

## LAMPIRAN I HASIL PERCOBAAN

<b>KAIN KAPAS HASIL PERSIAPAN PENYEMPURNAAN</b>




### **KAIN KAPAS HASIL PENYEMPURNAAN TOLAK AIR DENGAN YANG SUDAH DIPROSES**

<b>KAIN KAPAS CONTOH UJI SEBELUM CUCI</b>		
<b>FLUOROKARBON</b>	<b>PARAFIN</b>	<b><i>HYPERBRANCHED POLYMERS</i></b>
<b>KAIN KAPAS CONTOH UJI SESUDAH CUCI</b>		
<b>FLUOROKARBON</b>	<b>PARAFIN</b>	<b><i>HYPERBRANCHED POLYMERS</i></b>



## LAMPIRAN II DATA HASIL PENGUJIAN

Lampiran 2.1 Pembuatan Larutan Tolak Air dan Contoh Uji

No.	Keterangan	Gambar
1.	Kain Kapas	
2.	Pembuatan Larutan zat fluorokarbon, parafin, dan HBPs	

<p>3.</p>	<p>Benam peras 2 nip 2 dip, WPU 80%</p>	
<p>4.</p>	<p>Pengeringan 100° C dan Pemanasawetan 150-170° C</p>	
<p>5.</p>	<p>Kain Contoh Uji</p>	

Lampiran 2.2 Proses Pengujian Pada Contoh Uji

No.	Keterangan	Gambar
1.	Sudut Kontak (Goniometer)	 A photograph of a goniometer setup. The device consists of a black microscope mounted on a white base. A camera is attached to the side of the microscope. The base has some text and logos, including "YAKUSA LESTARI BERSAMA". The setup is on a white surface.
2.	Daya Tembus Udara (TEXTEST <i>Static Air permeability</i> )	 A photograph of a white TEXTEST Static Air permeability machine. The machine is mounted on a white cabinet. It has a black circular component on top and a digital display on the front. The machine is in a room with white walls and a window in the background.



3.	Pencucian (Washcator)	
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Lampiran 2.3 Perhitungan Data Pengujian Sudut Kontak Sebelum Pencucian

Fluorokarbon	Parafin	HBPs
$\Sigma(x - \bar{x})^2$ sudut kontak		
$(136.056^\circ - 133.670^\circ)^2$ = 5.69	$(127.324^\circ - 126.036^\circ)^2$ = 1.66	$(126.723^\circ - 129.840^\circ)^2$ = 9.72
$(133.837^\circ - 133.670^\circ)^2$ = 0.03	$(122.696^\circ - 126.036^\circ)^2$ = 11.16	$(138.785^\circ - 129.840^\circ)^2$ = 80.01
$(138.440^\circ - 133.670^\circ)^2$ = 22.75	$(125.509^\circ - 126.036^\circ)^2$ = 0.28	$(120.623^\circ - 129.840^\circ)^2$ = 84.95
$(134.523^\circ - 133.670^\circ)^2$ = 0.73	$(130.963^\circ - 126.036^\circ)^2$ = 24.28	$(138.858^\circ - 129.840^\circ)^2$ = 81.32
$(125.494^\circ - 133.670^\circ)^2$ = 66.85	$(123.688^\circ - 126.036^\circ)^2$ = 5.51	$(124.212^\circ - 129.840^\circ)^2$ = 31.67
$\Sigma = 96.05$	$\Sigma = 42.88$	$\Sigma = 287.68$
$SD = \sqrt{\frac{\Sigma(x-\bar{x})^2 \text{ sudut kontak}}{n-1}}$		
$= \sqrt{\frac{96.05}{4}}$	$= \sqrt{\frac{42.88}{4}}$	$= \sqrt{\frac{287.68}{4}}$

= 4.90	= 3.27	= 8.48
$CV = \frac{SD}{\bar{x} \text{ sudut kontak}} \times 100\%$		
= $\frac{4.90}{133.670^\circ}$	= $\frac{3.27}{126.036^\circ}$	= $\frac{8.48}{129.840^\circ}$
= 3.67%	= 2.60%	= 6.53%

Lampiran 2.4 Perhitungan Data Pengujian Sudut Kontak Sesudah Pencucian

Fluorokarbon	Parafin	HBPs
$\Sigma(x - \bar{x})^2 \text{ sudut kontak}$		
$(82.350^\circ - 87.310^\circ)^2 = 24.60$	$(0.000^\circ - 42.270^\circ)^2 = 1,786.75$	$(99.700^\circ - 90.390^\circ)^2 = 86.68$
$(91.840^\circ - 87.310^\circ)^2 = 20.52$	$(63.950^\circ - 42.270^\circ)^2 = 470.02$	$(95.140^\circ - 90.390^\circ)^2 = 22.56$
$91.980^\circ - 87.310^\circ)^2 = 21.81$	$(75.920^\circ - 42.270^\circ)^2 = 1,132.32$	$(97.250^\circ - 90.390^\circ)^2 = 47.06$
$(82.430^\circ - 87.310^\circ)^2 = 23.81$	$(71.480^\circ - 42.270^\circ)^2 = 853.22$	$(74.640^\circ - 90.390^\circ)^2 = 248.06$
$(87.940^\circ - 87.310^\circ)^2 = 0.40$	$(0.000^\circ - 42.270^\circ)^2 = 1,786.75$	$(85.240^\circ - 90.390^\circ)^2 = 26.52$
$\Sigma = 91.14$	$\Sigma = 6,029.07$	$\Sigma = 430.88$
$SD = \sqrt{\frac{\Sigma(x-\bar{x})^2 \text{ sudut kontak}}{n-1}}$		
= $\sqrt{\frac{91.14}{4}}$	= $\sqrt{\frac{6,029.07}{4}}$	= $\sqrt{\frac{430.88}{4}}$
= 4.77	= 38.82	= 10.38
$CV = \frac{SD}{\bar{x} \text{ sudut kontak}} \times 100\%$		
= $\frac{4.77}{87.310^\circ}$	= $\frac{38.82}{42.270^\circ}$	= $\frac{10.38}{90.390^\circ}$
= 5.47%	= 91.85%	= 11.48%

Lampiran 2.5 Perhitungan Data Pengujian Daya Tembus Udara

Fluorokarbon	Parafin	HBP
$\Sigma(x - \bar{x})^2$ Daya tembus udara		
$(48.800 - 49.000)^2 = 0.04$	$(52.800 - 51.200)^2 = 2.56$	$(55.400 - 53.900)^2 = 2.25$
$(47.500 - 49.000)^2 = 2.25$	$(50.700 - 51.200)^2 = 0.25$	$(52.700 - 53.900)^2 = 1.44$
$(50.900 - 49.000)^2 = 3.61$	$(50.700 - 51.200)^2 = 0.25$	$(54.400 - 53.900)^2 = 0.25$
$(49.700 - 49.000)^2 = 0.49$	$(50.500 - 51.200)^2 = 0.49$	$(53.100 - 53.900)^2 = 0.64$
$(48.000 - 49.000)^2 = 1.00$	$(51.100 - 51.200)^2 = 0.01$	$(54.000 - 53.900)^2 = 0.01$
$\Sigma = 7.39$	$\Sigma = 3.56$	$\Sigma = 4.59$
$SD = \sqrt{\frac{\Sigma(x-\bar{x})^2 \text{ daya tembus udara}}{n-1}}$		
$= \sqrt{\frac{1.36}{4}}$	$= \sqrt{\frac{3.56}{4}}$	$= \sqrt{\frac{4.59}{4}}$
$= 1.36$	$= 0.94$	$= 1.07$
$CV = \frac{SD}{\bar{x} \text{ sudut kontak}} \times 100\%$		
$= \frac{1.36}{49.000}$	$= \frac{0.94}{51.200}$	$= \frac{1.07}{53.900}$
$= 2.77\%$	$= 1.84\%$	$= 1.99\%$

Lampiran 2.6 Data Pengujian Sudut Kontak

No.	Keterangan	Sudut Kiri (°)	Sudut Kanan (°)
1.	Fluorokarbon 1	136.275	135.836
	Fluorokarbon 2	134.206	133.467
	Fluorokarbon 3	138.733	138.147
	Fluorokarbon 4	134.825	134.221

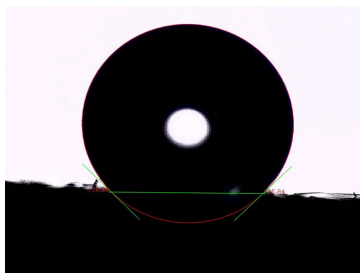
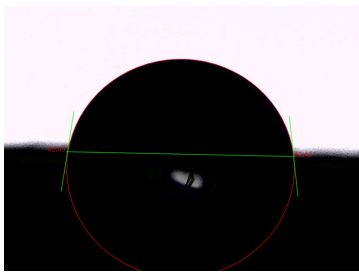
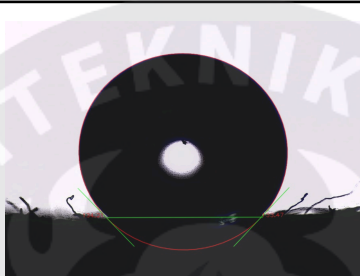
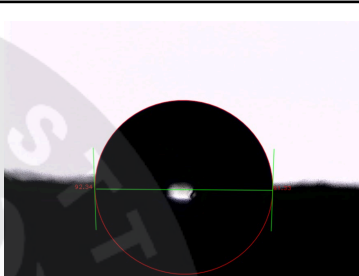

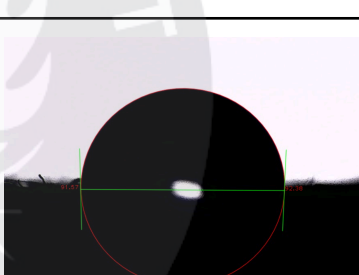
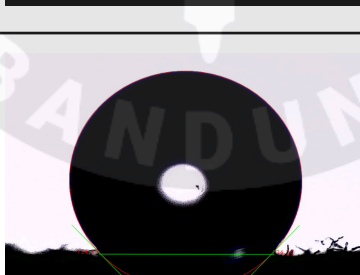
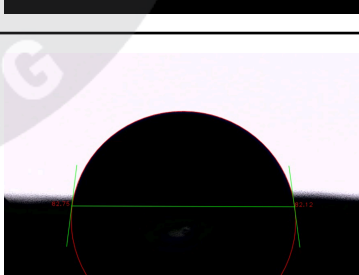
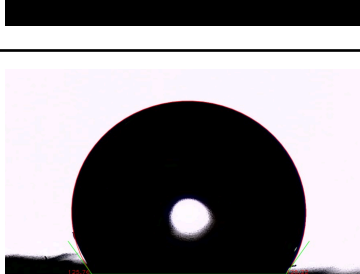
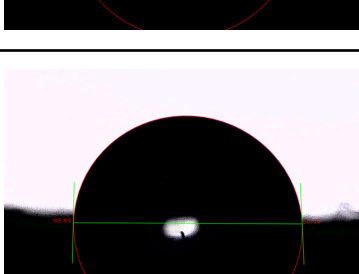
	Fluorokarbon 5	125.763	125.225
2.	Parafin 1	127.691	126.957
	Parafin 2	122.913	122.479
	Parafin 3	125.822	125.195
	Parafin 4	130.963	130.420
	Parafin 5	123.851	123.525
3.	HBP 1	126.984	126.462
	HBP 2	138.785	138.130
	HBP 3	120.713	120.533
	HBP 4	139.092	138.623
	HBP 5	124.466	123.958

Lampiran 2.7 Data Pengujian Sudut Kontak Sesudah Pencucian

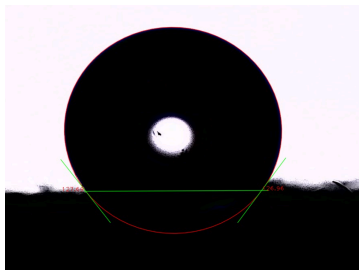

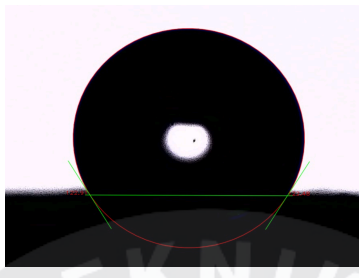
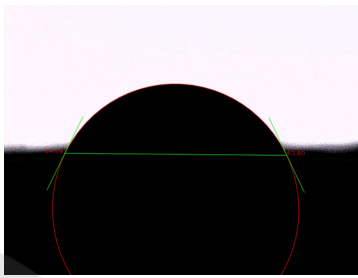

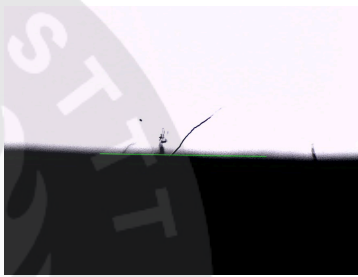

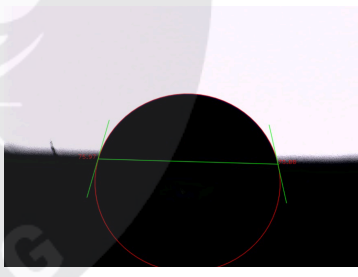
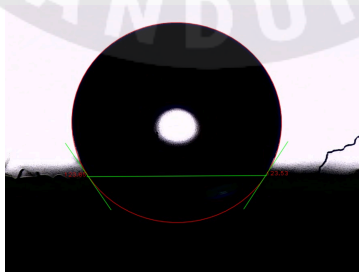
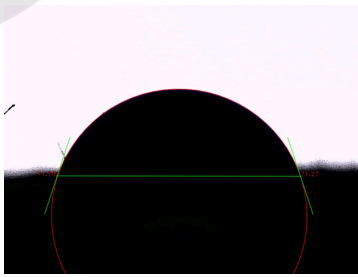
No.	Keterangan	Sudut Kiri (°)	Sudut Kanan (°)
1.	Fluorokarbon 1	82.09	82.62
	Fluorokarbon 2	92.34	91.33
	Fluorokarbon 3	91.57	92.38
	Fluorokarbon 4	82.75	82.12
	Fluorokarbon 5	88.89	86.99
2.	Parafin 1	0.00	0.00
	Parafin 2	64.09	63.80
	Parafin 3	75.97	75.88
	Parafin 4	71.70	71.27
	Parafin 5	0.00	0.00
3.	HBP 1	99.87	99.53
	HBP 2	95.31	94.97
	HBP 3	98.1	96.32
	HBP 4	74.70	74.58

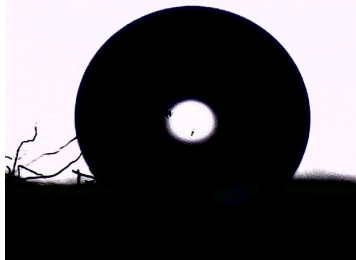
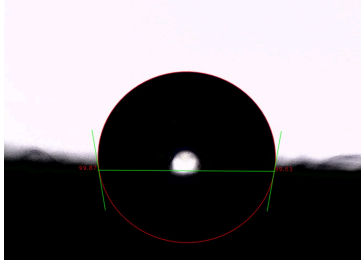

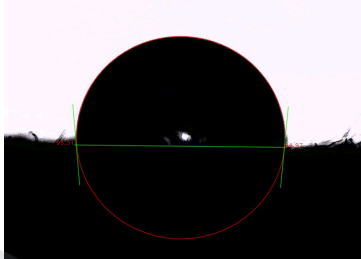

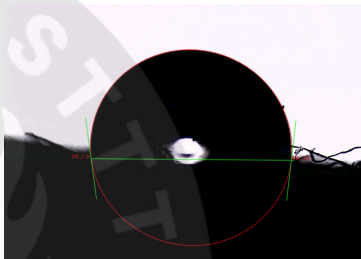

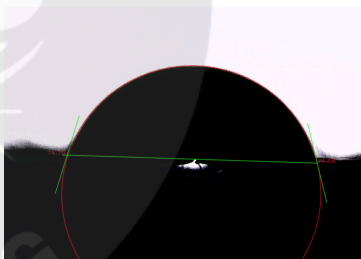


	HBP5 5	86.63	83.84
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Lampiran 2.8 Foto Pengujian Sudut Kontak Sebelum dan Sesudah Pencucian

No.	Keterangan	Foto Sebelum	Foto Sesudah
1.	Fluorokarbon 1 136,056° → 82.35°		
	Fluorokarbon 2 133,837° → 91.84°		
	Fluorokarbon 3 138,440° → 91.98°		
	Fluorokarbon 4 134,523° → 82.43°		
	Fluorokarbon 5 125,494° → 87.94°		



2.	Parafin 1 $127,324^\circ$ $\rightarrow$ $0.00^\circ$		
	Parafin 2 $122,696^\circ$ $\rightarrow$ $63.95^\circ$		
	Parafin 3 $125,509^\circ$ $\rightarrow$ $75.92^\circ$		
	Parafin 4 $130,963^\circ$ $\rightarrow$ $71.48^\circ$		
	Parafin 5 $123,688^\circ$ $\rightarrow$ $0.00^\circ$		

3.	HBPs 1 $126,723^\circ$ $\rightarrow$ $99.70^\circ$		
	HBPs 2 $138,785^\circ$ $\rightarrow$ $95.14^\circ$		
	HBPs 3 $120,623^\circ$ $\rightarrow$ $97.25^\circ$		
	HBPs 4 $138,858^\circ$ $\rightarrow$ $74.64^\circ$		
	HBPs 5 $124,212^\circ$ $\rightarrow$ $85.24^\circ$		

Lampiran 2.9 Tabel Data Perhitungan Pengujian Sudut Kontak Sebelum Pencucian

Titik	Fluorokarbon	Parafin	HBP
1	136,056°	127,324°	126,723°
2	133,837°	122,696°	138,785°
3	138,440°	125,509°	120,623°
4	134,523°	130,963°	138,858°
5	125,494°	123,688°	124,212°
<b><math>\bar{x}</math></b>	<b>133,670°</b>	<b>126,036°</b>	<b>129,840°</b>
<b>SD</b>	<b>4.90</b>	<b>3.27</b>	<b>8.48</b>
<b>CV</b>	<b>3.67%</b>	<b>2.60%</b>	<b>6.53%</b>

Lampiran 2.10 Tabel Data Perhitungan Pengujian Sudut Kontak Sesudah Pencucian

Titik	Fluorokarbon	Parafin	HBP
1	82.35°	0.00°	99.70°
2	91.84°	63.95°	95.14°
3	91.98°	75.92°	97.25°
4	82.43°	71.48°	74.64°
5	87.94°	0.00°	85.24°
<b><math>\bar{x}</math></b>	<b>87.31°</b>	<b>42.27°</b>	<b>90.39°</b>
<b>SD</b>	<b>4.77</b>	<b>38.82</b>	<b>10.38</b>
<b>CV</b>	<b>5.47%</b>	<b>91.85%</b>	<b>11.48%</b>
<b>%Penurunan</b>	<b>34.68%</b>	<b>66.46%</b>	<b>30.38%</b>

Lampiran 2.11 Tabel Data Perhitungan Pengujian Daya Tembus Udara

Titik	Fluorokarbon	Parafin	HBP's	Blanko
1	48,8 cm <sup>3</sup> /cm <sup>2</sup> /s	52,8 cm <sup>3</sup> /cm <sup>2</sup> /s	55,4 cm <sup>3</sup> /cm <sup>2</sup> /s	65.3 cm <sup>3</sup> /cm <sup>2</sup> /s
2	47,5 cm <sup>3</sup> /cm <sup>2</sup> /s	50,7 cm <sup>3</sup> /cm <sup>2</sup> /s	52,7 cm <sup>3</sup> /cm <sup>2</sup> /s	63.8 cm <sup>3</sup> /cm <sup>2</sup> /s
3	50,9 cm <sup>3</sup> /cm <sup>2</sup> /s	50,7 cm <sup>3</sup> /cm <sup>2</sup> /s	54,4 cm <sup>3</sup> /cm <sup>2</sup> /s	64.4 cm <sup>3</sup> /cm <sup>2</sup> /s
4	49,7 cm <sup>3</sup> /cm <sup>2</sup> /s	50,5 cm <sup>3</sup> /cm <sup>2</sup> /s	53,1 cm <sup>3</sup> /cm <sup>2</sup> /s	63.4 cm <sup>3</sup> /cm <sup>2</sup> /s
5	48,0 cm <sup>3</sup> /cm <sup>2</sup> /s	51,1 cm <sup>3</sup> /cm <sup>2</sup> /s	54,0 cm <sup>3</sup> /cm <sup>2</sup> /s	66.7 cm <sup>3</sup> /cm <sup>2</sup> /s
<b><math>\bar{x}</math></b>	<b>49,0 cm<sup>3</sup>/cm<sup>2</sup>/s</b>	<b>51,2 cm<sup>3</sup>/cm<sup>2</sup>/s</b>	<b>53,9 cm<sup>3</sup>/cm<sup>2</sup>/s</b>	<b>64,7 cm<sup>3</sup>/cm<sup>2</sup>/s</b>
<b>SD</b>	<b>1.36</b>	<b>0.94</b>	<b>1.07</b>	<b>6.95</b>
<b>CV</b>	<b>2.77%</b>	<b>1.84%</b>	<b>1.99%</b>	<b>2.04%</b>

