CHEMISTRY

Softeners for Plastics

➤ THAT PLASTIC shower curtain in your bathroom gave the chemists a lot of worries as they were perfecting it.

A plastics age story was told by W. A. Woodcock of the Carbide and Carbon Chemicals Corporation, New York, at the American Chemical Society meeting in Washington.

When the first plastic curtains were made about a decade ago, the softening agent used in the plastic evaporated too fast. Result: Curtains too stiff and cracked too easily.

Another plasticizer was used and the portion not wet was pliable but the part in contact with water was still too stiff.

A third softening material turned out to be just right—except it developed an obnoxious odor on the store shelf that discouraged customers.

Finally the present shower curtain of vinyl resin was perfected and proved satisfactory.

Then there is the story of the butchers' plastic aprons, made with an experimental softening agent, tested carefully under the usual conditions of a meat market. But they were shipped during a cold spell and arrived at their destination completely shattered because of brittleness.

Mr. Woodcock told these hard-luck stories in reporting the importance of plasticizers, production of which will reach an all-time high this year of 200,000,000 pounds.

Plastic materials get lots of notice but the softening agents necessary in making them are less well known, although a pound of plasticizer is needed for every two pounds of vinyl plastics.

Idle farm products will furnish both plastics and plasticizers of the future, Dr. C. E. Rehberg of the Department of Agriculture's Eastern Regional Research Laboratory, Philadelphia, told the chemists.

Usually plasticizers of vinyl plastics—used in raincoats, handbags, tobacco pouches and dozens of other things as well as shower curtains—are derived from petroleum. Dr. Rehberg reported that softening agents can be made with lactic (sour milk) acid, which can be produced from potatoes, molasses, and sulfite waste liquor from paper making. Other chemicals required can be made from agricultural wastes such as corn cobs.

In this way farms can relieve the oil wells of America in furnishing necessary raw materials.

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CHEMISTRY

New Nylon Plant

➤ NYLON is now ten years old. The hundreds of applications that have been found for this versatile plastic, ranging from women's hosiery to paint brush bristles, are responsible for a giant manufacturing plant near Parkersburg, W. Va., now completed, which will be in production this fall.

The plant will manufacture the nylon molding powders which other manufacturers will use in making finished products. It will make plastic Lucite and polythene molding powders as well. It has been constructed by the Du Pont Company, in whose laboratories nylon was discovered. It contains 17 buildings on a 400-acre tract of land which once belonged to George Washington.

The discovery of nylon about ten years ago was accidental in the sense that it came from a research project whose primary purpose was to acquire knowledge of the mechanism for making large organic molecules. Nature does this in building the structural materials of cotton and silk. The fact that from the program came a whole range of new products is a convincing argument for time and money spent in fundamental research without reference to commercial applications.

The first commercial use of nylon was in bristles for toothbrushes and hairbrushes. Very soon, however, a spectacular discovery was made. It could be used to make stockings for women, a rival of imported silk. But nearly the entire product was drafted by the war. War uses ranged from parachute material to naval rope to supplement the short supply of Manila hemp.

The name nylon does not refer to a single substance, but to a family of related substances. Nylons are chemically similar and have the common ability to be formed into textile fiber. But nylon in the form of powders can be molded into many useful objects. It is one of the so-called thermoplastics. It can be softened by heat and rehardened again by chilling. Nylon, however, is a type of thermoplastic that does not noticeably soften at the temperature of boiling water. This fact makes it usable in many applications which would not otherwise be possible.

Lucite is a trade name for a sparkling, crystal-like acrylic resin. Lucite molding powders will be made in Parkersburg. They will be available to other manufacturers to make transparent enclosures for aircraft, stormwindow panes, doorknobs, brush backs, household utensils, wrapping material, and many other articles. Polythene is an excellent electrical insulator, but has many other uses.

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ENGINEERING

Thickened Fuel Speeds Steam Forming in Boilers

➤ THICKENED FUEL, a wartime stuff for flame throwers and bombs to start fires in enemy strongholds, is replacing wood and coal kindling to start fires in giant industrial boilers. It is a time saver and a fuel saver.

Speed is its particular advantage. It will bring stoker-fed industrial boilers to full operating steam pressure in 30 minutes, compared with the eight hours usually required by the older type kindling. This means not only time saving but also substantial savings in coal consumption.

The thickened fuel has now been thoroughly tested in boiler firing, Esso Standard Oil Company revealed. It is made of diesel oil containing aluminum soap which makes it a semi-fluid, jelly-like mass that can be applied in nests along the boiler grate well in advance of use, and ignited with a paper torch.

It clings to the coal, burns slowly and with sufficient intensity to fire the coal. Its ability to fire the entire furnace evenly contributes to the speed with which steam pressure is obtained. Five gallons of the product are sufficient for a large boiler.

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