MONSANTO
CHEMICALS · PLASTICS

CHEMICAL AIDS IN DISTILLATION PROBLEMS

Monsanto Technical Data Sheet February 26, 1954
Monsanto Chemical Company, Organic Chemicals Division, St. Louis 1, Mo.

*AROCLORS**, *HB*-40*, *HB*-20*, PHENYLCYCLOHEXANE, BICYCLOHEXYL

All of the above materials are Monsanto chemicals which can be of value in certain distillation problems. These materials are high boiling solvents possessing good heat stability. The *AROCLORS* (a series of chlorinated polyphenyls) are especially noted for their chemical inertness. The other chemicals may also serve as inert solvents. Consequently, these materials all find use as distillation aids where the lower boiling material is subject to decomposition from localized overheating, and in cases where distillation residues are resinous or solid materials which are difficult to clean out of the still pot. The Monsanto chemicals listed also find considerable application as inert media for many chemical reactions.

An example of the value of such distillation aids is a case where a product distilling at about 78°C. at 40 mm. Hg. was separated without fractionation from *AROCLOR* 1242 which, at the same pressure, boils at 210°C. Another product boiling at 100°C. at 2 mm. Hg. required only moderate fractionation to separate it from *AROCLOR* 1242 boiling at 135°C. (at 2 mm. Hg.).

Which material to use in a given situation can be determined from the table of properties which appears on the next page. When reduced pressures are involved, further data may be obtained upon request.

AROCLOR products 1242, 1248, 1254 and 1260 are liquids with progressively increasing boiling points. These liquids act as a stable heel in the still and allow all of the desired end product to be recovered. In cases where the distillation residue normally tends to polymerize into gummy materials or to decompose into solids, the liquid *AROCLOR* compounds can be used to keep the residue as a free-flowing fluid for easier removal. Also, by allowing better heat transfer in the fluid, excessive decomposition and product loss can be minimized.

* Reg. U.S. Pat. Off.

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In addition to the liquid *AROCLOR* products, Monsanto offers *AROCLOR* 5460, a resinous solid which has been used to plasticize solid still residues to facilitate removal. This resin cannot be recovered and is discarded with the residue. From 25% to 30% of *AROCLOR* 5460, based on total residue weight, will satisfactorily plasticize most such residues.

When used as distillation aids, the liquid *AROCLOR* compounds can be reused several times and either discarded or distilled to restore their original refined state.

Used as stable solvents for reactions conducted in an inert liquid phase, the liquid *AROCLOR* compounds perform very well. Here again, the liquids can usually be used several times before discarding or re-purifying.

The other chemicals listed are included to offer a wider choice of boiling points both at normal and at reduced pressures. The table below will help to choose the correct compound for your reaction or distillation situation. Your Monsanto representative will be glad to discuss specific problems and to provide or obtain other data needed.

(Values are Approximate)	Phenylcyclohexane	Bicyclohexyl	*AROCLOR* 1242	*AROCLOR* 1248	*AROCLOR* 1254	*AROCLOR* 1260	*HB*-40	*HB*-20
Distillation Range	239-244°C.	238-242°C.	325-360°C.	340-375°C.	365-390°C.	385-420°C.	340-396°C.	312-370°C.
Pour Point	2.5-5.5°C.	1-3°C.	minus 19°C.	minus 7°C.	10°C.	31°C.	minus 25°C.	minus 54°C.
Viscosity (SUS at 100°F.)	31.2	34.2	80-93	185-240	1800-2500	72-78 (at 210°F.)	144	55.7
Specific Gravity	0.938 at 25°/15.6°C.	0.988 at 25°/15.6°C.	1.380 at 25°/25°C.	1.445 at 25°/25°C.	1.538 at 25°/25°C.	1.620 at 25°/25°C.	1.004 at 25°/15°C.	0.971 25°/15°C.

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For further information, contact - -

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St. Louis 1, Missouri

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Printed in U.S.A.

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