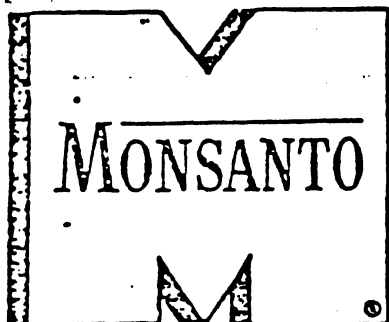




AROCLOR

Resins and Plasticizers for Chlorinated Rubber

Technical Bulletin O-124

Monsanto Chemical Company, Organic Chemicals Division, St. Louis 1, Mo.

May, 1957

Introduction

Monsanto produces a series of chlorinated biphenyls and polyphenyls identified by the trademark *Aroclor** for use as plasticizers and resins for chlorinated rubber base lacquers, varnishes and paints. These protective coatings are fire resistant, corrosion resistant, chemical resistant (to acids, alkalies and water), and have good electrical insulating properties.

When properly pigmented, these coatings have good weatherability. Chlorinated rubber films plasticized with an *Aroclor* grip common structural materials in strong adhesive bonds. Addition of an *Aroclor* improves the flexibility and life of chlorinated rubber and plastic coatings.

The formulations suggested in this bulletin are common in commercial practice. They are given as a starting point or guide in developing formulations that expand the outstanding qualities of these compounds.

*Aroclor: Monsanto Trademark. Reg. U.S. Pat. Off.

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Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing patents.

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Some important applications for protective and decorative coatings plasticized with Aroclor compounds - -

Wood and metal used in yachts, barges and other marine craft.

Structural steel for bridges, buildings, roofs and power-lines.

Structural materials at chemical plants, pulp and paper mills, textile mills, petroleum refineries and gas works for protection against acid fumes, alkalies and gas.

Tank cars and other rolling stock and construction machinery for protection against corrosive materials and weathering.

Equipment and stop-off lacquers used in electroplating.

Masonry floors and walls. Concrete swimming pools. Highway markings.

Cable coatings requiring fire resistance, chemical resistance, and excellent electrical properties.

Textile coatings resistant to chemicals, fire and water.

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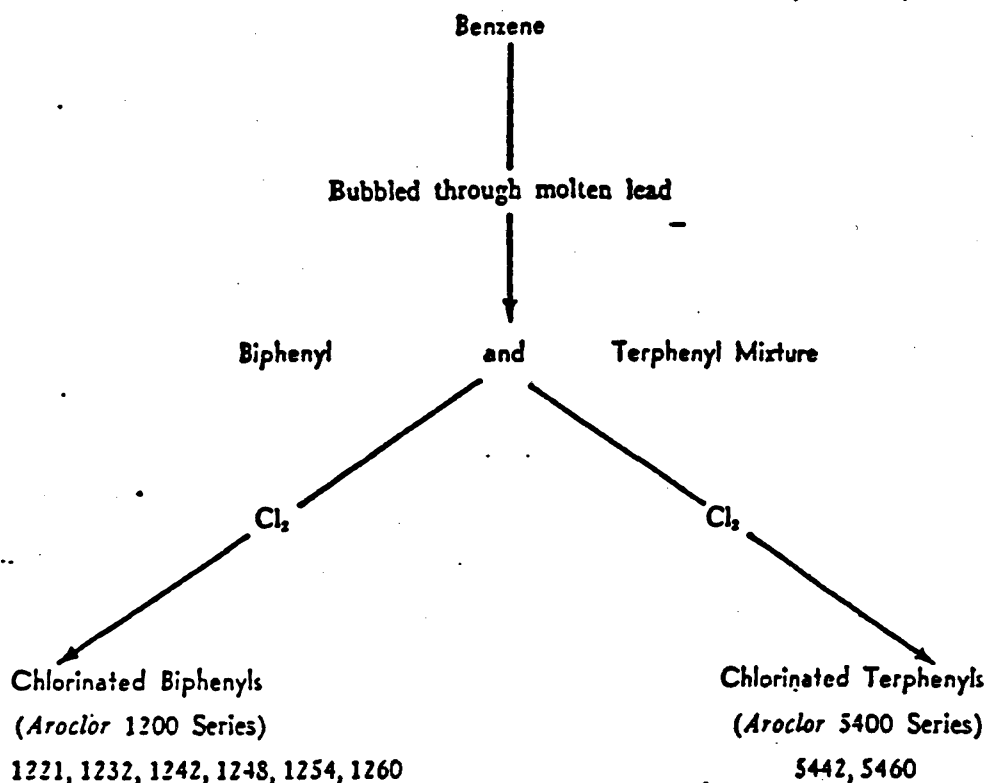
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This bulletin replaces technical bulletin P-124.

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Naming and Preparation of Aroclor Compounds



Note: The last two digits in a numbered series refer to the degree of chlorination. *Aroclor* 1248 is a biphenyl with 48 per cent chlorination. *Aroclor* 5460 is a terphenyl with 60 per cent chlorination. Two special mixtures are:

Aroclor 4465—a 60:40 mixture (biphenyl to terphenyl) with 65 per cent chlorination.

Aroclor 2565—a 75:25 mixture (biphenyl to terphenyl) with 65 per cent chlorination.

The physical properties of the *Aroclor* plasticizers vary gradually with the degree of chlorination. At low percentages of chlorine, such as *Aroclor* 1221 and 1232, the compounds are clear and very fluid. At 42 per cent they resemble vegetable oil; at 48 per cent they thicken slightly and look more like a medium-grade mineral oil. At 54 per cent chlorine, the compounds are quite viscous; if a bottle containing them is turned upside down, the bubble rises slowly to the top. At higher percentages, the biphenyls become gumlike, and a fingerprint on the surface lasts several days. Then at 68 per cent chlorine, the range is complete; *Aroclor* 1268 is a white powder. The terphenyls (*Aroclor* 5442 and 5460) are both yellowish solids.

The gradual change in physical properties often allows a processor to select a plasticizer particularly suited for his operation. For example, if he wants to dry mix the plasticizer, *Aroclor* 1268 could be used. It melts at higher processing temperature and can act as a solvent-plasticizer.

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Toxicity

Animal toxicity studies and 20 years of manufacturing and use experience indicate that *Aroclor* compounds are not serious industrial health hazards. If the materials are heated to volatilization, ventilation should be provided to prevent inhalation of vapors. This is true of other major components of the formulation as well as the *Aroclor* compounds.

Repeated or prolonged skin contact should be avoided although there are few instances of skin irritation. Human patch tests with finished products containing *Aroclor* compounds have shown no irritation. Monsanto will furnish information on specific *Aroclor* compounds upon request.

Shipping Information

Regulations	— None
Standard Containers	— Steel and Fiber (<i>Aroclor</i> 1268, 5460) drums.
Rail Classification	
Chlorinated diphenyl (synthetic resin, liquid, NOIBN)	— <i>Aroclor</i> 1142, 1148, 1154, 1160, 1162, 1168, 1221, 1232, 1242, 1248, 1254, 1260, 1268
Synthetic resin, liquid, NOIBN	— <i>Aroclor</i> 1260 mix, 1262 mix
Synthetic resin, other than liquid, NOIBN	— <i>Aroclor</i> 2565, 4065, 4465, 5042, 5060, 5442, 5460
Truck Classification	
Synthetic resin powder, NOI	— <i>Aroclor</i> 2565
Synthetic resin, lumps or solid mass, NOI	— <i>Aroclor</i> 4065, 4465, 5042, 5060, 5442, 5460

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