

Styrene Cracking Section dehydrogenates the ethyl-benzene to produce crude styrene, the operation being similar to dehydrogenation in the Butadiene Unit.

Styrene Finishing Section brings the crude styrene up to purity by fractional distillation and the unreacted ethyl-benzene is returned to the Styrene Cracking building for further treating.

Cumene Section is one of the original ethyl-benzene sub-sections converted to making cumene. In producing cumene a propylene "cut" is employed, the propylene being piped from the Light Ends Recovery Unit. It is reacted with benzene to form Cumene. About half the consumption of benzene or approximately 1,125,000 imperial gallons per year, is used in making Cumene, the output of which is about 2,500,000 pounds a month.

The Styrene Unit is operated for Polymer by the Dow Chemical Company of Canada, which employs only 109 persons. The smallness of the staff is made possible by engineers who designed the different sections to run themselves with a minimum of human aid. The Ethyl-benzene and Cumene Sections are jointly operated by two technicians and one helper on each of three eight-hour shifts by the means of a robot control and instrument board. Similar devices are employed at the other buildings.

Styrene is in itself a plastic base which has been in commercial production in the United States for the past seven years. Its uses range from insulation for radio sets used by the army to costume jewellery, combs and lenses. It is impervious to water, is light and resonant.

7. Buna-S Unit comprises two identical parallel units operating independently, which combine butadiene and styrene to produce buna-s rubber. Co-polymerization of these ingredients is accomplished in batch reactors in an aqueous emulsion in the presence of a catalyst and other chemicals. The resulting latex contains some unreacted butadiene and styrene which is later removed. Rubber is coagulated in a two-step operation involving addition of brine and salt, filtered off in rotary filters, dried and baled. The rubber is shipped in 75-pound bales.

8. The Butyl Rubber Unit was built to produce 4,000 long tons of butyl per year. Butyl rubber is made chiefly from isobutylene, built up to complex molecules with a small amount of isoprene, the operation being performed in the presence of a catalyst and inactive solvent at low temperatures. The product is dried in much the same way as is buna-s.

9. Steam and Power Plant in Polymer is the largest of its kind in Canada and one of the largest producers of process steam in the world. It has a rated capacity of 1,375,000 pounds of steam per hour at 450 pounds per square inch pressure, which, if converted into electrical energy, would light 1,200,000 sixty-watt bulbs or one in every household using electricity in Ontario, Alberta and Quebec.

The plant contains five great furnaces, which at their hottest point generate a temperature of 2,500 to 3,000 degrees F., but are so well insulated as to permit a heat loss of only half of one per cent, representing an annual saving of about 8,000 tons of coal.

Air for each furnace is forced in by a 200-horsepower electric fan. Boiler water goes through a treater and a filter before being pumped into the boilers by the means of electric motors and turbines. 400,000 tons of bituminous coal per year are required to feed the five furnaces, or enough to heat every house in Winnipeg and Edmonton. This coal is crushed by means of a pulverizer within the plant which renders