

LAMPIRAN A

HASIL UJI STANDARISASI

Hasil Perhitungan Penetapan Susut Pengeringan Simplisia	
Replikasi	Hasil Susut Pengeringan
A	8,7 %
B	8,6 %
C	8,6 %

$$\text{Rata - rata : } \frac{8,7\%+8,6\%+8,6\%}{3} = 8,6\%$$

Hasil Perhitungan Penetapan Susut Pengeringan Ekstrak Kering

Replikasi	Hasil Susut Pengeringan
1	7,4 %
2	7,8 %
3	7,8 %

$$\text{Rata- rata : } \frac{7,4\%+7,8\%+7,8\%}{3} = 7,66\%$$

Hasil Perhitungan Penetapan Kadar Abu Total Simplisia

No	W (krus kosong) (gram)	W (bahan) (gram)	W (krus + abu) (gram)	% (kadar abu)	Rata-rata (%)
1	21,5928	2,0006	21,7584	8,2775	
2	20,9861	2,0043	21,1574	8,5466	8,3844
3	21,5324	2,0050	21,6994	8,3292	

I. Kadar abu : $\frac{(\text{berat kurs+serbuk}) - (\text{berat kurs kosaong})}{\text{berat serbuk}} \times 100\%$

$$: \frac{21,7584-21,5928}{2,0006} \times 100\%$$

$$: 8,2775\%$$

2. Kadar abu : $\frac{(\text{berat kurs+serbuk}) - (\text{berat kurs kasong})}{\text{berat serbuk}} \times 100\%$

$$: \frac{21,1574-20,9861}{2,0043} \times 100 \%$$

$$: 8,5466 \%$$

$$3. \text{ Kadar abu : } \frac{(\text{berat kurs+serbuk}) - (\text{berat kurs kosong})}{\text{berat serbuk}} \times 100 \%$$

$$: \frac{21,6994-21,5324}{2,0050} \times 100 \%$$

$$: 8,3292 \%$$

Rata – rata kadar abu total = 8,34 %

Hasil Perhitungan Penetapan Kadar Abu Total Ekstrak Kental

No	W (krus kosong) (gram)	W (bahan) (gram)	W (krus + abu) (gram)	% (kadar abu)	Rata-rata (%)
1	20,7932	2,0296	20,9950	9,9428	
2	21,5926	2,0412	21,7966	9,9941	9,9632
3	21,5500	2,0246	21,7515	9,9526	

$$1. \text{ Kadar abu : } \frac{(\text{berat kurs+serbuk}) - (\text{berat kurs kosong})}{\text{berat serbuk}} \times 100 \%$$

$$: \frac{20,9950-20,7932}{2,0292} \times 100 \%$$

$$: 9,94 \%$$

$$2. \text{ Kadar abu : } \frac{(\text{berat kurs+serbuk}) - (\text{berat kurs kosong})}{\text{berat serbuk}} \times 100 \%$$

$$: \frac{21,7966-21,5926}{2,0412} \times 100 \%$$

$$: 9,99 \%$$

$$3. \text{ Kadar abu : } \frac{(\text{berat kurs+serbuk}) - (\text{berat kurs kosong})}{\text{berat serbuk}} \times 100 \%$$

$$: \frac{21,7515-21,5500}{2,0246} \times 100 \%$$

: 9,9526 %

Rata – rata kadar abu total = 9,96 %

Hasil Perhitungan Randemen Ekstrak

$$\frac{\text{berat ekstrak kental}}{\text{berat serbuk}} \times 100\%$$
$$= \frac{620.9876}{2000} \times 100 \% = 31.04 \%$$

Hasil Perhitungan Kadar Sari Larut Etanol

No	berat cawan + ekstrak setelah Diuapkan	berat cawan kosong	berat ekstrak
1	55,0804	54,6217	5,0203
2	53,7745	53,3078	5,0239
3	56,035	55,5712	5,0145

1. Kadar sari larut etanol = $\frac{(\text{berat cawan+ekstrak}) - (\text{berat cawankosong})}{\text{berat ekstrak}} \times 100\%$

$$= \frac{55,0804 - 54,6217}{5,0203} \times 100 \% = 9,23 \%$$

2. Kadar sari larut etanol = $\frac{(\text{berat cawan+ekstrak}) - (\text{berat cawankosong})}{\text{berat ekstrak}} \times 100\%$

$$= \frac{53,7745 - 53,3078}{5,0239} \times 100 \% = 9,29 \%$$

3. Kadar sari larut etanol = $\frac{(\text{berat cawan+ekstrak}) - (\text{berat cawankosong})}{\text{berat ekstrak}} \times 100\%$

$$= \frac{56,035 - 55,5712}{5,0145} \times 100 \% = 9,25 \%$$

Rata-rata kadar sari etanol = 9,23 %

Hasil Perhitungan Kadar Sari Larut Air

No	berat cawan + ekstrak setelah Diuapkan	berat cawan kosong	berat ekstrak
1	54,2926	53,5722	5,0236
2	54,1706	53,4417	5,0211
3	55,3367	54,6219	5,0164

$$1. \text{ Kadar sari larut air} = \frac{(\text{berat cawan} + \text{ekstrak}) - (\text{berat cawan kosong})}{\text{berat ekstrak}} \times 100\%$$

$$= \frac{54,2926 - 53,5722}{5,0236} \times 100\% = 14,34\%$$

$$2. \text{ Kadar sari larut air} = \frac{(\text{berat cawan} + \text{ekstrak}) - (\text{berat cawan kosong})}{\text{berat ekstrak}} \times 100\%$$

$$= \frac{54,1706 - 53,4417}{5,0211} \times 100\% = 14,41\%$$

$$3. \text{ Kadar sari larut air} = \frac{(\text{berat cawan} + \text{ekstrak}) - (\text{berat cawan kosong})}{\text{berat ekstrak}} \times 100\%$$

$$= \frac{55,3367 - 54,6219}{5,0164} \times 100\% = 14,36\%$$

Rata-rata kadar sari air = 14,37 %

Hasil Perhitungan Harga Rf pada Pemeriksaan secara KLT dengan Pelarut = kloroform : methanol :air (64:50:10)

No	Pengamatan (UV 366)	Noda	Rf	Warna
1	Klerak	A	0,85	biru
2	Ekstrak kental	A	0,85	biru
		B	0,88	biru tua
3	Ekstrak kering	A	0,85	biru
		B	0,88	biru tua
4	Formula 1	A	0,85	biru
		B	0,90	biru tua
5	Formula 2	A	0,85	biru
		B	0,91	biru tua
6	Formula 3	A	0,85	biru
		B	0,91	biru tua
7	Formula 4	A	0,85	biru
		B	0,88	biru tua

Contoh perhitungan Rf = $\frac{\text{jarak yang ditempuh oleh zat}}{\text{jarak yang ditempuh oleh fase gerak}}$

Pada λ 366 nm :

1. $RfA = \frac{0,68}{8} = 0,085$

2. $RfA = \frac{0,68}{8} = 0,085$

$RfB = \frac{0,70}{8} = 0,87$

3. $RfA = \frac{0,68}{8} = 0,085$

$RfB = \frac{0,70}{8} = 0,87$

4. $RfA = \frac{0,68}{8} = 0,085$

$RfB = \frac{0,72}{8} = 0,90$

5. $RfA = \frac{0,68}{8} = 0,085$

$RfB = \frac{0,73}{8} = 0,91$

6. $RfA = \frac{0,68}{8} = 0,085$

$RfB = \frac{0,73}{8} = 0,91$

7. $RfA = \frac{0,68}{8} = 0,085$

$RfB = \frac{0,71}{8} = 0,88$

LAMPIRAN B

HASILUJI KESERAGAMAN BOBOT TABLET HISAP EKSTRAK DAUN SIRIH MERAH

Replikasi I

No	Replikasi I (mg)	Replikasi II (mg)	Replikasi III (mg)
1	790	820	815
2	810	810	800
3	800	820	800
4	820	810	810
5	810	790	820
6	790	800	800
7	810	810	790
8	800	820	810
9	820	790	810
10	800	800	800
X	805	807	805,5
SD	10,80	11,59	8,95

Replikasi II

No	Replikasi I (mg)	Replikasi II (mg)	Replikasi III (mg)
1	800	810	810
2	800	800	780
3	780	810	810
4	780	800	820
5	800	820	780
6	810	820	810
7	820	790	790
8	820	810	820
9	810	810	800
10	800	810	810
X	802	808	803
SD	13,98	9,18	14,94

Replikasi III

No	Replikasi I (mg)	Replikasi II (mg)	Replikasi III (mg)
1	810	820	790
2	810	810	800
3	810	800	800
4	820	810	810
5	820	800	800
6	820	800	790
7	810	800	800
8	800	790	810
9	810	810	810
10	820	810	800
X	813	805	801
SD	6,74	8,49	7,37

Replikasi IV

No	Replikasi I (mg)	Replikasi II (mg)	Replikasi III (mg)
1	820	830	830
2	810	800	810
3	810	790	810
4	800	830	820
5	830	810	790
6	810	810	800
7	800	800	800
8	810	820	810
9	800	800	820
10	790	800	810
X	808	809	810
SD	11,35	13,70	11,54

LAMPIRAN C

CONTOH PERHITUNGAN SUDUT DIAM

Formula (1) :

$$W \text{ persegi panjang} = 5,21 \text{ gram}$$

$$W \text{ lingkaran} = 1,00 \text{ gram}$$

$$\begin{aligned} \text{Luas persegi panjang} &= 33 \text{ cm} \times 21,6 \text{ cm} \\ &= 712,8 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Luas lingkaran} &= \frac{1,00 \times 712,8}{5,21} \\ &= 136,8183 \text{ cm}^2 \end{aligned}$$

$$A = \pi \times r^2$$

$$\begin{aligned} R^2 &= \frac{A}{\pi} \\ &= \frac{136,8183}{3,14} \end{aligned}$$

$$r = 6,600 \text{ cm}$$

$$\begin{aligned} \text{Tg } \alpha &= \frac{t}{r} \\ &= \frac{3,5}{6,6} \end{aligned}$$

$$\alpha = 27,93^0$$

LAMPIRAN D

CONTOH PERHITUNGAN INDEKS KOMPRESIBILITAS

Formul (1) :

$$\text{Berat gelas} = 93,67 \text{ gram}$$

$$\text{Berat gelas + granul} = 140,73 \text{ gram}$$

$$V_1 = 100 \text{ ml}$$

$$V_2 = 88 \text{ ml}$$

$$\text{Bj nyata} = \frac{(W_2 - W_1)}{V_1} = \frac{140,73 - 93,67}{100} = 0,4706$$

$$\text{Bj mampat} = \frac{(W_2 - W_1)}{V_2} = \frac{140,73 - 93,67}{88} = 0,5354$$

$$\text{Kompresibilitas} = \left(1 - \frac{\text{bj mampat}}{\text{bj nyata}} \right) \times 100\%$$

$$= (1 - 0,8789) \times 100\%$$

$$= 12,11 \%$$

Lampiran E

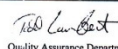
SERTIFIKAT ANALISIS MANITOL

1189/11



1711 Giles Court, Grand Haven, MI 49417 616-535-6900

Certificate of Analysis

Lot Number: 201011282 Date of Manufacture : November 28, 2010 Retest Date: November 27, 2012		S/N Order Number: Customer Order Number: Container Info:			
Product ID: SPI-1222 Product Name: Mannogem (TM) Powdered Mannitol USP/EP Manufacturing Site: Grand Haven, MI		Attention To : FAX Num/Scr			
Test Name	Result	Units	Low Limit	High Limit	Method
Description and Foreign Matter	Conforms		Conforms		IV_311
Identification by IR (USP)	Conforms			Conforms	IV_347
Mannitol Assay, db(USP)	99.4	%	98.0	101.5	IV_372
Loss on Drying (USP)	0.0	%		0.3	IV_306
Heavy Metals (JP)	<5	ppm		5	IV_383
KF Water	0.0	%		0.5	IV_360
D-Mannitol % db (EP)	99.6	%	98.0	102.0	IV_404
Impurities A, B (Sorbitol, Maltitol)	<2.0	%		<2.0	IV_404
Impurity C (Isomalt)	<2.0	%		<2.0	IV_404
Total Impurities	<2.0	%		<2.0	IV_404
Unspecified Impurities	<0.10	%		<0.10	IV_404
Melting Range Start	166	°C	164	169	IV_403
Melting Range End	167	°C	164	169	IV_403
ID B (EP/JP Melting Point)	167	°C	165.0	170.0	IV_403
Certified Lead from COA	<0.29	ppm		<0.5	CERT_LEAD
Certified nickel from COA	<1	ppm		<1	CERT_NICK
Certified chloride from COA	<0.037	%		<0.007	CERT_CHLO
Certified Sulfate from COA	<0.01	%		<0.01	CERT_SULF
Certified Conductivity from COA	Conforms			Conforms	CERT_COND
Certified reduced sugars(EP) from COA	<0.2	%		<0.2	CERT_REDU
Specific Rotation	140		137	145	CERT_SP_R
Certified appearance of solution (EP) from COA	Conforms			Conforms	CERT_APPE
<p>Storage: Keep Container closed in a dry, well ventilated area. Data transferred from manufacturer's COA; USP / EP assays and ID verified by SPI Mannitol is a white crystalline powder conforming to current USP and EP monograph requirements and specifications. Manufactured in China</p>					
			Approved By:  Quality Assurance Department		
			Approval Date: January 10, 2011		
<p>This analysis is not to be construed as a warranty. Customer is responsible to verify the lot and code numbers of product received with numbers contained on this report and perform any analysis necessary to determine suitability of the product described above for the use intended by the customer. No representation is made as to the FDA regulated use or made for this product unless it is designated as meeting USP, NF, or Food Grade Status.</p>					

Lampiran F

DETERMINASI SIRIH MERAH



DINAS KESEHATAN PROPINSI JAWA TIMUR
UPT MATERIA MEDICA
Jalan Lahor No.87 Telp. (0341) 593396 Batu (65313)
KOTA BATU

Nomor : 074 / 142 / 101.8 / 2011
Sifat : Biasa
Perihal : **Determinasi Tanaman Sirih Merah**

Memenuhi permohonan saudara :
Nama : FRANSELINA FREDERIKA CUNDAWAN
N R P : 244.300.6052
Fakultas : Fakultas Farmasi
Universitas Katolik Widya Mandala Surabaya

1. Perihal determinasi tanaman Sirih Merah
 - Kingdom : Plantae
 - Sub Kingdom : (Tracheobionta (tumbuhan berpembuluh)
 - Super Divisi : Spermatophyta. (Menghasilkan Biji)
 - Divisi : Angiospermae/ Magnoliophyta (Tumbuhan berbunga)
 - Kelas : Dicotyledonae/ Magnoliopsida (Berkeping dua)
 - Bangsa : Piperales
 - Suku : Piperaceae
 - Marga : Piper
 - Jenis : *Piper crocatum*
 - Sinonim : *Piper cf. fragile* Benth
 - Kunci determinasi : 1b-2b-3b-4b-6b-7b-9a-41b-42b-43b-54b-59b-61-62b-63a-64a
2. Nama Simplisia : *Piperis crocati Folium* / Daun Sirih Merah
3. Kandungan kimia : Alkaloid, terpenoid, isprenoid, flavonoid, saponin, cyanogenik, glukosida, glu-casonilate, dan non protein amino acid.
4. Penggunaan : Penelitian
5. Daftar Pustaka :
 - Syamsuhidayat, Sri sugati, Hutapea, Johny Ria. *Inventaris Tanaman Obat Indonesia* Departemen Kesehatan Republik Indonesia : Badan Penelitian Dan Pengembangan Kesehatan.
 - Steenis, CGGJ Van Dr, *FLORA*, 2008, Pradnya Paramita, Jakarta
 - Anonim, <http://tehsirihmerah.com/> Sirih merah obat beragam penyakit, diakses tanggal 27 Mei 2010

Batu, 19 Oktober 2011
Kepala UPT Materia Medica Batu



Lampiran G
TABEL UJI HSD (0,05)

k d. k.	2	3	4	5	6	7	8	9	10	11
5	3.64	4.60	5.22	5.67	6.03	6.33	6.58	6.80	6.99	7.17
6	3.46	4.34	4.90	5.30	5.63	5.90	6.12	6.32	6.49	6.65
7	3.34	4.16	4.68	5.06	5.36	5.61	5.82	6.00	6.16	6.30
8	3.26	4.04	4.53	4.89	5.17	5.40	5.60	5.77	5.92	6.05
9	3.20	3.95	4.41	4.76	5.02	5.24	5.43	5.59	5.74	5.87
10	3.15	3.88	4.33	4.65	4.91	5.12	5.30	5.46	5.60	5.72
11	3.11	3.82	4.26	4.57	4.82	5.03	5.20	5.35	5.49	5.61
12	3.08	3.77	4.20	4.51	4.75	4.95	5.12	5.27	5.39	5.51
13	3.06	3.73	4.15	4.45	4.69	4.88	5.05	5.19	5.32	5.43
14	3.03	3.70	4.11	4.41	4.64	4.83	4.99	5.13	5.25	5.36
15	3.01	3.67	4.08	4.37	4.59	4.78	4.94	5.08	5.20	5.31
16	3.00	3.65	4.05	4.33	4.56	4.74	4.90	5.03	5.15	5.26
17	2.98	3.63	4.02	4.30	4.52	4.71	4.86	4.99	5.11	5.21
18	2.97	3.61	4.00	4.28	4.49	4.67	4.82	4.96	5.07	5.17
19	2.96	3.59	3.98	4.25	4.47	4.65	4.79	4.92	5.04	5.14
20	2.95	3.58	3.96	4.23	4.45	4.62	4.77	4.90	5.01	5.11
24	2.92	3.53	3.90	4.17	4.37	4.54	4.68	4.81	4.92	5.01
30	2.89	3.49	3.85	4.10	4.30	4.46	4.60	4.72	4.82	4.92
40	2.86	3.44	3.79	4.04	4.23	4.39	4.52	4.63	4.73	4.82
60	2.83	3.40	3.74	3.98	4.16	4.31	4.44	4.55	4.65	4.73
120	2.80	3.36	3.68	3.92	4.10	4.24	4.36	4.47	4.56	4.64
∞	2.77	3.31	3.63	3.86	4.03	4.17	4.29	4.39	4.47	4.55

Catatan kaki: Dari *Annals of mathematical statistics*. Diulang cetak seizin penerbit, The Institute of Mathematical Statistics.

Sumber: Scheffler (1987).

Lampiran I

HASIL UJI STATISTIK KEKERASAN TABLET ANTAR FORMULA TABLET HISAP EKSTRAK DAUN SIRIH MERAH

ANOVA KEKERASAN

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.899	3	1.633	12.231	.002
Within Groups	1.068	8	.134		
Total	5.967	11			

Hipotesa pengujian :

F hitung > F tabel (0,05) sehingga H₀ ditolak sehingga ada perbedaan yang bermakna antar formula.

KEKERASAN HSD

(I) keke rasa (J) n kekerasan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
1.00 2.00	1.12000 [*]	.29835	.023	.1646	2.0754
3.00	-.65667	.29835	.203	-1.6121	.2987
4.00	.31333	.29835	.727	-.6421	1.2687
2.00 1.00	-1.12000 [*]	.29835	.023	-2.0754	-.1646
3.00	-1.77667 [*]	.29835	.002	-2.7321	-.8213
4.00	-.80667	.29835	.101	-1.7621	.1487

3.00	1.00	.65667	.29835	.203	-.2987	1.6121
	2.00	1.77667*	.29835	.002	.8213	2.7321
	4.00	.97000*	.29835	.047	.0146	1.9254
4.00	1.00	-.31333	.29835	.727	-1.2687	.6421
	2.00	.80667	.29835	.101	-.1487	1.7621
	3.00	-.97000*	.29835	.047	-1.9254	-.0146

Keterangan :

Simbol* = perbedaan signifikan karena selisihnya > HSD 5%

Tanpa simbol = perbedaan tidak signifikan karena selisihnya < HSD 5%

Lampiran J

**HASIL UJI STATISTIK WAKTU HANCUR TABLET ANTAR
FORMULA TABLET HISAP EKSTRAK DAUN SIRIH MERAH**

ANOVA WAKTU HANCUR

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	23.253	3	7.751	966.865	.000
Within Groups	.064	8	.008		
Total	23.317	11			

Hipotesa pengujian :

F hitung > F tabel (0,05) sehingga H ditolak sehingga ada perbedaan yang bermakna antar formula.

WAKTU HANCUR HSD

(I) waktuhancur	(J) waktuhancur	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	2.97333*	.07311	.000	2.7392	3.2074
	3.00	.60000*	.07311	.000	.3659	.8341
	4.00	-.74333*	.07311	.000	-.9774	-.5092
2.00	1.00	-2.97333*	.07311	.000	-3.2074	-2.7392
	3.00	-2.37333*	.07311	.000	-2.6074	-2.1392
	4.00	-3.71667*	.07311	.000	-3.9508	-3.4826

3.00	1.00	-.60000*	.07311	.000	-.8341	-.3659
	2.00	2.37333*	.07311	.000	2.1392	2.6074
	4.00	-1.34333*	.07311	.000	-1.5774	-1.1092
4.00	1.00	.74333*	.07311	.000	.5092	.9774
	2.00	3.71667*	.07311	.000	3.4826	3.9508
	3.00	1.34333*	.07311	.000	1.1092	1.5774

Keterangan :

Simbol* = perbedaan signifikan karena selisihnya > HSD 5%

Tanpa simbol = perbedaan tidak signifikan karena selisihnya < HSD 5%

Lampiran K

**HASIL UJI STATISTIK KERAPUHAN TABLET ANTAR
FORMULA TABLET HISAP EKSTRAK DAUN SIRIH MERAH**

ANOVA KERAPUHAN

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.000	3	.000	.933	.468
Within Groups	.001	8	.000		
Total	.002	11			

Hipotesa pengujian :

F hitung > F tabel (0,05) sehingga H diterima sehingga tidak ada perbedaan yang bermakna antar formula.

KERAPUHAN HSD

(I) kerap uhan	(J) kerapuhan	Mean Difference (I- J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.00	2.00	.01490	.01081	.545	-.0197	.0495
	3.00	.01623	.01081	.479	-.0184	.0508
	4.00	.00913	.01081	.832	-.0255	.0437
2.00	1.00	-.01490	.01081	.545	-.0495	.0197
	3.00	.00133	.01081	.999	-.0333	.0359
	4.00	-.00577	.01081	.948	-.0404	.0288

3.00	1.00	-.01623	.01081	.479	-.0508	.0184
	2.00	-.00133	.01081	.999	-.0359	.0333
	4.00	-.00710	.01081	.910	-.0417	.0275
4.00	1.00	-.00913	.01081	.832	-.0437	.0255
	2.00	.00577	.01081	.948	-.0288	.0404
	3.00	.00710	.01081	.910	-.0275	.0417

Keterangan :

Simbol* = perbedaan signifikan karena selisihnya > HSD 5%

Tanpa simbol = perbedaan tidak signifikan karena selisihnya < HSD 5%

Lampiran L

HASIL ANOVA UJI KEKERASAN PADA *DESIGN EXPERT*

Response 1 Kekerasan

ANOVA for selected factorial model

Analysis of variance table [Partial sum of squares - Type III]

Source	Sum of Square	d	Mean F Square	Value	p-value Prob > F	
Model	4.90	3	1.63	12.31	0.0023	significant
A-Macam Pengikat	1.61	1	1.6	12.17	0.0082	
B-Macam Pengisi	3.27	1	3.27	24.63	0.0011	
AB	0.018	1	0.018	0.13	0.7248	
Pure error	1.06	8	0,13			
Cor Total	5.96	11				

The Model F-value of 12.31 implies the model is significant. There is only a 0.23% chance that a "Model F-Value" this large could occur due to noise. Values of "Prob > F" less than 0.0500 indicate model terms are significant. In this case A, B are significant model terms.

Values greater than 0.1000 indicate the model terms are not significant. If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

Std. Dev.	0.36	R-Squared	0.8220
Mean	12.22	Adj R-Squared	0.7552
C.V.	%2.98	Pred R-Squared	0.5994
PRESS	2.39	Adeq Precision	8.451

The "Pred R-Squared" of 0.5994 is in reasonable agreement with the "Adj R-Squared" of 0.7552.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 8.451 indicates an adequate signal. This model can be used to navigate the design space.

Factor	Coefficient	df	Standard	95% CI		VIF
	Estimate		Error	Low	High	
Intercept	12.22	1	0.11	11.97	12.46	
A-Macam Pengikat	0.37	1	0.11	0.12	0.61	1.00
B-Macam Pengisi	-0.52	1	0.11	-0.76	-0.28	1.00
AB	0.038	1	0.11	-0.20	0.28	1.00

Final Equation in Terms of Coded Factors:

$$\begin{aligned} \text{Kekerasan} &= \\ &+12.22 \\ &+0.37 \quad * A \\ &-0.52 \quad * B \\ &+0.038 \quad * A * B \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Kekerasan} &= \\ &+12.21667 \\ &+0.36667 \quad * \text{Macam Pengikat} \\ &-0.52167 \quad * \text{Macam Pengisi} \\ &+0.038333 \quad * \text{Macam Pengikat} * \text{Macam Pengisi} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node. In the Diagnostics Node, Select Case Statistics from the View Menu. Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

- 1) Normal probability plot of the studentized residuals to check for normality of residuals.
- 2) Studentized residuals versus predicted values to check for constant

error.

3) Externally Studentized Residuals to look for outliers, i.e., influential values.

4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.

Lampiran M

HASIL ANOVA UJI WAKTU HANCUR PADA *DESIGN EXPERT*

Response	2	Waktu hancur			
ANOVA for selected factorial model					
Analysis of variance table [Partial sum of squares - Type III]					
Source	Sum of Squares	df	Mean Square	F Value	p-value Prob > F
Model	23.25	3	7.75	966.86	< 0.0001 significant
A-Macam Pengikat	7.29	1	7.29	908.76	< 0.0001
B-Macam Pengisi	1.99	1	1.99	248.57	< 0.0001
AB	13.98	1	13.98	1743.27	< 0.0001
Pure Error	0.064	8	8.017E-003		
Cor Total	23.32		11		

The Model F-value of 966.86 implies the model is significant. There is only a 0.01% chance that a "Model F-Value" this large could occur due to noise. Values of "Prob > F" less than 0.0500 indicate model terms are significant. In this case A, B, AB are significant model terms.

Values greater than 0.1000 indicate the model terms are not significant.

If there are many insignificant model terms (not counting those required to support hierarchy), model reduction may improve your model.

Std. Dev.	0.090	R-Squared	0.9972
Mean	25.35	Adj R-Squared	0.9962
C.V.	%0.35	Pred R-Squared	0.9938
PRESS	0.14	Adeq Precision	71.898

The "Pred R-Squared" of 0.9938 is in reasonable agreement with the "Adj R-Squared" of 0.9962.

"Adeq Precision" measures the signal to noise ratio. A ratio greater than 4 is desirable. Your ratio of 71.898 indicates an adequate signal. This model can be used to navigate the design space.

Coefficient	Standard	95% CI	95% CI			
Factor	Estimate	df	Error	Low	High	VIF
Intercept	25.35	1	0.026	25.29	25.41	
A-Macam Pengikat	0.78	1	0.026	0.72	0.84	1.00
B-Macam Pengisi	-0.41	1	0.026	-0.47	-0.35	1.00
AB	1.08	1	0.026	1.02	1.14	1.00

Final Equation in Terms of Coded Factors:

$$\begin{aligned} \text{Waktu hancur} &= \\ &+25.35 \\ &+0.78 \quad * A \\ &-0.41 \quad * B \\ &+1.08 \quad * A * B \end{aligned}$$

Final Equation in Terms of Actual Factors:

$$\begin{aligned} \text{Waktu hancur} &= \\ &+25.35250 \\ &+0.77917 \quad * \text{Macam Pengikat} \\ &-0.40750 \quad * \text{Macam Pengisi} \\ &+1.07917 \quad * \text{Macam Pengikat} * \text{Macam Pengisi} \end{aligned}$$

The Diagnostics Case Statistics Report has been moved to the Diagnostics Node. In the Diagnostics Node, Select Case Statistics from the View Menu. Proceed to Diagnostic Plots (the next icon in progression). Be sure to look at the:

- 1) Normal probability plot of the studentized residuals to check for normality of residuals.

2) Studentized residuals versus predicted values to check for constant error.

3) Externally Studentized Residuals to look for outliers, i.e., influential values.

4) Box-Cox plot for power transformations.

If all the model statistics and diagnostic plots are OK, finish up with the Model Graphs icon.