

receiver 10, while the gaseous products pass through gas meter 12 to gas-holder 11. Gas samples for analysis are taken as follows: before the expt. from the clean-out valve located at the inlet to the reactor; and after the expt. from the gas-holder. The condensate was first stripped of butane, and then fractionated through a column with 30 theoretical plates. In this way we collected fractions with the corresponding paraffin boiling points: C₅-C₆ (up to 75°), C₇ (75-100°), C₈ (100-125°) and C₉₋₁₀ (125-175°). The individual fractions were analyzed for unsaturates by the bromine method. Sp. gr. and refractive index were also measured. The experiments were conducted at temperatures of 400, 450 and 500° at pressures of 100, 300, 600, 1000 and 1500 atm. Space velocities for the butane-propylene liquid mixture were varied from 1.9 to 4.0 liters/liter-hour. The duration of an expt. was 1-3 hours.

The data presented in Table 1 show that a complex mixture of hydrocarbons is formed in this process. About 60-70% of these products boil below 175°. The principal processes appear to be those of polymerization and alkylation. At 400° polymerization predominates, as confirmed by the small proportion of the heptane fraction in the condensate (about 11 vol. %), and by the higher degree of unsaturates in all condensate fractions. As the temp. is increased to 450-500°, the yield of alkylation products increases significantly, the unsaturation of the condensate decreases, the heptane fraction increases, and the higher boiling products decrease in quantity. Increase of pressure from 300 to 1000 atm at 400°, from 600 to 1500 atm at 450°, or from 100 to 600 atm at 500°, has no significant effect on the course of the process. However when the pressure was reduced from 600 to 100 atm at 450°