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OBTAINING CYCLOPENTANONE IN THE PRESENCE OF METAL OXIDES

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Abstract. The obtaining of cyclopentanone by pyrolysis of calcium adipate was presented earlier in the works.^{1,2} The possibility of obtaining cyclopentanone by pyrolysis of calcium adipate at different temperatures with the formation of cyclopentanone and cyclopentene was studied.³ It has been shown that the by-product, cyclopentene, reached its maximum yield at 500°C.

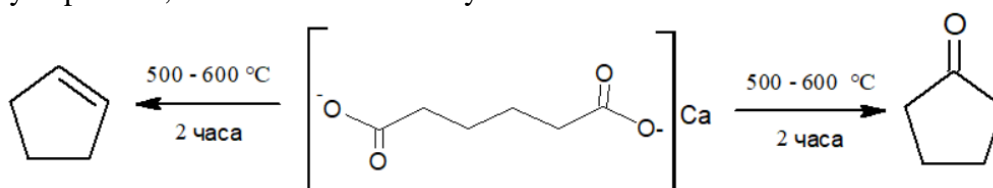


Figure 1. Diagram of the pyrolysis process

Studies of pyrolysis of calcium adipate with metal salts and metal oxide catalysts for the dehydrogenation of lower alkanes was carried out. The experiment was carried out using a quartz reactor in the form of a hollow cylindrical vessel with a full load of 7,0 g. Pyrolysis was carried out with the same salt load – 3,0 g for 2 hours in the presence of 0.03 g (1%) of catalysts (table 1). The obtained liquid products were chromatographed on a Kristallux 4000M chromatograph. The best results were achieved in the presence of a «K-16u» catalyst.

Table 1. Dependence of the yield of the target product on the catalyst

Catalyst	Process conditions		Cyclopentanone yield, %
	t,h	T, °C	
Without catalyst	1	600	16,81
«K-16u»	2	500	34,14
(Fe ₂ O ₃ x Cr ₂ O ₃ x ZnO)	2	600	51,62
ZnCl ₂	2	500	23,70
	2	600	29,27

References

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