WHEN YOU ARE LOOKING FOR A WAY... to make your process or product better, cheaper, or more profitable, discuss the problem with Monsanto. Often an additive, a stabilizer, or a modified processing step will be the answer. Monsanto has hundreds of special "task" compounds; you'll see six mentioned in this advertisement. And if Monsanto's products cannot serve your requirements—almost certainly one of our customers' products will.

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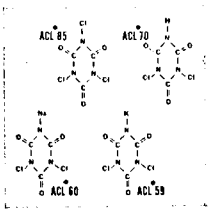


VERSATILE dry sources of available chlorine

Want a stable, crystalline compound that releases as much as 90% of its own weight as available chlorine? Then start your evaluation with ACL-85 (trichloroisocyanuric acid), a white crystalline solid. You can also order the same basic molecule with a hydrogen, a sodium, or a potassium ion replacing one active chlorine. An alkaline metal ion makes the product more soluble, and the molecule still releases *all* its available chlorine in water (approximately 60% of the dry solid's weight).

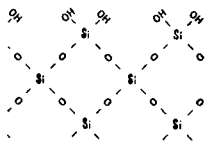
The ACL's make the most effective (and low cost) dry household and commercial laundry bleaches; and put fast-acting chlorine into dishwashing compounds, scouring cleansers and sanitizers. But astute chemists are now checking out these ACL compounds for syntheses, particularly where a synthesis requires attaching a chlorine on another "N-H" position in an exchange reaction. Added slowly to the reaction, ACL compounds give you a closely measurable, *easily controlled* amount of chlorine for a synthesis in which a mild chlorination or oxidation can make all the difference in the quality of the end product.



AROCLOR® compounds... inert, high-heat stable, almost non-volatile reaction media

If there is a "beautiful reaction" that's just "too hot to handle" in the conventional way—try running it in Aroclor. This series of chlorinated polyphenyls provides you with a liquid matrix that is impervious to strong acids, alkalies, and highly corrosive reactants. An Aroclor, one that won't boil at temperatures in excess of 600°F., will control the reactions of almost any kind of "nervous," covalent hot stuff you want to react, then peacefully disgorge your finished product by crystallization or distillation.

Aroclor, used as a reaction medium, may open a whole new methodology of controlling rate of reaction and limiting formation of by-products. The non-polar, practically non-volatile, and inert liquids permit high-temperature reactions to proceed without autoclaving; they can slow down the speed and regulate, *stepwise*, the *degree* of reaction. Aroclor reaction media may be able to help you make a process run with less complicated equipment, or operate a reaction that would not otherwise be feasible. If you cannot tolerate even a chance of trace chlorine in the reaction environment, use terphenyls in place of Aroclor as the inert reaction solvent. Terphenyls are also available from Monsanto.



HOOK your product up with SYTON® for... frictionizing, *reinforcing, surface-sealing*

Syton's inert and infinitesimal particles economically solve the problem of surface-to-surface slip and slide. For example, in the packaging industry, Syton is used as an effective spray-on antiskid coating to make shipping containers stay put, in plant and in transit. In the textile industry, Syton controls yarn slippage, modifies hand, and controls luster; application requires no special equipment, no after-treatment, no curing.

Syton's large surface area and countless particles qualify it as a prime candidate for many reinforcing jobs. In the foundry industry, Syton has proved an excellent binder and reinforcer in making ceramic shell molds for high-tolerance alloy casting.

Tiny surface pits and pores are dirt collectors. Syton's invisible surface-sealing ability is widely recognized by suppliers of water-based paints, wallpaper, shades, blinds and carpets for making their products soil *resistant*.

Syton, an aqueous suspension of 30% (by weight) of inert submicroscopic particles of rigid silica, comes in two ultimate particle sizes: 100-250 angstroms or 350-400 angstroms. Perhaps you've already noted where and when you'd like to evaluate Syton. Mail the coupon and we'll see that working samples and pertinent product information are sent to you pronto!

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Monsanto task force chemicals

MISSION:

CHEMICAL PATHWAYS TO PRODUCT IMPROVEMENT

To *management*, you can improve a product by lowering its costs. To *customers*, you can improve a product by increasing the benefits it offers, by raising its quality, by formulating or modifying the product *to suit a need. Surprisingly often*, you can do this chemically. And surprisingly often, Monsanto can help you solve the problem that's in search of an answer.

62-OMC-23253 Chemical & Engineering News, September 17, 1962 and Janu
Chemical Engineering, October 15, 1962 and February 18, 1963; Industr

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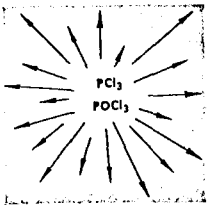


PCl_3 and $POCl_3$... the reactive bearers of phosphorus and chlorine

These two "eager" liquids are like a carpenter's *hammer to the molecular* builder. PCl_3 is your handiest tool to fashion phosphite esters; $POCl_3$, for phosphate and phosphonate esters. If you are building lubricating oil or gasoline additives, one or the other can be the bearer of your chlorine and phosphorus and weld them securely in good yield into organic phosphorus compounds. $POCl_3$ is the starting point for phosphate plasticizers. It is the prime reactant in the synthesis of aromatic aldehydes, chloroquinolines, and the pyrimidine portion of antibiotics. PCl_3 is used extensively in the preparation of fatty acid chlorides for surfactant manufacture. PCl_3 also can help you make high purity organic acid chlorides for reaction with amino alcohols to prepare the amino esters for local anesthetics, *antispasmodic*, and anticholinergic agents. You can use it, too, as a catalyst for alpha-halogenation of aliphatic acids.

In the maze of organic structures wherein lie so many useful compounds, PCl_3 and $POCl_3$ are often the most effective and lowest-cost reagents you can use, in terms of "cleanness," speed of reaction, and high yield.

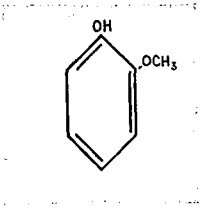


SANTOBRITE®... low-cost, simple "stopper" for algae, souring, slime formation in process water

Santobrite briquettes (they weigh 1 ounce each) can keep your process water free of fungi, bacteria, algae, and odors at about one-half the cost of most methods of water treatment. No matter how long you must store or recycle plant water—you can keep it fresh and free of microorganism growth simply by hanging a mesh bag of Santobrite briquettes at the make-up intake or anywhere in the system. The dense briquettes dissolve *slowly*. Once a week, or month—simply refill the bag. Keeps water-borne debris from impairing the quality in wet-process products, like paper, plywood, fiberboard, veneers . . . controls "spoilage" in circulating process-cooling water, quenching tanks, and in the reservoirs of air-conditioning systems.

Santobrite water treatment means four-way dollar savings: less cost for water conditioning, less time and attention to process water, fewer off-quality products due to water spoilage, less down time for system clean-out.

No testing, no technical service—just Santobrite briquettes in a bag—water stays free of slime, scum, microbiological sediments.



GUAIACOL... a hindered phenol with an *ortho*-positioned methoxy

Guaiacol is a "sleeper" building block that has been described as the "phenol with the golden arm." There's a reason: the methoxy-group in the *ortho* position poses some intriguing stereo blocking possibilities (for making specialty resins) and provides a strong arm for building synthetics that duplicate or *approximate natural* products.

Most substituted phenols have molecular modifiers in the *para* position like nonyl phenol's $-C_9H_{19}$. But guaiacol's inert $-OCH_3$ in the *ortho* position on the ring makes it a unique starting point for building pyrones, steroids, complex heterocyclics, and chemical duplicates of "natural" compounds. With other starting materials, most syntheses that try to make an addition of a methoxy at the *ortho* position result in mixed *isomers*. *However*, with guaiacol, the *ortho*-positioned $-OCH_3$ is "locked in" from the start.

In making resins, the $-OCH_3$ blocks condensation out of one *ortho* position; confines the polymer geometry to a limited build-up pattern with lower molecular weights. This stereo blockage indicates that a variety of modifications can be "built-in" to phenolic resins by the adroit use of a small amount of guaiacol hooked in the molecular design.

Monsanto offers whole "task forces" of compounds developed to improve *existing products* . . . by making them more salable, or by enabling you to make them better or at lowered cost. Discuss your specific needs with Monsanto and check the six product improvers above.

Please send more information on
- ☐ ACL Compounds, Bulletin I-177
- ☐ PCl_3, $POCl_3$, Bulletin I-35
- ☐ Syton Silica Sols, Tech. Data Sheet
- ☐ Aroclor ☐ Santobrite for Process Water
- ☐ Guaiacol Reactions

*Name*_____ *Title*_____

*Firm*_____

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*City*_____ *Zone*___ *State*_____

For more details, use this handy coupon

Monsanto

Monsanto Chemical Co.
Task Force Chemicals
Dept. 253, Building B-2-S
St. Louis 66, Missouri

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. 1962 and January 21, 1963; Chemical Week, October 6, 1962 and February 9, 1963;
, 1963; Industrial & Engineering Chemistry, November, 1962 and March, 1963.

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