

## STUDY OF SPECIFIC PROPERTIES OF COBALT CATALYST FOR APPLYING IN A NEW LARGE-SCALE CAPACITY UNIT FOR THE CYCLOHEXYLAMINE PRODUCTION

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Production capacity of cyclohexylamine (CHA), based on process developed by UCT Prague in cooperation with BorsodChem, s. r. o., will cover about 75 % of world production of CHA. CHA is produced by catalytic hydrogenation of aniline in gaseous phase. A cobalt catalyst  $\text{Co}/\text{CaCO}_3\text{-Na}_2\text{CO}_3$  accelerates abovementioned hydrogenation reaction. This cobalt catalyst is highly active and selective and its lifetime is longer than 18 years. Specific property of this cobalt catalyst is activation period. This phenomenon represents time period during which, under constant reaction conditions the conversion of aniline will increase up 2-3 times. Mentioned period is not related to the incompleteness reduction of cobalt precursor to active  $\text{Co}^0$ . According to current knowledge, the activation period is conditioned by the reduction of cobalt precursor at temperature higher than a 260 °C, presence of chemical promotor  $\text{Na}_2\text{CO}_3$  and concentration of water in aniline over a 0.1 wt. %. The goal of this contribution is the expansion of the knowledge about activation period and the function of water and chemical promotor on the secondary activation of cobalt catalyst. The effect of ammonia in hydrogen gas on the hydrogenation aniline, *i.e.* activation period was studied. It was discovered that the 7 mol. % of ammonia in hydrogen gas suppress the promotional effect of water on origin of activation period. In addition, the effect of alkali metal carbonate on the hydrogenation of aniline and its adsorbed content was studied.