

Appendix A

PREPARATION OF ZEOLITES AND CATALYSTS

1. Synthesis of NaY Zeolite

Table A-1 Chemical Compositions of Working Solution

No	Solution/Composition (g/l)	Na ₂ O	SiO ₂	Al ₂ O ₃	H ₂ O	Density (g/l)
1	Waterglass	84.69	251.82	-	920.8	1257.31
2	High sodium aluminate	259.39	-	41.40	1108.49	1409.28
3	Low sodium aluminate	145.45	-	100.54	1062.51	1308.50
4	Aluminium sulfate	-	-	89.98	1157.3	1247.28
5	Deionized water	-	-	-	1000	1000

Step I: Preparation of initiating agent (seed)

Based on 200 ml seed

Basis ratio : (13-17) Na₂O : (1) Al₂O₃ : (12-16) SiO₂ : (300-400) H₂O

Input ratio : 15.39 Na₂O : Al₂O₃ : 15 SiO₂ : 334.55 H₂O

Step II : Preparation of aluminosilicale gel (whole gel)

Based on 2000 ml whole gel

Basis ratio : (3-5) Na₂O : (1) Al₂O₃ : (8-12) SiO₂ : (120-200) H₂O

Input ratio : 4.58 Na₂O : Al₂O₃ : 8.96 SiO₂ : 180.76 H₂O

Table A-2 The Quantity of Working Solution for Synthetic of NaY Zeolite

Working Solution	Volume (ml)
<u>Step I: Preparation of initiating agent</u>	
Water glass	57
High sodium aluminate	39
Deionized water (make up)	4
<u>Step II: Preparation of whole gel</u>	
Water glass	590
Initiating agent (from step I)	100
Aluminium sulfate	180
Low sodium aluminate	130

2. Preparation of zeolite Catalysts

Table A-3 Distribution of Individual Rare Earth Oxide used in Experiments

Source: Kritsanaphak, 2001: 85

Type/RE ₂ O ₃ (wt%)	La ₂ O ₃	Ce ₂ O ₃	Pr ₂ O ₃	Nd ₂ O ₃	Sm ₂ O ₃	Total
RECl ₃ (rich-La)	36.313	1.090	7.935	0.645	0.0004	45.98
RECl ₃ (mixed)	17.568	24.373	2.206	1.222	0.073	45.44

Table A-4 Solid Content of Catalyst Components

Material	% Solid*
NaY	80.81
Rich La RECl	50.42
PBA	73.53
Clay RIPP	77.82
REY	90.32
REHY	88.15
USY	90.04

* % solid was determined at 800°C for 2 hours.