain forms of animal life. Extreme care should therefore be taken by all users of PCB-containing products to prevent any entry into the environment through spills, leakage, use, disposal, vaporization or otherwise. Further, the products in which PCB materials are used, or which are formulated using PCB materials as a component, should be given careful study to eliminate the possibility that PCB might reach the environment as a result of use in a given application.

Some specific applications where the use of PCB should definitely be avoided are in paints and sealants for swimming pools, paints and waterproofing agents in silos and other buildings where food products for humans or animals are stored, and as a component of any container or wrapping used in the packaging of food products.

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## Shipping

*Freight Classification*

| | |
|---|---|
| Aroclor 1221, 1232, 1242, 1248, 1254, 1260, 1262 | Synthetic Resin, Liquid, NOIBN |

*Rail Classification*

| | |
|---|---|
| Aroclor 1268, 4465, 5442, 5460 | Synthetic Resin, Other Than Liquid, NOIBN |

*Truck Classification*

| | |
|---|---|
| Aroclor 1268 | Synthetic Resin, Powder, NOI |
| Aroclor 4465, 5442, 5460 | Synthetic Resin, Lumps or Solid Mass, NOI |

| | |
|---|---|
| *Shipping Regulations* | None |

*Standard Containers*

| | |
|---|---|
| Aroclor 1221 | Tank car, 520-lb. steel drum, 50-lb. can |
| Aroclor 1232 | Tank car, 550-lb. steel drum, 50-lb. can |
| Aroclor 1242, 1248, 1254, 1260, 1262 | Tank car, 600-lb. steel drum, 50-lb. can |
| Aroclor 1268 | 200-lb. fiber drum, 25-lb. fiber drum |
| Aroclor 4465 | 500-lb. steel drum, 50-lb. can |
| Aroclor 5442 | 450-lb. steel drum, 50-lb. can |
| Aroclor 5460 (flaked) | 50-lb. bag |

DSW 009699



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*Des Plaines, Illinois 60018*
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*2005 Concord Pike, Fairfax*
*Tel. (302) 658-6531*

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