The processing companies today are scanning every item in their operation — from chemicals to can linings — to *save* on costs yet still improve on product quality. Oddly enough, some of the newest "tricks of the trade" are built on "old," long-established commercial chemicals . . . such as taking resin-formers out of oil by treatment with maleic anhydride.

If you are working on formulation costs or product quality, read these six items, selected from many hundreds of ways Monsanto products may be able to help you.

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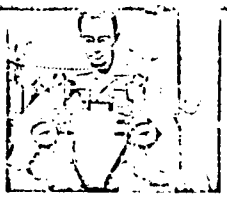
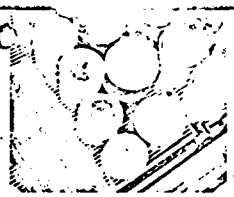


HB-40*...low-cost, highly efficient pigment disperser–grinding aid.

HB-40 rapidly converts dry pigments into readily dispersible, highly concentrated paste...at much lower cost than most dispersants. It's practically colorless (APHA 150 max.), grinds to true color values, has only a whisper of odor. It's a big, bulky, shear-resistant molecule with a boiling point in excess of 325° C., assuring low, low volatility.

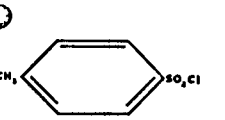
HB-40 "holds" an extremely high percentage of pigment and the pastes strip clean from the rolls or blender ... are smooth and workable. HB-40 pigment dispersions blend readily with virtually all resins in commercial use for coating, casting, or slush molding ... including vinyl, alkyd, styrene, nitrocellulose, ethyl cellulose, PVAc, chlorinated rubber, and methyl methacrylate resin formulations. The miscibility of rubber latex with mineral oil is greatly improved by adding 15 to 30% of HB-40. 2% HB-40 in high-melting asphalt-molding compounds imparts a high gloss. HB-40 "flexibilizes" asphalt and Gilsonite-based maintenance paints. It improves the electrical resistivity properties of PVC compositions plasticized with DOP. HB-40 adds important "plus" properties, at low cost, to many formulations. Perhaps to yours, too.



DIETHYL PHTHALATE...formulates low-cost, nontoxic adhesives and coatings.

Concerned about the new Food & Drug laws relating to food packaging? Monsanto's diethyl phthalate offers coatings and adhesives makers a plasticizer with several advantages: it is low in cost, makes extremely quick-tack PVAc emulsion adhesives ... and it has been accepted as "nontoxic" both by the U. S. Bureau of Animal Industry and by the Food & Drug Administration.

Typical uses of diethyl phthalate-plasticized adhesives include boxboard manufacture, sealing tapes, envelope adhesives, and adhesives for food wrapping film. Only 11 parts diethyl phthalate per 100 parts Gelva®-55 (polyvinyl acetate) emulsion makes a stable, quick-tack adhesive, with low-temperature flexibility of −5.0° C. (Modified Clash & Berg Test); a volatility loss of only 4.8% after 20 hours at 87° C.; and oil extraction weight loss of only 0.63% after 24 hours' contact with peanut oil. Diethyl phthalate is one plasticizer that best combines economy and formulating efficiency with fully approved safety of use. Try it.



para-TOLUENESULFONYL CHLORIDE...offers a 3-way cost advantage in chemical synthesis.

Monsanto's new process makes this intermediate one of the most "cooperative" and rewarding of all commercial chemical raw materials ... a versatile reactant for the step synthesis of a variety of organic chemicals.

HIGHLY REACTIVE: With extremely high reactivity at the chlorine atom, PTSC undergoes many replacement reactions with typical hydrogen-containing molecules such as alcohols, amines, reactive hydrocarbons, metal salts of acids ... in fact with almost any organic molecule containing labile atoms. PTSC thus offers multi-directional pathways to a host of profitable commercial chemical compounds.

PURE: With a 98% minimum assay, PTSC assures predictable yields for the process, a minimum of troublesome contaminants.

STABLE: Though highly reactive, Monsanto high-purity PTSC can be stored the year round with negligible deterioration ... thus assuring better yields through cleaner reactions that are easier to predict and control. PTSC offers processing savings wherever sulfonic acid chloride reactions can serve in your product synthesis.

Monsanto Task Force Chemicals

Are you tired of getting whipsawed by the profit squeeze? Here are six Monsanto products that might help you push ahead of competitors. They're designed to lower materials cost, short-cut processing time, or "build in" plus values that command higher prices.

Monsanto offers you a whole task force of cost-cutting "quality improvers," including a complete line of fast-acting dispersants ... *seven* FDA-approved nontoxic plasticizers ... and a variety of high-yield intermediates, *heat-defiant* color stabilizers, low-cost resin extenders. Chances are, your product is made by chemical processing, Monsanto can help you stretch your profit margin. We'll certainly welcome the opportunity to try.

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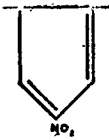


para-NITROPHENOL...high-assay intermediate can cut synthesis costs.

Monsanto *para*-nitrophenol can be a cost-saving base raw material for a number of specialized syntheses. PNP actually offers highest assay at lowest cost.

At 99.0% minimum purity, this high assay eliminates the loss of 3 to 4% water content of ordinary commercial material. The uniform level of concentration can make important money savings through easier, faster, more predictably uniform processing reactions. Used by itself, PNP is a low-cost fungicide and preservative for chrome-tanned leather. In syntheses, PNP offers a valuable reactivity for creating new structures. Its highly reactive phenol hydrogen atom gains an energizing "boost" from the *para* NO_2 group. This phenol hydrogen undergoes replacement by a host of reactive structures that may be derived from sulfonyl chlorides, alkyl halides, phosphoryl chlorides and many others. PNP offers organic chemists a low-cost combination of an OH and an NO_2 radical on an aromatic ring . . . a building block for new chemical structures for insecticides, dyes, and derivatives of *para*-aminophenol. Give your creative imagination a workout with PNP. Likely result: better end products at substantial savings.



SANTOWHITE® POWDER REFINED...controls oxidative degradation of caprolactam, polypropylene, and high-density polyethylene.

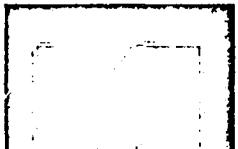
Santowhite Powder Refined stabilizes olefins against oxidative heat degradation that causes color build-up during processing and decreased flow properties. At concentrations up to 0.5%, the in-process and residual antioxidant action of Santowhite Powder Refined is almost equal to Monsanto's *Santonox*®. . . . but its color-controlling mechanism is far superior. So, too, is its stabilizing action, compared with compounds such as di-*t*-butyl-*p*-cresol and other alkylene-bis-substituted phenols. For example, Santowhite Powder Refined, when used as an antioxidant for polypropylene and high-density polyethylene, protects these polymers from oxidation for 2.6 hrs. and 5.3 hrs. compared to 0.3 hrs. and 0.8 hrs. respectively for the unprotected controls (as shown by infrared tests on carbonyl build-up). In air oven aging tests, after three days at 150° C., polypropylene samples with Santowhite Powder Refined showed a weight loss due to decomposition of resin of just 0.42% compared with 20.6% loss for the controls. In polycaprolactam, Santowhite Powder Refined improves low-temperature brittleness and makes reprocessing easier by maintaining the melting point. For example, 1% on the resin maintains the melt index within 25% after two extrusions at 290° C., while the unprotected resin increases its melt index over 500%.



AROCLOR® oils and resins ...reduce cost of coatings and improve chemical resistance, adhesion, weathering.

Combinations of the various Aroclor liquids and solids offer coatings formulators an efficient way to conserve their base resin solids, yet *increase* the total resin content of their vehicle. At the same time, they can lower cost and improve properties of their coatings. The reason is simple. The highly inert Aroclor chlorinated polyphenyls, ranging from clear syrupy liquids to brilliant pale resins, are readily compatible with virtually all commercial coating resins . . . by simple mixing. They are low in cost . . . and they greatly improve the chemical resistance, weatherability, film strength, and adhesion to metal, wood, or masonry. In aluminum paints, for example, addition of an Aroclor resin promotes the adhesion and sealing properties. In traffic roadmarking, marine and swimming pool paints, color-fastness and chemical resistance are greatly improved. In epoxies, Aroclor resins will make the coatings fire-resistant. Aroclor resins exert a "permanent" flexibilizing action, are non-drying and completely inert. Because of their low per-pound cost and the simplicity of blending, the Aroclor resins usually can cut the cost of any coating compound in which they are used.

Mission Today: QUALITY AT LESS COST



• • • For more details, use this handy coupon • • • •

Please send more information about:

- ☐ HB-40
- ☐ Diethyl Phthalate
- ☐ para-Toluenesulfonyl Chloride
- ☐ para-Nitrophenol
- ☐ Santowhite Powder Refined
- ☐ Aroclor

MONSANTO CHEMICAL COMPANY
Organic Chemicals Division
Task Force Chemicals, Department 2763-Z
St. Louis 66, Missouri

Name.....
Company.....
Street.....
City.....*Zone*.....*State*.....

emical Week, October 8; Chemical & Engineering News, December 5, 1960.

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