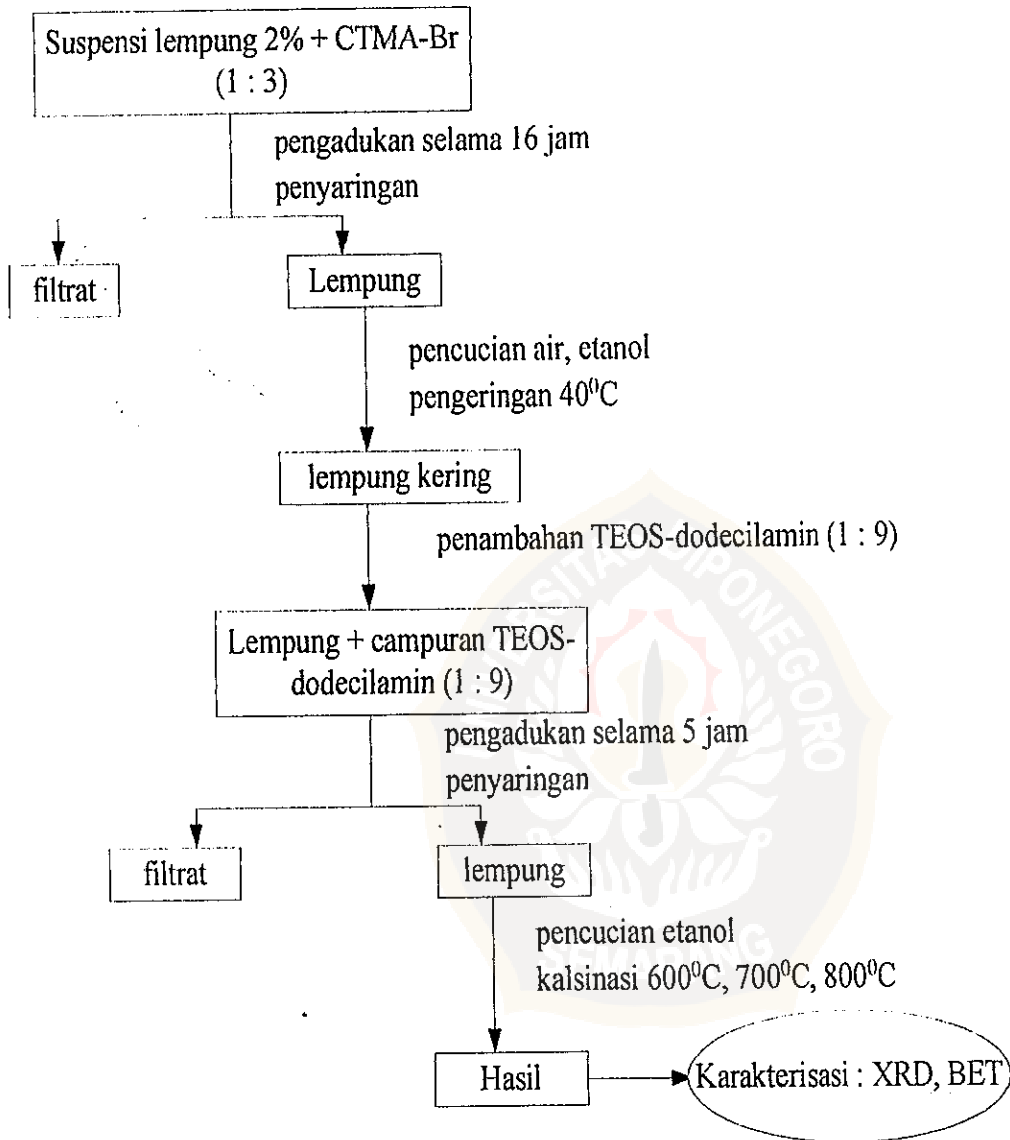
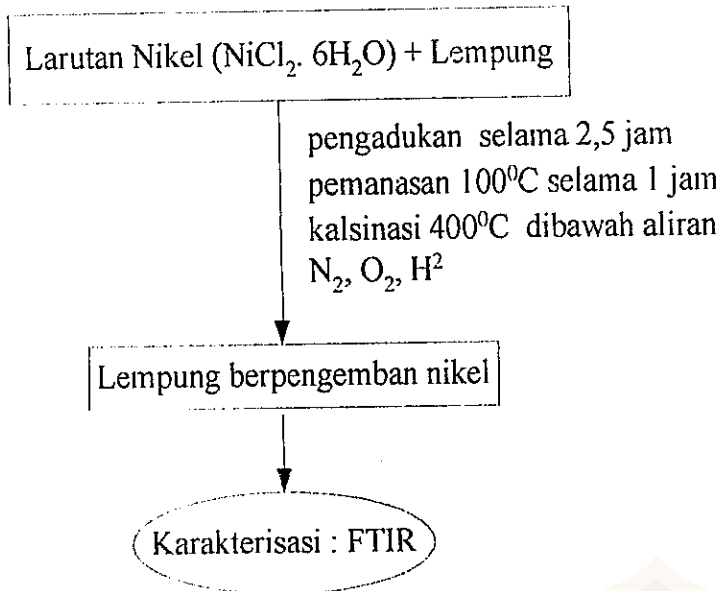


Lampiran A : Skema Kerja

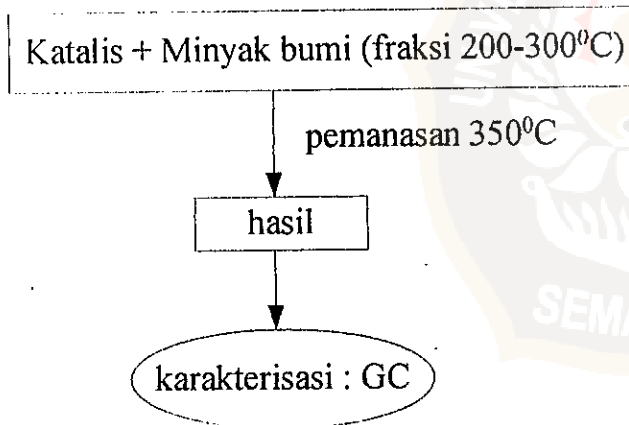
1. Sintesis Lempung Terpillar Silika (SiO_2)



2. Impregnasi Nikel

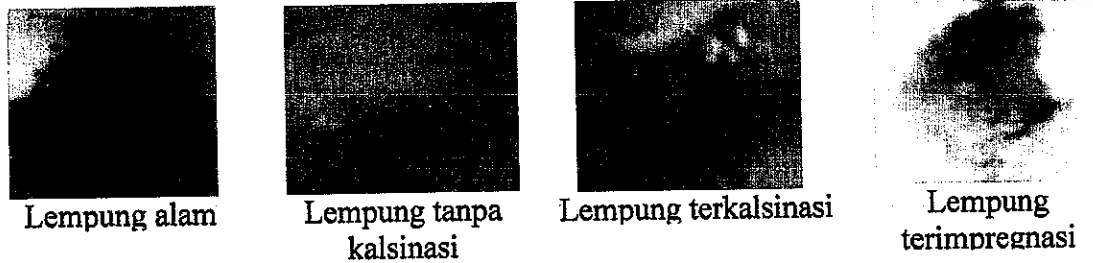


3. Uji Aktivitas Katalis



Lampiran B : Katalis dan Produk Perengkahan

Gambar B.1 : Lempung alam, lempung terpillar dan lempung teremban nikel



Gambar B.2 : Produk cair hidrorengkah minyak bumi



Pengurangan			Penambahan	
L pengurangan	% pengurangan	konversi tunggal	L penambahan	% Penambahan
0	0.0	-	45323	0.50153742
0	0.0	-	66484	0.735696381
63172	0.69905	100	0	0
0	0	-	99671	1.102934659
0	0	-	140720	1.557183148
0	0	-	56512	0.625355543
0	0	-	186689	2.068076505
275069	3.04386	100	0	0
0	0	-	413592	4.576722852
0	0	-	348996	3.872978801
0	0	-	65240	0.721934864
36343	0.40216	100	0	0
0	0	-	93902	1.039101117
0	0	-	261744	2.896408501
0	0	-	72417	0.801353739
0	0	-	118220	1.308196804
34249	0.37899	100	0	0
26997	0.29235	100	0	0
0	0	-	292173	3.233127477
0	0	-	204399	2.261836084
0	0	-	139011	1.538269945
0	0	-	215032	2.379496946
29203	0.32880	100	0	0
0	0	-	109332	1.209841029
0	0	-	142414	1.575918708
47215	0.52248	100	0	0
0	0	-	77507	0.857672556
83491	0.92390	100	0	0
0	0	-	160824	1.779641268
0	0	-	100584	1.113043531
0	0	-	174257	1.928290383
72316	0.79691	100	0	0
0	0	-	644157	7.128110494
243250	2.69176	100	0	0
0	0	-	424523	4.697683068
0	0	-	89722	0.992848002
0	0	-	225433	2.494598651
161564	1.78717	100	0	0
0	0	-	451364	4.994703939
0	0	-	42081	0.465669519
0	0	-	357215	3.952871394
0	0	-	74874	0.828538655
0	0	-	400326	4.42992942
97905	1.08340	40.2223502	0	0
0	0	-	53751	0.594784111
0	0	-	385906	4.270355672
193727	2.14374	100	0	0
0	0	-	103742	1.147983324
0	0	-	179190	1.962949324
0	0	-	191447	2.11851275
0	0	-	152156	1.683725269
0	0	-	396382	4.366284921
0	0	-	101533	1.123565092
33650	0.37569	12.54522957	0	0
0	0	-	11480	0.127032204
12868	0.14239	4.098238635	0	0
219937	2.43378	20.72531235	0	0
0	0	-	197203	2.182207089
0	0	-	209853	2.322186003
165317	2.09494	27.30475623	0	0
0	0	-	123366	1.365142079
0	0	-	45445	0.502882296
0	0	-	164718	1.822737744
396568	4.41047	35.22123195	0	0
103184	1.14161	5.784763522	0	0
9926	0.10983	2.232966492	0	0
150696	1.66758	16.58148452	0	0
0	0	-	534	0.005912155
0	0	-	57762	0.639177176
155453	1.72021	22.17034835	0	0
99343	1.09331	5.418953664	0	0
431638	4.77642	34.02135007	0	0
233523	2.58412	33.38800428	0	0
283564	3.13788	21.06402122	0	0
0	0	-	366443	4.054985044
581867	6.43882	100	0	0
384348	4.25311	100	0	0
128179	1.41841	9.544970036	0	0
621256	6.87488	65.27114213	0	0
475756	5.28461	11.71476853	0	0
459734	5.08732	100	0	0
239042	2.64519	100	0	0
477180	5.28037	100	0	0
492598	5.45099	27.83882122	0	0
252085	2.78952	100	0	0
240398	2.66020	100	0	0
184080	1.81567	18.48805901	0	0
461048	5.10186	100	0	0
378579	4.18928	100	0	0
9036855	100	100	9036855	100



komp frak awal	komp frak akhir	Pengurangan		konversi tunggal	Pertambahan	
		L pengurangan	% pengurangan		L pertambahan	% pertambahan
0.151262347	0	63172	0.74435044	100	0	0
0.702178659	0	275068	3.241097328	100	0	0
0	0.05285019	0	0	-	20703	0.243944497
0.092774007	0.045242713	18620	0.219393678	51.23341691	0	0
0.0874284	0.140151755	0	0	-	20654	0.243359054
0.05359957	0.094268938	0	0	-	15932	0.187720583
0	0.069880753	0	0	-	27375	0.225553716
0.108609365	0.102806826	2273	0.026783208	5.342577676	0	0
0.195361631	0.354058199	0	0	-	62167	0.732507385
0.076080371	0.114742735	0	0	-	15145	0.178456712
0.12052866	0.237942453	0	0	-	45995	0.541955452
0.164993508	0.291248356	0	0	-	50242	0.591995306
0.213131564	0.393665095	0	0	-	70722	0.833306482
0.08743392	0.189227951	0	0	-	39876	0.469858174
0.151876489	0.244464847	0	0	-	36270	0.427366875
0.183836978	0.332699202	0	0	-	58315	0.687114285
0	0.179809624	0	0	-	70438	0.829960466
0	0.472322694	0	0	-	185026	2.180134493
0.620954142	0.46178121	62354	0.734706175	25.633605	0	0
0.206732546	0.342443531	0	0	-	52379	0.617179596
0.519992002	0.955841251	0	0	-	170738	2.01178134
0.575929068	0.945651944	0	0	-	144834	1.70655699
0.412276791	1.047802009	0	0	-	248958	2.923440354
0.236763173	0	92749	1.092845141	100	0	0
0.309424232	0.468286947	0	0	-	62232	0.733274283
0.888049562	1.510192389	0	0	-	243716	2.87167027
0	0.931172277	0	0	-	364774	4.298080163
0.621259823	0	243409	2.866056103	100	0	0
0.264491457	1.361876338	0	0	-	156670	1.834238536
0.869713883	0	340699	4.014402148	100	0	0
0	1.557667136	0	0	-	610195	7.169638426
0.494533448	0.319283202	68652	0.808915413	35.437491	0	0
0.731528439	0.856706098	0	0	-	49037	0.577791698
0.513111983	0.625823821	0	0	-	44153	0.520252295
1.551373013	2.167554935	0	0	-	241381	2.844152204
2.615624267	3.230398249	0	0	-	240829	2.837657353
0.690833389	0.532292549	62106	0.731788582	22.94921507	0	0
0.819514306	0.845228514	0	0	-	10700	0.126076182
0.801523694	0.980893336	0	0	-	70266	0.827930068
2.708966779	2.704352064	1808	0.021300475	0.170349609	0	0
2.425814411	2.418142468	2888	0.034027217	0.303933167	0	0
1.769933875	1.285103848	189902	2.237588566	27.38916038	0	0
1.410638474	1.129394992	110173	1.298156164	19.83731825	0	0
2.191206752	1.949621162	94868	1.11805306	11.05388785	0	0
0.742395918	0.882624345	0	0	-	54944	0.647401106
2.88871107	2.403429504	190102	2.23994925	16.79923864	0	0
0	0.363224292	0	0	-	142288	1.676561
4.553355641	5.056946972	0	0	-	197275	2.324463897
1.134658105	0	444503	5.237509253	100	0	0
2.318588484	1.912601015	189040	1.873948131	17.51011322	0	0
1.703926537	1.490249235	83705	0.986285991	12.5402884	0	0
7.778624556	9.295870092	0	0	-	594360	7.003261481
1.789917116	1.687856519	39930	0.47048853	5.694710427	0	0
4.681526907	5.95737048	0	0	-	499795	5.889009356
0	1.501694954	0	0	-	588269	6.931483521
3.238725483	1.750964147	552810	6.867169097	45.93662981	0	0
1.785438065	0	699421	8.24117741	100	0	0
0	0	0	0	-	0	0
3.436496362	5.835379583	0	0	-	939730	11.0727012
4.720148396	8.163931342	0	0	-	1349055	15.89572148
1.485352778	0	581867	6.856051733	100	0	0
0.981135178	0	364348	4.528711437	100	0	0
3.428088132	4.27780525	0	0	-	332873	3.922193929
2.429711968	1.123605505	511649	6.028691379	53.75560689	0	0
10.36708475	11.28503606	0	0	-	359595	4.237055186
1.173580009	0	459734	5.41897931	100	0	0
0.610210495	0	239042	2.816593328	100	0	0
1.218113651	0	477180	5.622537428	100	0	0
4.518979476	3.492571836	401298	4.728433466	22.87904128	0	0
0.643506696	0	252085	2.970281045	100	0	0
0.513673062	0	240396	2.832579908	100	0	0
2.265527062	1.572994104	271408	3.197959892	30.58153531	0	0
1.176933067	0	461048	5.432458358	100	0	0
0.966412233	0	378579	4.480739812	100	0	0
100	100	8486907	100	100	8486907	100
komp frak awal	komp frak akhir	pengurangan	% pengurangan	konversi tunggal	pertambahan	%pertambahan
4.973743193	7.07090328	514237	6.06	26.39281711	1335771	15.739
23.11980851	25.75773573	1114525	13.13	12.30585257	2147897	25.308
58.72151143	62.10609505	3677375	43.33	15.96625704	5003240	58.952
13.18493687	5.06526594	3180771	37.48	61.5829337	0	0
100	100	8486907	100	100	8486907	100

komp frak akhir	Pengurangan			Pertambahan	
	L pengurangan	%pengurangan	konversi tunggal	L pertambahan	% pertambahan
0	63172	0.847199849	100	0	0
0.129119754	224468	3.010593774	81.6115525	0	0
0.097069252	0	0	-	1683	0.022565286
0	34249	0.459309498	100	0	0
0.072871497	0	0	-	7550	0.101246033
0.115067033	0	0	-	2530	0.033925682
0	0	0	-	0	0
0.329429163	0	0	-	52519	0.704330522
0.127853182	0	0	-	20281	0.271991068
0.191181785	0	0	-	27677	0.371179742
0.239058209	0	0	-	93648	1.25590432
0	64634	0.866801893	100	0	0
0.350458412	0	0	-	53796	0.721453503
0.135178536	0	0	-	18703	0.250828744
0.205844952	0	0	-	21141	0.283526035
0.267491713	0	0	-	32771	0.439484357
0.161153845	0	0	-	63130	0.84662878
0.326609483	0	0	-	127945	1.715859343
0.357243916	103305	1.385414936	42.46855097	0	0
0.279326895	0	0	-	27654	0.370870959
0.691199517	0	0	-	67068	0.899447287
0.729130235	0	0	-	60014	0.804850036
0.727566364	0	0	-	123506	1.656337091
0	92749	1.243847237	100	0	0
0.325363674	0	0	-	6244	0.08373866
1.048547921	0	0	-	62795	0.842130491
0.42904817	0	0	-	168074	2.254026136
0.292573993	128797	1.727292897	52.91391856	0	0
1.058905826	0	0	-	35810	0.480249983
1.213185007	0	0	-	134550	1.80444282
0.293130454	78897	1.05808076	40.72585894	0	0
0.782052164	0	0	-	19792	0.265429034
0.499058459	5505	0.073830894	2.738230465	0	0
1.930450992	0	0	-	148498	1.991500495
3.358949096	0	0	-	291187	3.90609437
0.749171143	0	0	-	22853	0.306480324
0.839152790	0	0	-	48667	0.628526638
1.135540216	0	0	-	130849	1.75480464
3.370734445	0	0	-	259236	3.476529712
3.191352925	0	0	-	300011	4.023423682
1.982131284	0	0	-	83125	1.114789759
1.713464355	0	0	-	116628	1.590911011
2.618004442	0	0	-	167153	2.241677771
1.826509029	0	0	-	424898	5.695600353
2.793023937	37484	0.502697165	3.312450799	0	0
7.190171766	0	0	-	1032937	13.85264664
0	444503	5.961192555	100	0	0
2.453898231	0	0	-	53006	0.710356598
1.785281071	0	0	-	31870	0.427400134
10.39197041	0	0	-	1023743	13.72934388
2.162295969	0	0	-	145874	1.965311031
6.0493101	0	0	-	535811	7.185723041
3.513171893	0	0	-	107511	1.441818016
1.767980942	6879	0.091711877	0.977750169	0	0
3.878555091	0	0	-	173170	2.322377764
7.167875945	0	0	-	958864	12.85925977
0	581857	7.803375504	100	0	0
0	384348	5.154458757	100	0	0
3.86699146	0	0	-	171828	2.304370092
0.756135213	656601	8.792219642	68.87963583	0	0
9.133682985	483168	6.479738212	11.89728643	0	0
0	459734	6.165461595	100	0	0
0	239042	3.205771519	100	0	0
0	477180	6.399422371	100	0	0
2.802961337	671443	9.004680485	37.94611306	0	0
0	252085	3.380694786	100	0	0
0	240398	3.223967019	100	0	0
0	887489	11.90206035	100	0	0
0	481048	6.183077159	100	0	0
0	378579	5.077095263	100	0	0
100	7456603	100		7456603	100
komp frak akhir	pengurangan	%pengurangan	konversi tunggal	pertambahan	% pertambahan
5.532843542	582597	7.813	29.901	801617	10.750
28.75414242	213200	2.859	2.354	2420373	32.459
62.9100527	2593809	34.785	11.278	4234613	56.790
2.802961337	4066998	54.542	78.741	0	0
100	7456603	100		7456603	100



Lampiran C₄ : Perhitungan Selektivitas dan Konversi Ni 2%

feed		Ni 2%		aetisih	sehrnsya	Deviasi	keterangan	time total	area feed	area Ni 2%	LA feed tkoreksi	La Ni 2% tkoreksi
No	Time	No	Time									
1	4.107			-	-	-	- terkonversi	4.107	58434		63172	0
2	5.163			-	-	-	- terkonversi	5.163	254437		275069	0
3	5.65			-	-	-	- terkonversi	5.65	33617		36343	0
4	6.284	1	5.99	-0.294	-0.27216029	8.024577046	jangsan pindah	6.284	31880	53984	34249	43512
5	6.5	2	6.189	-0.311	-0.2799	11.11111111	jangsan plndah	6.5	19422	49187	20987	39736
		3	6.319	-	-	-	- baru	6.319		36424	0	29426
6	6.767	4	5.437	-0.33	-0.28920922	14.10424527	jangsan pindah	6.767	39355	65101	42546	52593
7	7.029	5	6.706	-0.323	-0.29806692	8.364927637	jangsan pindah	7.029	70790	178291	76530	144035
8	7.167	6	6.822	-0.345	-0.30262202	14.00360017	jangsan pindah	7.167	27568	71124	29803	57458
9	7.342	7	7.005	-0.337	-0.30828887	9.313069122	jangsan pindah	7.342	43674	110506	47215	89274
10	7.6	8	7.26	-0.34	-0.31642	7.462120599	jangsan pindah	7.6	59785	145135	64634	117249
11	7.721	9	7.374	-0.347	-0.3214172	8.389497679	jangsan pindah	7.721	77229	174885	83491	141283
12	7.987	10	7.617	-0.35	-0.32152762	6.861216121	jangsan pindah	7.987	7.967	108240	34251	87443
13	8.117	11	7.76	-0.357	-0.33191242	7.598493246	jangsan pindah	8.117	55033	127944	59496	103361
14	8.253	12	7.89	-0.363	-0.33581018	8.09678189	jangsan plndah	8.253	66614	182441	72016	147387
		13	8.1	-	-	-	- baru	8.1		99490	0	80374
		14	8.233	-	-	-	- baru	8.233		257404	0	207947
15	8.708	15	8.345	-0.363	-0.34831267	4.216707912	jangsan pindah	8.708	225005	241718	243250	195275
16	8.862	16	8.484	-0.378	-0.35235671	7.277648929	jangsan pindah	8.862	75635	208837	81768	168711
17	9.121	17	8.747	-0.374	-0.35884412	4.194491913	jangsan pindah	9.121	188421	533905	203700	431322
18	9.423	18	9.034	-0.389	-0.36628634	6.20106505	jangsan pindah	9.423	208690	540532	225612	436675
19	9.841	19	9.454	-0.387	-0.37584684	2.967475278	jangsan pindah	9.841	149390	458500	161504	370405
20	9.954	20	9.567	-0.387	-0.37831137	2.296688055	jangsan pindah	9.954	85792	220970	92749	176513
21	10.11	21	9.701	-0.409	-0.3816298	7.171924205	jangsan pindah	10.11	112121	310564	121213	250893
22	10.489	22	10.092	-0.397	-0.38928636	1.981482742	jangsan plndah	10.489	321788	947190	347881	765166
23	10.779	23	10.251	-0.528	-0.39476692	33.75319746	pindah	10.779	225152	645947	243409	521838
24	11.094	24	10.675	-0.419	-0.40031793	4.666808727	jangsan pindah	11.094	349487	952353	377826	769370
25	11.427	25	10.988	-0.439	-0.40576514	6.190663652	jangsan pindah	11.427	315144	1145579	340699	925470
26	11.617	26	11.204	-0.413	-0.40867442	1.058441088	benar	11.617	179196	260734	193727	210637
27	11.775	27	11.342	-0.433	-0.41098375	5.355963627	jangsan pindah	11.775	265072	737403	286566	568720
28	12.057	28	11.626	-0.431	-0.41485733	3.891144719	jangsan pindah	12.057	185928	519073	201005	419339
29	12.234	29	11.822	-0.412	-0.41712609	1.228906114	benar	12.234	562146	1614477	607730	1223488
30	12.498	30	12.064	-0.434	-0.42027719	3.265180281	jangsan pindah	12.498	947781	2326227	1024535	189270
31	12.952	31	12.506	-0.446	-0.42504419	6.930265698	jangsan pindah	12.952	250326	601818	270625	486186
32	13.118	32	12.675	-0.443	-0.42688135	3.848890235	jangsan pindah	13.118	296954	714659	321034	577346
33	13.309	33	12.883	-0.426	-0.42821364	0.516947104	benar	13.309	290435	862924	313986	697123
34	13.464	34	13.038	-0.426	-0.42943101	0.798966059	benar	13.464	981604	1982695	1061201	1801744
35	13.906	35	13.476	-0.431	-0.43237473	0.317948277	benar	13.906	878894	1923650	950162	1554044
36	14.211	36	13.768	-0.443	-0.43395036	2.085409502	jangsan pindah	14.211	641342	1209174	693348	976846
37	14.42	37	13.949	-0.471	-0.4348152	3.21880182	jangsan pindah	14.42	511150	1053279	562588	850904
38	14.729	38	14.26	-0.469	-0.43577372	7.624664046	jangsan pindah	14.729	794028	1505452	858415	1216197
39	14.923	39	14.49	-0.433	-0.43618034	0.729134648	benar	14.923	268999	723482	290812	584474
40	15.142	40	14.699	-0.444	-0.43645847	1.727891308	benar	15.142	1046735	1485484	1131613	1200068
		41	14.867	-	-	-	- baru	14.867		545765	0	440903
41	15.491	42	15.349	-0.442	-0.43650524	1.258807804	benar	15.491	1649925	1989967	1783715	1607619
42	15.733	43	15.214	-0.489	-0.43625162	12.09127376	jangsan pindah	15.733	411162	696891	444503	562992
43	16.015	44	15.635	-0.48	-0.43566055	10.17752239	jangsan pindah	16.015	840149	1173300	908275	947864
44	16.203	45	15.726	-0.477	-0.43508978	9.632544761	jangsan pindah	16.203	617424	858577	667490	693854
45	16.447	46	16.001	-0.446	-0.43413818	2.732267857	jangsan pindah	16.447	2816613	3683197	3047170	3137087
46	16.771	47	16.299	-0.472	-0.43250652	9.131303311	jangsan pindah	16.771	648583	740028	701176	597840
47	16.994	48	16.55	-0.444	-0.43113953	2.982902556	jangsan pindah	16.994	1696388	2130164	1833924	1720678
48	17.459	49	16.965	-0.494	-0.42764924	15.5152298	jangsan pindah	17.459	1173564	1138371	1268727	919647
49	17.773			-	-	-	- terkonversi	17.773	646960		699421	0
50	18.023	50	17.536	-0.487	-0.42225514	15.33311298	jangsan pindah	18.023	1245227	1755500	1346201	1418202
51	18.431	51	18	-0.431	-0.41755888	3.218729257	jangsan pindah	18.431	1710363	2201056	1849054	1778149
52	18.65			-	-	-	- terkonversi	18.65	538223		581887	0
53	18.85			-	-	-	- terkonversi	18.85	355519		384348	0
54	19.109	52	18.896	-0.413	-0.40828484	1.154870708	benar	19.109	1242173	1132981	1342899	915292
55	19.422	53	19.017	-0.405	-0.40338263	0.400951323	benar	19.422	880415	312655	951807	252582
56	19.811	54	19.629	-0.382	-0.39493956	3.276338806	jangsan pindah	19.811	3756551	3161355	4061164	2553938
57	20.423			-	-	-	- terkonversi	20.423	428251		459734	0
58	20.667			-	-	-	- terkonversi	20.667	221112		239042	0
59	20.863			-	-	-	- terkonversi	20.863	441388		477160	0
60	21.17	55	20.942	-0.228	-0.3688002	38.17790771	pindah	21.17	1636744	1006638	1769465	813224
61	21.679			-	-	-	- terkonversi	21.679	233177		252085	0
62	22.083			-	-	-	- terkonversi	22.083	222367		240398	0
63	22.511	56	22.398	-0.113	-0.33398516	66.16616119	pindah	22.511	820922	477027	887489	385372
64	23.909			-	-	-	- terkonversi	23.909	428466		461048	0
65	25.418			-	-	-	- terkonversi	25.418	350183		378579	0
65	25.418								38235365	48490514	39173839	39173839

	LA feed tkoreksi	LA Ni 2% tkoreksi
Golongan A(3-10)	1948396	3122078
Golongan B(11-15)	9056870	16546955
Golongan C(15-20)	23003353	18306010
Golongan D(21-25)	5165020	1198596
	39173839	39173839

Komposisi Fraksi awal	Komposisi fraksi akhir	Pengurangan		konversi tunggal	Pertambahan	
		L. pengurangan	%pengurangan		L. pertambahan	%pertambahan
0.161262347	0	63172.32961	0.664892244	100	0	0
0.702178659	0	275068.933	2.895115648	100	0	0
0.092774007	0	36342.95452	0.382511595	100	0	0
0.0874284	0.111328991	0	0	-	9362.731106	0.09854326
0.05359957	0.101436335	0	0	-	18739.40126	0.197233229
0	0.075115723	0	0	-	29425.56202	0.309705659
0.108509365	0.134255125	0	0	-	10046.37711	0.106738672
0.195361631	0.367682223	0	0	-	67504.24685	0.710485911
0.076080371	0.146676111	0	0	-	27654.92035	0.291069558
0.12052866	0.227891996	0	0	-	42058.12635	0.442664082
0.164903508	0.299305963	0	0	-	52615.07618	0.553776571
0.213131564	0.360658169	0	0	-	57791.53988	0.608259136
0.08743392	0.223218917	0	0	-	53191.92443	0.56984793
0.151876489	0.263853668	0	0	-	43865.53616	0.461887181
0.183836978	0.376240598	0	0	-	75371.48963	0.793289179
0	0.20517415	0	0	-	80374.1809	0.845042674
0	0.530633721	0	0	-	207946.8857	2.188652409
0.620954142	0.498485126	47975.57024	0.504945515	19.72271504	0	0
0.208732546	0.430675987	0	0	-	86943.32246	0.915083251
0.519992002	1.101050403	0	0	-	227621.7204	2.395731126
0.575929068	1.114716994	0	0	-	211062.837	2.221447968
0.412276791	0.945545762	0	0	-	206900.8616	2.198693057
0.236763173	0.455697376	0	0	-	85764.49432	0.90267602
0.309424232	0.640463411	0	0	-	129680.0928	1.364800103
0.880049567	1.053268613	0	0	-	417285.0737	4.30194835
0.621269823	1.332110029	0	0	-	278426.7196	2.930456637
0.964491457	1.963998567	0	0	-	391543.3006	4.121014838
0.009713883	2.362480029	0	0	-	584771.056	6.154747526
0.494533448	0.537701044	0	0	-	16910.31813	0.177982028
0.731528439	1.52071959	0	0	-	309153.4822	3.253857403
0.513111963	1.070462978	0	0	-	218534.6665	2.297984373
1.551373913	3.173243858	0	0	-	615758.6575	6.480893736
2.615624267	4.79726219	0	0	-	854834.9672	8.995080034
0.690833389	1.2411046	0	0	-	215561.2379	2.268794095
0.619514306	1.473811271	0	0	-	256312.2052	2.697700056
0.801523594	1.770572805	0	0	-	383137.4669	4.032542911
2.708966779	4.088430653	0	0	-	540542.8926	5.689243674
2.420514411	3.967064569	0	0	-	603881.2937	6.358883829
1.769933875	2.493629991	0	0	-	283498.1039	2.983833135
1.410638474	2.172134121	0	0	-	298305.5556	3.139682379
2.191306757	3.10463197	0	0	-	357782.7236	3.765682843
0.742365918	1.492007282	0	0	-	293661.8018	3.090806615
2.88871107	3.063452782	0	0	-	68452.68734	0.720466299
0	1.125508795	0	0	-	440902.7524	4.640525718
4.553355541	4.1033274	176096.5311	1.853425675	9.872458602	0	0
1.134696105	1.437169762	0	0	-	118489.1512	1.247104833
2.318588484	2.419648511	0	0	-	39588.8902	0.416675247
1.703926537	1.771226842	0	0	-	26363.97871	0.277482326
7.778624556	8.008158049	0	0	-	69916.62185	0.94637739
1.789917116	1.52612942	103335.2396	1.08760908	14.73742518	0	0
4.681525907	4.392949928	113045.7122	1.189812338	6.164143583	0	0
3.238725483	2.347615866	349080.0645	3.674096878	27.51420649	0	0
1.745438066	0	662941.0625	7.36144515	100	0	0
3.436496362	3.620295714	0	0	-	72000.89459	0.757813375
4.720148396	4.539147595	70904.60058	0.746274821	3.834842183	0	0
1.485352776	0	581866.7344	6.124179382	100	0	0
0.981138178	0	384347.528	4.045278871	100	0	0
3.428068132	2.33650029	427806.846	4.500585572	31.84206965	0	0
2.429711968	0.644775595	69224.5312	7.359376847	73.46267942	0	0
10.36708475	6.519532872	1507226.084	15.86363743	37.1131516	0	0
1.173580009	0	459733.9963	4.838725696	100	0	0
0.610210495	0	239041.6563	2.51592658	100	0	0
1.218113851	0	477179.5228	5.022340719	100	0	0
4.516979476	2.075948258	966240.7415	10.0644864	54.04122802	0	0
0.643506696	0	252084.9899	2.663206383	100	0	0
0.613673962	0	240398.4225	2.530206618	100	0	0
2.255627062	0.983753235	502117.4518	5.2848113796	56.5772905	0	0
1.176933087	0	461047.5189	4.852550493	100	0	0
0.966412233	0	378578.8394	3.964563106	100	0	0
100	100	9501138	100	100	9501138	100

Komposisi fraksi awal	Komposisi fraksi akhir	pengurangan	%pengurangan	Konversi tunggal	pertambahan	%pertambahan
4.97374	7.96984	422559.7873	4.45	21.68756984	1596241	16.801
23.11981	42.24002	0	0	-	7490084	78.834
58.72151	46.73043	5112155	53.81	22.22352087	414812	4.366
13.18494	3.06970	3966423	41.75	76.79396145	0	0
100	100	9501138	100	100	9501138	100

Lampiran C₅ : Perhitungan Selektivitas dan Konversi Ni 4%

no	time	Ni 4% no	feed time	selisih	seharusnya	deviasi	keterangan	time total	area feed	area Ni 4%	LA feed tkoreksi	LA Ni4% tkoreksi	komp fraksi awal	
		1	4.107	-	-	-	- terkonversi	4.107	58434		63172	0	0.16126347	
		2	5.163	-	-	-	- terkonversi	5.163	254437		275069	0	0.702178659	
1	5.15						- baru	5.15		23258	0	19138	0	
2	5.26	3	5.65	-0.33	-0.3015645	29.32566717	pindah	5.65	33617	41996	36343	34556	0.092774007	
		4	6.284	-	-	-	- terkonversi	6.284	31680		34249	0	0.0874284	
		5	6.5	-	-	-	- terkonversi	6.5	19422		20997	0	0.05359957	
		6	6.767	-	-	-	- terkonversi	6.767	39355		42546	0	0.108609365	
		7	7.029	-	-	-	- terkonversi	7.029	70790		76530	0	0.195361631	
3	7.35						- baru	7.35		64509	0	53081	0	
		8	7.167	-	-	-	- terkonversi	7.167	27568		29803	0	0.076080371	
		9	7.342	-	-	-	- terkonversi	7.342	43674		47215	0	0.12052866	
		10	7.6	-	-	-	- terkonversi	7.6	59786		64634	0	0.164993508	
		11	7.721	-	-	-	- terkonversi	7.721	77229		83491	0	0.213131564	
4	7.992	12	7.967	-0.375	-0.38031794	1.398287917	benar	7.967	31682		28346	34251	23324	0.08743992
5	7.733	13	8.117	-0.384	-0.38475026	0.194999167	benar	8.117	55033		30819	69496	25359	0.151876489
6	7.864	14	8.253	-0.389	-0.38698884	0.07746773	benar	8.253	68614		49715	72016	49008	0.183839978
7	8.194						- baru	8.194			139561	0	114837	0
8	8.315	15	8.708	-0.393	-0.401425325	2.098852334	Jgn pindah	8.708	225005		87194	243250	71747	0.620954142
9	8.454	16	8.862	-0.408	-0.405563921	0.600664673	benar	8.862	75635		83273	81768	68520	0.208732546
10	8.714	17	9.121	-0.407	-0.412331746	1.263071962	benar	9.121	188421		225043	203700	185175	0.519992002
11	9.18	18	9.423	-0.423	-0.410910228	0.733698173	benar	9.423	206690		240521	225612	197911	0.575929068
12	9.421	19	9.841	-0.42	-0.429876994	2.297632656	Jgn pindah	9.841	149390		342146	161504	281532	0.412276791
13	9.661	20	9.954	-0.293	-0.432481191	32.24825581	pindah	9.954	85792		151744	92749	124861	0.236763173
14	9.929	21	10.11	-0.181	-0.43595322	58.48178389	pindah	10.11	112121		238643	121213	196365	0.309424232
15	10.051	22	10.489	-0.438	-0.444072082	1.367364093	benar	10.489	321788		402609	347881	331283	0.888049562
16	10.211						- baru	10.211			246538	0	202862	0
17	10.35	23	10.779	-0.429	-0.449935186	4.852933765	Jgn pindah	10.779	225152		141530	243409	118457	0.621359923
18	10.629	24	11.094	-0.465	-0.455960695	1.582474563	Jgn pindah	11.094	349487		637130	377826	524257	0.964491457
19	10.94	25	11.427	-0.487	-0.461942108	5.424465918	Jgn pindah	11.427	315144		783727	340699	644883	0.869713683
20	11.156	26	11.617	-0.461	-0.46517606	0.897734772	benar	11.617	179196		189331	193727	155789	0.494533448
21	11.295	27	11.775	-0.48	-0.467766375	2.615328004	Jgn pindah	11.775	265072		387510	285566	318859	0.731528239
22	11.433						- baru	11.433			182923	0	150517	0
23	11.578	28	12.057	-0.479	-0.472166252	1.447318222	benar	12.057	185928		451279	201005	371331	0.513111983
24	11.771	29	12.234	-0.463	-0.474781639	2.481485851	Jgn pindah	12.234	562146		1180660	607730	955039	1.551373913
25	12.012	30	12.498	-0.486	-0.478472993	1.573131047	benar	12.498	947781		1897875	1024635	1561649	2.615624267
26	12.454	31	12.952	-0.498	-0.484234253	2.842786755	Jgn pindah	12.952	250326		487062	270625	400775	0.690833389
27	12.623	32	13.118	-0.495	-0.486155537	1.819266167	Jgn pindah	13.118	296954		810198	321034	502096	0.819514306
28	12.879	33	13.309	-0.48	-0.488243434	1.688366094	benar	13.309	290425		744494	313996	612600	0.801523594
29	12.883	34	13.464	-0.401	-0.489841267	1.80492494	Jgn pindah	13.464	981604		1791969	1061201	1474506	2.708966779
30	13.421	35	13.906	-0.485	-0.480322003	1.008406207	Jgn pindah	13.906	878894		1866180	850162	1535576	2.425514411
31	13.713	36	14.211	-0.400	-0.486320962	0.336879406	benar	14.211	641142		1140657	693348	943516	1.769933875
32	13.881	37	14.42	-0.520	-0.49778448	0.270800567	Jgn pindah	14.42	511150		1130324	562508	937482	1.410638474
33	14.207	38	14.729	-0.527	-0.498964300	5.474189237	Jgn pindah	14.729	794078		1667017	858415	1371690	2.191306752
34	14.809						- baru	14.809			654177	0	538284	0
34	14.436	39	14.923	-0.487	-0.500642628	2.725062069	Jgn pindah	14.923	268999		708828	290812	583253	0.742365918
35	14.046	40	15.142	-0.497	-0.501602705	0.917599677	benar	15.142	1046735		1704652	1131613	1402658	2.88871107
37	14.997	41	15.481	-0.494	-0.502775554	1.745421814	benar	15.491	1649925		2281569	1783715	1877369	4.553355541
38	15.2	42	15.733	-0.533	-0.50333138	5.894450732	Jgn pindah	15.733	411162		819139	444503	674021	1.134698105
39	15.48	43	16.015	-0.535	-0.503713095	6.21125504	Jgn pindah	16.015	840149		1458240	908275	1199900	2.318588484
40	15.67	44	16.203	-0.533	-0.503808524	5.794160841	Jgn pindah	16.203	617424		898647	667490	813499	1.703926537
41	15.951	45	16.447	-0.496	-0.503742644	1.537023696	benar	16.447	2818613		4830991	3047170	3975137	7.778624556
42	16.25	46	16.771	-0.521	-0.503323906	3.511872491	Jgn pindah	16.771	648583		966645	701176	795395	1.789917116
43	16.499	47	16.994	-0.495	-0.502816135	1.654471834	benar	16.994	1696368		2587346	1833924	2128974	4.681525907
44	16.916	48	17.459	-0.543	-0.501181474	8.343988745	Jgn pindah	17.459	1173564		1449928	1268727	1193090	3.238725483
45	17.267	49	17.773	-0.506	-0.499637348	1.273454082	benar	17.773	648660		775062	699421	637753	1.785438066
46	17.485	50	18.023	-0.538	-0.488154148	7.998899273	Jgn pindah	18.023	1245227		1457292	1346201	1189120	3.436496362
47	17.842	51	18.431	-0.489	-0.49525033	1.262054726	benar	18.431	1710363		2676650	1849054	2202375	4.720148396
		52	18.65	-	-	-	- terkonversi	18.65	538223		581867	0	1.485352776	
		53	18.85	-	-	-	- terkonversi	18.85	355519		384348	0	0.981138178	
48	18.834	54	19.109	-0.475	-0.489099514	2.882749582	Jgn pindah	19.109	1242173		1322672	1342899	1088349	3.428068132
49	18.967	55	19.422	-0.455	-0.485701649	6.321092151	Jgn pindah	19.422	880415		355807	951807	292773	2.429711968
50	19.475	56	19.911	-0.436	-0.479687242	9.107443008	Jgn pindah	19.911	3759991		3316305	4061164	2728792	10.36708475
		57	20.423	-	-	-	- terkonversi	20.423	425251		459734	0	1.173580009	
		58	20.667	-	-	-	- terkonversi	20.667	221112		239042	0	0.610210495	
		59	20.863	-	-	-	- terkonversi	20.863	441388		477180	0	1.218113851	
51	20.899	60	21.17	-0.271	-0.46024098	41.11780311	pindah	21.17	1636744		1071128	1769465	881368	4.516979476
		61	21.679	-	-	-	- terkonversi	21.679	233177		252085	0	0.643506696	
		62	22.083	-	-	-	- terkonversi	22.083	222367		240398	0	0.613673962	
52	22.362	63	22.511	-0.149	-0.433252282	65.60895208	pindah	22.511	820922		502020	887489	413083	2.265527082
		64	23.909	-	-	-	- terkonversi	23.909	426466		451048	0	1.176933087	
		65	25.418	-	-	-	- terkonversi	25.418	359183		378579	0	0.966412233	
								36235385		47607787	39173639	39173639	100	
										LA feed tkoreksi	LA Ni 4% tkoreksi	komp fraksi awal		
										Golongan A(3-10)	1948396	1240947	4.973743193	
										Golongan B(11-14)	9056870	14429067	23.11980851	
										Golongan C(15-20)	23003353	22209174	58.72151143	
										Golongan D(21-25)	5165020	1294451	13.18493687	
											39173639	39173639	100	

komp fraksi akhir	Pengurangan			Pertambahan	
	L. Pengurangan	%pengurangan	konversi tunggal	L. pertambahan	%pertambahan
0	63172	0.734964661	100	0	0
0	275069	3.200229376	100	0	0
0.048853352	0	0	-	19137.63585	0.222652642
0.08821246	1787	0.020789576	4.916837292	0	0
0	34249	0.398461178	100	0	0
0	20997	0.24428387	100	0	0
0	42546	0.494994938	100	0	0
0	76530	0.890374582	100	0	0
0.135500942	0	0	-	53080.64971	0.61755522
0	29803	0.346741722	100	0	0
0	47215	0.549317976	100	0	0
0	64634	0.751969696	100	0	0
0	83491	0.97136232	100	0	0
0.05954068	10927	0.127125433	31.9020812	0	0
0.064735208	34136	0.397152608	57.37641243	0	0
0.104426194	31108	0.361920319	43.19630927	0	0
0.293147421	0	0	-	114836.512	1.336040305
0.18315071	171504	1.995320404	70.50495396	0	0
0.174914663	13248	0.154127419	16.2015364	0	0
0.472702061	18525	0.218527192	9.094355452	0	0
0.505213569	27702	0.322290935	12.27890837	0	0
0.718676548	0	0	-	120027.934	1.396438703
0.318737773	0	0	-	32112.43358	0.373605091
0.501268837	0	0	-	75152.51228	0.874345482
0.84567888	16998	0.193107405	4.771206827	0	0
0.517852258	0	0	-	202861.5731	2.360148643
0.297283299	126953	1.477001899	52.1560152	0	0
1.338289469	0	0	-	146430.283	1.70361113
1.646215866	0	0	-	304184.1289	3.538963778
0.397689143	37937	0.441374837	19.58296366	0	0
0.81396348	0	0	-	32292.8053	0.375703587
0.38422916	0	0	-	150516.5432	1.751151831
0.947910055	0	0	-	170326.2262	1.981623259
2.437962512	0	0	-	347306.0154	4.04690846
3.988480195	0	0	-	537014.1499	6.247773779
1.023072129	0	0	-	130150.004	1.514201781
1.281718882	0	0	-	181062.355	2.106530404
1.563807198	0	0	-	298614.2256	3.474161954
3.78402469	0	0	-	413304.6929	4.808503135
3.919921750	0	0	-	585413.7353	6.81086818
2.400549257	0	0	-	250168.8829	2.910535201
2.393146314	0	0	-	384884.0725	4.477849637
3.501563725	0	0	-	513275.3139	5.971589712
1.374096637	0	0	-	538283.6532	6.262543538
1.486800982	0	0	-	292440.5932	3.402340831
3.580615919	0	0	-	271044.3064	3.153406754
4.79242818	0	0	-	93553.45205	1.089590623
1.720598775	0	0	-	229518.6122	2.67028414
3.063028323	0	0	-	291624.1738	3.392837725
2.076649772	0	0	-	146003.2537	1.698712756
10.14748071	0	0	-	927967.1514	10.79623104
2.030434643	0	0	-	94219.46746	1.096175805
5.434711763	0	0	-	295050.3065	3.432698317
3.045568995	75666	0.880324486	5.963966238	0	0
1.828015182	61668	0.717468035	8.817245363	0	0
3.061037053	147081	1.711182612	10.922564257	0	0
5.622084471	0	0	-	353321.1801	4.110638063
0	581867	6.769601338	100	0	0
0	384348	4.471607304	100	0	0
2.778268185	254550	2.961509694	16.96528097	0	0
0.747371433	659034	7.667387113	69.24032795	0	0
6.965887744	1332373	15.50119823	32.80765123	0	0
0	459734	5.348574682	100	0	0
0	239042	2.781077901	100	0	0
0	477180	5.551640654	100	0	0
2.249900841	888097	10.33237276	50.19014691	0	0
0	252065	2.932827715	100	0	0
0	240398	2.7868629	100	0	0
1.054491359	474407	5.51938168	53.45492108	0	0
0	461048	5.36396584	100	0	0
0	378579	4.404492757	100	0	0
100	8595288	100		8595288	100
komp fraksi akhir	pengurangan	%pengurangan	konversi tunggal	pertambahan	%pertambahan
3.167811602	1046644	12.18	53.7182472	339195	3.946
36.83361506	181488	2.11	2.003872613	5553585	64.613
56.68418114	3496587	40.68	15.20033614	2702408	31.441
3.3043922	3870569	45.03	74.9381266	0	0
100	8595288	100		8595288	100

