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Appendix A

Table 1A Remaining Mercury in Liquid Product of Blank Tests of Mercuric Chloride.

Time (hr)	Feed (ppb)	Remaining Mercury in Liquid Product (ppb)			
		35°C	150°C	200°C	250°C
12	10000	540	337.1	205	145
24	10000	580	320.9	223	109
Average		560.0	329.0	214.0	127.0

Table 2A Remaining Mercury in Liquid Product of Blank Tests of Diphenylmercury.

Time (hr)	Feed (ppb)	Remaining Mercury in Liquid Product (ppb)			
		35°C	150°C	200°C	250°C
12	7000	6650	337.1	205	145
24	7000	6270	320.9	223	109
Average		6460.0	329.0	214.0	127.0

**Table 3A Remaining Mercury in Liquid Product of CoMo/Alumina
in Study of Mercuric Chloride.**

Time (hr)	Feed (ppb)	Remaining Mercury in Liquid Product (ppb)			
		150 C	200°C	200°C (repeat)	250°C
12-	10000	53.7	67.3	65.8	37.3
24		81.2	59	83.3	69.1
36		97.1	99.4	90.72	62.2
48		93.7	83.4	97.6	72.9
60		140.3	116.5	105.1	85.9
Average		93.2	85.1	88.5	65.5

**Table 4A Remaining Mercury in Liquid Product of NiMo/Alumina
in Study of Mercuric Chloride**

Time (hr)	Feed (ppb)	Remaining Mercury in Liquid Product (ppb)		
		150°C	200°C	250°C
12	10000	68.1	62.1	37.3
24		98.8	78.5	69.1
36		52.8	87.2	62.2
48		87.4	78.6	72.9
60		156.3	115.9	85.9
Average		90.7	83.5	65.5

**Table 5A Remaining Mercury in Liquid Product of CoMo/Alumina
in Study of Diphenylmercury.**

Time (hr)	Feed (ppb)	Remaining Mercury in Liquid Product (ppb)			
		150°C	200°C	250°C	250°C (repeat)
12	7000	252.6	272.4	227.1	235.4
24		286.8	217.4	241.3	221
36		303.3	230.9	180.5	210.4
48		368.6	266.3	212.6	228
60		347.8	328.7	271.8	294.5
Average		311.8	263.1	226.7	237.9

**Table 6A Remaining Mercury in Liquid Product of NiMo/Alumina
in Study of Diphenylmercury**

Time (hr)	Feed (ppb)	Remaining Mercury in Liquid Product (ppb)			
		150°C	200°C	200°C (repeat)	250°C
12	7000	284.5	323.4	252.1	223.6
24		258.5	185.4	210.4	217.2
36		330.3	210.5	247	191.8
48		383.4	292.1	236.3	222.3
60		310	321.9	313.4	271.4
Average		293.3	266.7	251.8	225.3

Table 7A Amount of Deposited Mercury on Catalyst
in Study of Mercuric Chloride

Catalyst	Temp °C	Conc. of mercury in cat. (ppm)	Amount of mercury in catalyst (mg).
CoMo	150	69.1	0.35
	200	37.7	0.19
	250	18.2	0.09
NiMo	150	76.7	0.38
	200	39.1	0.20
	250	19.6	0.10

Table 8A Amount of Deposited Mercury on Catalyst
in Study of Diphenylmercury.

Catalyst	Temp °C	Conc. of mercury in cat. (ppm)	Amount of mercury in catalyst. (mg)
CoMo	150	453.4	2.27
	200	202.6	1.01
	250	72.4	0.36
NiMo	150	594.5	2.97
	200	209.3	1.05
	250	68.4	0.34

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Appendix B

Table 1B Material Balance of Blank Test.

Mercury Type	Temp °C	quantity of mercury found in feed (mg)	quantity of mercury found in sample (mg)	Percentages of mercury found in sample	Percentages of decrement of quantity of mercury
Mercuric chloride	35	7.274	0.407	5.60	94.40
	150	7.274	0.239	3.29	96.71
	200	7.274	0.156	2.14	97.86
	250	7.274	0.092	1.26	98.74
Diphenylmercury	35	5.092	4.699	92.28	7.72
	150	5.092	2.488	48.86	51.14
	200	5.092	0.764	15.00	85.00
	250	5.092	0.361	7.09	92.91

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Table 2B Material Balance of Mercuric chloride. (Basis : Concentration of Mercury in Feed is 10 ppm)

Catalyst	Temp °C	Feed (ppm)	quantity of Mercury in Feed 60 hr. (mg)	Product (ppb)	quantity of Mercury in Product 60 hr. (mg)	Mercury in Cat (µg/g)	quantity of Mercury in Cat.(mg)	quantity of the loss of Mercury in reactor wall (mg)
CoMo	150	10	18.2	93.2	0.169	69.1	0.346	17.67
	200	10	18.2	85.1	0.155	37.7	0.189	17.84
	250	10	18.2	65.5	0.119	18.2	0.091	17.98
NiMo	150	10	18.2	90.7	0.165	76.7	0.384	17.64
	200	10	18.2	83.5	0.152	39.1	0.196	17.84
	250	10	18.2	66.2	0.120	19.6	0.098	17.97

Table 3B Material Balance of Diphenylmercury. (Basis : Concentration of Mercury in Feed is 7 ppm)

Catalyst	Temp °C	Feed (ppm)	quantity of Mercury in Feed 60 hr. (mg)	Product (ppb)	quantity of Mercury in Product 60 hr. (mg)	Mercury in Cat (µg/g)	quantity of Mercury in Cat.(mg)	quantity of the loss of Mercury in reactor wall (mg)
CoMo	150	7	12.7	311.8	0.567	453.4	2.267	9.90
	200	7	12.7	263.1	0.478	202.6	1.013	11.24
	250	7	12.7	226.7	0.412	72.4	0.362	11.96
NiMo	150	7	12.7	293.3	0.533	594.5	2.973	9.22
	200	7	12.7	266.7	0.485	209.3	1.047	11.20
	250	7	12.7	225.3	0.410	68.4	0.342	11.98

Appendix C.

Table 1C Quantity of Deposited Mercury on Reactor Tube Wall.

Sections	Quantity of deposited mercury on reactor tube wall ($\mu\text{g}/\text{cm.}$)	
	Mercuric chloride	Diphenylmercury
1	329	412
2	182	536
3	28.2	465
4	2.01	2.15
5	1.65	1.21
6	1.12	1.15
7	0.76	0.94

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Appendix D

Table 1D BET Surface Area of CoMo/Al₂O₃.

Feed	Temp °C	BET surface area (sq.m/g)	% Change of BET surface area	mercury /surface area µg/sq.m
Fresh catalyst		149.23	0.00	0
toluene pure	200	88.74	-40.54	0.018
toluene + Mc	150	87.52	-41.35	0.463
toluene + Mc	200	85.96	-42.39	0.253
toluene + Mc	250	87.56	-41.32	0.122
toluene + Di	150	77.23	-48.25	3.038
toluene + Di	200	85.81	-42.50	1.358
toluene + Di	250	85.60	-42.64	0.485

Table 2D Pore Volume of CoMo/Al₂O₃.

Feed	Temp °C	Volume cc/g	% Change of Volume	mercury /volume µg/cc
Fresh catalyst		0.39	0.00	0
toluene pure	200	0.23	-40.40	7.013
toluene + Mc	150	0.25	-34.85	179.48
toluene + Mc	200	0.23	-39.65	97.92
toluene + Mc	250	0.23	-40.11	47.27
toluene + Di	150	0.22	-42.00	1177.66
toluene + Di	200	0.23	-41.09	526.23
toluene + Di	250	0.23	-41.53	188.05

Table 3D BET Surface Area of NiMo/Al₂O₃.

Feed	Temp °C	BET surface area (sq.m/g)	% Change of BET surface area	mercury /surface area µg/sq.m
Fresh catalyst		177.43	0.00	0
toluene pure	200	160.49	-9.55	0.007
toluene + Mc	150	145.19	-18.17	0.432
toluene + Mc	200	154.78	-12.76	0.22
toluene + Mc	250	136.52	-23.06	0.11
toluene + Di	150	144.30	-18.67	3.351
toluene + Di	200	133.60	-24.70	1.18
toluene + Di	250	151.94	-14.36	0.386

Table 4D Pore Volume of NiMo/Al₂O₃.

Feed	Temp °C	Volume cc/g	% Change of Volume	mercury /volume µg/cc
Fresh catalyst		0.46	0.00	0
toluene pure	200	0.35	-24.37	2.814
toluene + Mc	150	0.32	-30.14	166.017
toluene + Mc	200	0.35	-25.01	84.63
toluene + Mc	250	0.34	-25.80	42.42
toluene + Di	150	0.32	-31.72	1286.79
toluene + Di	200	0.32	-30.08	453.03
toluene + Di	250	0.34	-26.23	148.05

Table 5D Pore Size Distribution of Fresh and
Reference CoMo/Alumina Catalyst

Average dia. Å	Fresh catalyst		Reference catalyst	
	Pore volume	% Pore volume	Pore volume	% Pore volume
550	0.003230	0.779369	0.002976	0.718081
475	0.002183	0.526737	0.002021	0.487648
425	0.002756	0.684997	0.003124	0.753792
375	0.003469	0.837037	0.004030	0.972401
325	0.006128	1.478629	0.005529	1.334096
290	0.007312	1.764317	0.002737	0.660412
270	0.008486	2.047592	0.003251	0.784436
250	0.010033	2.420869	0.003849	0.928728
230	0.011920	2.876184	0.004578	1.104628
210	0.014631	3.530323	0.008596	2.074134
190	0.018218	4.395832	0.015984	3.856789
170	0.023234	5.606146	0.020351	4.910505
155	0.013526	3.263697	0.011948	2.882940
145	0.016222	3.914216	0.014187	3.423190
135	0.019196	4.631815	0.016261	3.923627
125	0.020106	4.851389	0.008787	2.120221
115	0.023626	5.700732	0.010828	2.564437
105	0.029075	7.015525	0.013142	3.171041
97.5	0.015459	3.730112	0.006746	1.827746
92.5	0.018946	4.571492	0.008602	2.075582
87.5	0.021525	5.193780	0.009792	2.362718
82.5	0.014326	3.456729	0.006452	1.556807
77.5	0.006391	1.542088	0.002408	0.681028
72.5	0.007587	1.830672	0.002906	0.701191
67.5	0.009052	2.184163	0.003521	0.849584
62.5	0.010916	2.633928	0.004300	1.037550
57.5	0.013424	3.239085	0.005360	1.293318
52.5	0.016624	4.011215	0.006712	1.619543
47.5	0.011173	2.695940	0.007719	1.862522
42.5	0.004528	1.092564	0.003421	0.825455
37.5	0.006685	1.613028	0.004826	1.164469
32.5	0.009604	2.317355	0.006779	1.635709
27.5	0.006667	1.608685	0.005632	1.358949
22.5	0.008180	1.973757	0.006935	1.673850

**Table 6D Pore Size Distribution of Spent CoMo/Alumina Catalysts
in Study of Mercuric chloride at Various Temperatures**

TEMP	150		200		250	
	Average dia. Å	Pore volume	% Pore volume	Pore volume	% Pore volume	Pore volume
550	0.002657	0.990346	0.00262	0.68146	0.002589	1.055042
475	0.001796	0.869425	0.00177	0.42684	0.001750	0.713142
425	0.002650	0.987737	0.00295	0.71132	0.002454	1.000029
375	0.004388	1.635544	0.00391	0.94369	0.004373	1.782039
325	0.006017	2.242722	0.00537	1.29452	0.005996	2.443427
290	0.002985	1.112602	0.00266	0.64135	0.002976	1.212749
270	0.008536	1.317977	0.00315	0.76103	0.003523	1.435656
250	0.004186	1.560252	0.00373	0.90098	0.004171	1.699722
230	0.004978	1.855455	0.00444	1.07157	0.004960	2.021246
210	0.007831	2.918856	0.00981	2.36634	0.007423	3.024944
190	0.018377	6.849678	0.01655	3.99432	0.015807	6.441504
170	0.023391	8.718551	0.02108	5.08520	0.020126	8.201536
155	0.013756	5.127288	0.01238	2.98670	0.011815	4.814726
145	0.016300	6.075515	0.01469	3.54456	0.014029	5.716952
135	0.019269	7.182154	0.01638	3.95256	0.016587	6.759362
125	0.012417	4.628201	0.00924	2.22953	0.012455	5.075532
115	0.012469	4.647583	0.01117	2.69570	0.010811	4.405586
105	0.015416	5.746021	0.01361	3.33271	0.013372	5.449216
97.5	0.007928	2.955011	0.00711	1.71461	0.006853	2.792663
92.5	0.010087	3.759738	0.00904	2.18054	0.008754	3.567339
87.5	0.011482	4.279697	0.01029	2.48216	0.009966	4.061241
82.5	0.013027	4.855567	0.00974	2.35017	0.008715	3.551446
77.5	0.002903	1.082038	0.00222	0.53518	0.002237	0.911599
72.5	0.002799	1.043274	0.00270	0.65076	0.002716	1.106796
67.5	0.003431	1.278840	0.00329	0.79336	0.003308	1.348042
62.5	0.004231	1.577025	0.00404	0.97433	0.004058	1.653674
57.5	0.005326	1.985165	0.00506	1.22141	0.005083	2.071371
52.5	0.006723	2.505671	0.00637	1.53830	0.006388	2.603171
47.5	0.007625	2.842074	0.00732	1.76552	0.007357	2.998048
42.5	0.002097	0.781617	0.00285	0.68864	0.002895	1.179740
37.5	0.003249	1.211003	0.00413	0.99701	0.004178	1.702575
32.5	0.004860	1.818927	0.00591	1.42899	0.005960	2.428757
27.5	0.004515	1.682880	0.00505	1.21804	0.005245	2.137366
22.5	0.005568	2.075366	0.00622	1.50059	0.006463	2.833734

Table 7D Pore Size Distribution of Spent CoMo/Alumina Catalysts
in Study of diphenylmercury at Various Temperatures.

TEMP	150		200		250	
Average dia. Å	Pore volume	% Pore volume	Pore volume	% Pore volume	Pore volume	% Pore volume
550	0.002609	1.102733	0.002743	0.661860	0.002928	1.284954
475	0.001764	0.745581	0.001854	0.447353	0.001979	0.868466
425	0.002900	1.225728	0.002741	0.661378	0.002727	1.196745
375	0.003840	1.623034	0.004437	1.070606	0.004635	2.034072
325	0.005267	2.226176	0.006086	1.468253	0.006356	2.789334
290	0.002609	1.102733	0.003018	0.728215	0.003153	1.383696
270	0.003096	1.308571	0.003576	0.862855	0.003735	1.639107
250	0.003666	1.549490	0.004233	1.021383	0.004422	1.940597
230	0.004360	1.842819	0.005035	1.214898	0.005259	2.307915
210	0.010402	4.396581	0.009570	2.309151	0.009530	4.182246
190	0.016186	6.841255	0.016129	3.891778	0.014367	6.304966
170	0.020609	8.710703	0.020540	4.956109	0.018304	8.032721
155	0.012098	5.113401	0.012048	2.907089	0.010711	4.700528
145	0.014366	6.072005	0.014321	3.455523	0.012767	5.602805
135	0.016806	7.103308	0.016051	3.872956	0.015100	6.626843
125	0.009216	3.895281	0.008325	2.008744	0.009776	4.290203
115	0.011142	4.709333	0.010077	2.431486	0.008542	3.748662
105	0.013773	5.821365	0.012473	3.009618	0.010591	4.647866
97.5	0.007088	2.995649	0.006360	1.534608	0.005330	2.339073
92.5	0.009012	3.809057	0.008170	1.971344	0.006949	3.049573
87.5	0.010258	4.335697	0.009305	2.245209	0.007919	3.475258
82.5	0.010159	4.293854	0.008186	1.975205	0.005452	2.392813
77.5	0.001910	0.807290	0.002325	0.561001	0.002346	1.029543
72.5	0.002342	0.989891	0.002812	0.678509	0.002822	1.238436
67.5	0.002878	1.216430	0.003412	0.823284	0.003408	1.495603
62.5	0.003556	1.502997	0.004174	1.007147	0.004152	1.822108
57.5	0.004487	1.896498	0.005211	1.257385	0.005161	2.264908
52.5	0.005673	2.397778	0.006533	1.576352	0.006447	2.829270
47.5	0.006352	2.684768	0.007383	1.781449	0.007299	3.203170
42.5	0.001854	0.783821	0.002669	0.644005	0.003086	1.354293
37.5	0.002863	1.210090	0.003880	0.936208	0.004362	1.814266
32.5	0.004286	1.811542	0.005626	1.357501	0.006135	2.892348
27.5	0.004103	1.734194	0.005419	1.307554	0.005429	2.382520
22.5	0.005084	2.140375	0.006654	1.605548	0.006689	2.935471

Table 8D Pore Size Distribution of Fresh and
Reference NiMo/Alumina Catalyst

Average dia. Å	Fresh catalyst		Reference catalyst	
	Pore volume	% Pore volume	Pore volume	% Pore volume
550	0.007232	1.461122	0.007113	1.437080018
475	0.005764	1.184534	0.005483	1.107761808
425	0.007372	1.489407	0.007014	1.417078483
375	0.010952	2.212695	0.00994	2.008234976
325	0.016550	3.343691	0.016829	3.400058994
290	0.008214	1.659521	0.008364	1.689826694
270	0.009726	1.964999	0.009887	1.997527083
250	0.011513	2.326037	0.011704	2.364625971
230	0.013906	2.809509	0.013919	2.812135073
210	0.017355	3.506330	0.016494	3.332377031
190	0.021631	4.370234	0.019652	3.970405809
170	0.027612	5.578610	0.025097	5.07049026
165	0.015999	3.232369	0.014508	2.931134107
145	0.019297	3.898683	0.017546	3.5449186
135	0.022845	4.615506	0.020677	4.177492414
125	0.018626	3.763117	0.008821	1.782157014
115	0.019867	4.013843	0.010734	2.168651331
105	0.024540	4.957956	0.013361	2.699399146
97.5	0.012704	2.566662	0.006537	1.320707448
92.5	0.016046	3.241865	0.008796	1.777106121
87.5	0.018258	3.688768	0.01004	2.028438547
82.5	0.015375	3.106299	0.007097	1.433847447
77.5	0.007921	1.600325	0.001919	0.387706531
72.5	0.009355	1.890044	0.002387	0.482259244
67.5	0.011105	2.243607	0.002969	0.599844028
62.5	0.013335	2.694146	0.003705	0.748542312
57.5	0.016324	3.298031	0.004721	0.953810596
52.5	0.020138	4.068595	0.006014	1.215042771
47.5	0.022436	4.532873	0.007243	1.463344661
42.5	0.007236	1.461930	0.005207	1.051999952
37.5	0.010210	2.062785	0.007171	1.44879809
32.5	0.014253	2.879615	0.010017	2.023791725
27.5	0.009557	1.930855	0.014874	3.005079178
22.5	0.011708	2.365434	0.0184	3.717457098

Table 9D Pore Size Distribution of Spent NiMo/Alumina Catalysts
in Study of Mercuric chloride at Various Temperatures

TEMP	150		200		250	
	Average dia. A	Pore volume	% Pore volume	Pore volume	% Pore volume	Pore volume
550	0.006904	1.394854554	0.007364	1.487791	0.007221	1.458900
475	0.004631	0.935627381	0.005257	1.062102	0.005434	1.097882
425	0.005929	1.197869735	0.006728	1.359296	0.006951	1.404350
375	0.009551	1.929643084	0.010161	2.052885	0.010721	2.166025
325	0.014502	2.929921893	0.01637	3.307325	0.016025	3.237822
290	0.0072	1.454657125	0.008132	1.642954	0.007954	1.606992
270	0.008522	1.721748336	0.009618	1.943179	0.009417	1.902570
250	0.010088	2.038136261	0.011386	2.300379	0.011148	2.252294
230	0.011998	2.424024471	0.013541	2.735766	0.013259	2.678792
210	0.014539	2.937397214	0.015554	3.142463	0.015904	3.213176
190	0.017557	3.547140993	0.01876	3.790190	0.019474	3.934443
170	0.02242	4.529640659	0.023961	4.840978	0.024867	5.024022
155	0.012968	2.619999111	0.013845	2.797184	0.014385	2.906284
145	0.015673	3.166505712	0.016754	3.384906	0.017384	3.512189
135	0.018558	3.74937874	0.01984	4.008389	0.019433	3.926160
125	0.010011	2.022579511	0.011444	2.312097	0.010011	2.022580
116	0.011507	2.324824936	0.010991	2.220575	0.012153	2.455340
105	0.014279	2.884887929	0.013669	2.761626	0.015088	3.048315
97.5	0.007151	1.444757375	0.006728	1.359296	0.007526	1.520521
92.5	0.009375	1.694084798	0.008993	1.816907	0.009911	2.002376
87.5	0.010686	2.158953617	0.010261	2.073088	0.011301	2.283206
82.5	0.008558	1.729021622	0.009168	1.852263	0.010566	2.134709
77.5	0.001871	0.378008817	0.002055	0.415183	0.002389	0.482663
72.5	0.002325	0.46973303	0.002545	0.514181	0.002936	0.593177
67.5	0.00289	0.583883207	0.003154	0.637221	0.003614	0.730157
62.5	0.003604	0.728136705	0.003923	0.792586	0.004472	0.903504
57.5	0.00459	0.927343917	0.004984	1.006946	0.005651	1.141704
52.5	0.005845	1.180898736	0.006335	1.279896	0.007153	1.445161
47.5	0.006743	1.362326805	0.007504	1.516076	0.008380	1.693059
42.5	0.003082	0.622674064	0.005089	1.028160	0.003995	0.607133
37.5	0.004484	0.905928132	0.007034	1.421119	0.005701	1.151806
32.5	0.006504	1.31404027	0.00983	1.986011	0.008151	1.646793
27.5	0.007523	1.51991466	0.013792	2.786477	0.009062	1.830848
22.5	0.009288	1.876507691	0.017056	3.445921	0.011167	2.256133

Table 10D Pore Size Distribution of Spent NiMo/Alumina Catalysts
in Study of diphenylmercury at Various Temperatures.

TEMP	150		200		250	
	Average dia. Å	Pore volume	% Pore volume	Pore volume	% Pore volume	Pore volume
550	0.006732	1.464379	0.006919	1.397885	0.007201	1.737534
475	0.004731	1.029111	0.004671	0.943709	0.005165	1.246266
425	0.006056	1.317332	0.006078	1.227973	0.006611	1.595172
375	0.010016	2.178732	0.011208	2.264416	0.010692	2.579879
325	0.014222	3.093642	0.015368	3.104885	0.015657	3.777887
290	0.007056	1.534857	0.007628	1.541128	0.007771	1.875069
270	0.008358	1.818075	0.009031	1.824585	0.009200	2.219874
250	0.009895	2.152411	0.010691	2.159964	0.010892	2.628137
230	0.011769	2.560053	0.012715	2.568884	0.012954	3.125679
210	0.014139	3.075588	0.015143	3.059427	0.015638	3.773303
190	0.017380	3.780587	0.018278	3.692809	0.019053	4.597310
170	0.022193	4.827535	0.023343	4.716120	0.024329	5.870359
155	0.012838	2.792587	0.013495	2.726472	0.014074	3.395924
145	0.015514	3.374685	0.016320	3.297223	0.017008	4.103871
135	0.016388	3.564802	0.019324	3.904138	0.019143	4.619026
125	0.008886	1.932928	0.009855	1.950655	0.009605	2.317596
116	0.010787	2.346443	0.010009	2.022175	0.011664	2.814414
105	0.013392	2.913096	0.012460	2.517365	0.014486	3.495336
97.5	0.006682	1.453503	0.006089	1.230195	0.007208	1.739223
92.5	0.008797	1.913568	0.008205	1.657703	0.009518	2.296604
87.5	0.010030	2.181777	0.009365	1.892064	0.010854	2.618968
82.5	0.005925	1.288836	0.006438	1.300706	0.007685	1.854318
77.5	0.001940	0.421999	0.002207	0.445893	0.002341	0.564861
72.5	0.002395	0.520973	0.002707	0.546911	0.002873	0.693228
67.5	0.002959	0.643657	0.003325	0.671769	0.003531	0.851997
62.5	0.003672	0.798752	0.004109	0.830165	0.004365	1.053234
57.5	0.004654	1.012362	0.005184	1.047353	0.005510	1.329511
52.5	0.005904	1.284266	0.006553	1.323940	0.006967	1.681072
47.5	0.007020	1.527026	0.007654	1.546381	0.008316	2.006573
42.5	0.004786	1.041075	0.004494	0.907948	0.005983	1.443642
37.5	0.006593	1.434143	0.006256	1.263935	0.008167	1.970620
32.5	0.009200	2.001231	0.008735	1.764782	0.011262	2.717415
27.5	0.013242	2.880468	0.010674	2.156529	0.014715	3.550591
22.5	0.016375	3.561974	0.013191	2.665053	0.018186	4.388111

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