

thickness. The top of the reactor was hermetically sealed with hydraulic closure 6 operated by pump 7, and is closed below by a fine regulation valve. By means of the latter, reaction products were continuously withdrawn, and the space velocity regulated for the reaction mixture being passed through the apparatus. The reactor was heated in a tubular electric furnace and its temp. measured by thermocouple 8, inserted into a small opening in the body of the reactor to a depth of 150 mm, i.e., level with the catalyst bed. In this work, the propylene was 98% pure, and the butane contained as impurities 2.8% of unsaturated compounds, 0.8% propane, and 0.5% of isobutane. The propylene content of the mixture was varied between the limits 23-30%. The selection of aluminum oxide as catalyst was determined by its freedom from strong cracking and isomerization catalysts, thereby allowing us to follow the chemistry of the process from the composition of the condensate. Immediately before the expt. the catalyst was dehydrated for one hour at 425° in a stream of air. It has an apparent density of 1.02 g/cm^3 , and a total pore vol. of $0.67 \text{ cm}^3/\text{g}$ and the vol. of sorbed liquid benzene from saturated vapors was $0.68 \text{ cm}^3/\text{g}$. In each expt. a fresh 50 ml portion of catalyst was used. Above the catalyst was poured a layer, comprising 80 ml of porcelain tiles, which helped heat the reacting components being fed to the catalyst. At the beginning of the expt., nitrogen was passed through, the fine regulator closed and and the hydraulic compressor turned on. After 5-7 min, when the reacting components built up the required pressure in the reactor, the valve was opened and drops of condensate began to fall through the cooler 9 into the ice-cooled