DAFTAR LAMPIRAN

Table 3A—Tensile Requirements for PSL 1

(1)	(2)		(3)		(4)
Grade	Yield Strength, Minimum psi	Yield Strength, Minimum MPa	Ultimate Tensile Strength, Minimum psi	Ultimate Tensile Strength, Minimum MPa	Elongation in 2 in. (50.8 mm), Minimum, Percent
A25	25,000	(172)	45,000	(310)	a
A	30,000	(207)	48,000	(331)	a
B	35,000	(241)	60,000	(414)	a
X42	42,000	(290)	60,000	(414)	a
X46	46,000	(317)	63,000	(434)	a
X52	52,000	(359)	66,000	(455)	a
X56	56,000	(386)	71,000	(490)	a
X60	60,000	(414)	75,000	(517)	a
X65	65,000	(448)	77,000	(531)	a
X70	70,000	(483)	82,000	(565)	a

Table 2A—PSL 1 Chemical Requirements for Heat and Product Analyses by Percentage of Weight

(1)	(2)	(3)	(4)		(5)	(6)	(7)
Grade & Class	Carbon, Maximum[a]	Manganese, Maximum[a]	Phosphorus Minimum	Phosphorus Maximum	Sulfur, Maximum	Titanium, Maximum	Other
			Seamless				
A25, Cl I	0.21	0.60		0.030	0.030		
A25, Cl II	0.21	0.60	0.045	0.080	0.030		
A	0.22	0.90		0.030	0.030		
B	0.28	1.20		0.030	0.030	0.04	b, c, d
X42	0.28	1.30		0.030	0.030	0.04	c, d
X46, X52, X56	0.28	1.40		0.030	0.030	0.04	c, d
X60[f],	0.28	1.40		0.030	0.030	0.04	c, d
X65[f], X70[f]	0.28	1.40		0.030	0.030	0.06	c, d
			Welded				
A25, Cl I	0.21	0.60		0.030	0.030		
A25, Cl II	0.21	0.60	0.045	0.080	0.030		
A	0.22	0.90		0.030	0.030		
B	0.26	1.20		0.030	0.030	0.04	b, c, d
X42	0.26	1.30		0.030	0.030	0.04	c, d
X46, X52, X56	0.26	1.40		0.030	0.030	0.04	c, d
X60[f]	0.26	1.40		0.030	0.030	0.04	c, d
X65[f]	0.26	1.45		0.030	0.030	0.06	c, d
X70[f]	0.26	1.65		0.030	0.030	0.06	c, d

VALLOUREC & MANNESMANN TUBES
V & M do BRASIL S.A.
BARREIRO PLANT - Belo Horizonte - MG - Brazil
CEP: 30161-970 - P.O BOX: 1453

EcoTube

QS-9000/ISO 9002 | ISO 14001

INSPECTION CERTIFICATE
(According to EN 10204 / DIN 50049 3.1.B)

Nº.: 0050205377 Sheet: 1 / 2

Customer: PT PARADISE PERKASA
Customer Order: AR1604/10/05
Inspection: V & M do BRASIL S.A.

Country: Cingapura
Work Order: 168278 / 000030
Material Number: 376074
Customer Material Number:

DIMENSION: 219,10 mm X 8,20 mm **SCHEDULE:** 040 # **GRADE:** GR X42 /GR B /
METALURGICAL STANDARD: API SPEC 5L 01.03.2004 # PSL 1 # **DIMENSIONAL STANDARD:** API SPEC 5L 01.03.2004
IN ACCORDANCE ALSO TO THE STANDARDS: A 53 / 2004 # A 106 / 2004 # ASME SA-53 / 2004 # ASME SA-106 / 2004 #
PRODUCT: SEAMLESS STEEL PIPE, HOT FINISHED , BEVELED ENDS 30 DEG. # AS ROLLED # **SUPERFICIAL PROTECTION:** LACQUER #
TOLERANCES: OUTSIDE DIAMETER: - 0,800 mm / + 1,600 mm **WALL THICKNESS:** - 1,025 mm / + 1,230 mm
CUT LENGTH: FIXED 12.000,00 mm
STANDARD MARKING: 163309/30 VMB 5L-0150.4 MONOGRAMA API "MM/AA" 219,10 X 8,20 X42 /B PSL1 S ...M ASTM A/ASME SA-106 16300 KPA SCH 040 ...KG ASTM A/ASME SA-53
SHIPPING MARKING: MADE IN BRAZIL * PIS52978 PARADISE PERKASA * INDONESIA

Batch	Heat N.	Inspection Lot	Pieces
0005753585	79114 ✓	030001084913	52
TOTAL			52

THE PRODUCT IS SATISFACTORY IN THE FOLLOWING TESTS / INSPECTIONS: DIMENSIONAL # VISUAL # FLATTENING TEST # HYDROSTATIC TEST: 16.300,0 KPA 5 s #
ELECTROMAGNETIC TEST ACCORDING TO API 5L //

CHEMICAL COMPOSITION(%): CEq according: DI according: Unit: Pcm:

	C	Mn	P	S	Si	Ni	Cr	Mo	Al	Cu	Sn	V	Nb	B	Ti	Pb	As	Zr	Bi	W	O	N	H	Ca	Zn	Sb	CEq	FB	DI Pcm
Required: Min		0,29			0,10																								
Max	0,21	1,15	0,030	0,030		0,40	0,40	0,15		0,400		0,080			0,040														
Heat N./ Batch:																													
79114/0005753585	0,18	0,98	0,025	0,006	0,21	0,01	0,04	0,01	0,021	0,010		0,002	0,002	0,0001	0,002									0,0026					
Check1	0,17	0,98	0,024	0,005	0,20	0,01	0,04	0,01	0,021	0,007		0,002	0,002	0,0001	0,001									0,0023					
Check2	0,17	0,97	0,024	0,005	0,20	0,01	0,04	0,01	0,020	0,007		0,002	0,002	0,0001	0,001									0,0023					

MECHANICAL TESTS S.Direction: Longitudinal Temperature: Room Temperature Gage Length: L0=2"

Tensile		Area(MM2)	Ys(MPA)	Ts(MPA)	E(%)	R.A.()	Ys/Ts
Required:	Min.:		290	415	27		
	Max.:						

PT. PARADISE PERKASA
PO No : 4300008008
Item No : 006 Qty : 51 lgt
CERTIFIED TRUE COPY
Signature: Date: 06.03.07

VERIFIED COPY
30-07-2009

MIRC No. L 06662-
PO No. 43- 8008
30-03-07

LABORATORIUM UJI POLIMER
PUSAT PENELITIAN FISIKA - LIPI
Jl. Sangkuriang - Komplek LIPI Gd. 60 Bandung 40135
Telepon : 022 - 2503052 Fax : 022 - 2503050
LIPI E-mail : info@labujipolimer.com http : // www.labujipolimer.com

LAPORAN PENGUJIAN

Nomor: 193/Lap/LUP/M/TT/Okt/09
Nama & Alamat Pelanggan : Rimbun Turnip
Balikpapan, KALTIM

Jenis Uji/Karakterisasi : Uji Tarik
Nama Sampel : Semen Komposit
Nomor/Identifikasi Sampel : 193/LUP/M/TT/Okt/09
Tanggal Penerimaan Sampel : 13 Oktober 2009

A. Alat Uji

1. Nama Alat : *Universal Testing Machine*
2. Pembuat dan Tipe : Orientec Co. Ltd, Model UCT-5T

B. Metode Uji

1. Metode Standar : Kesepakatan dengan Pelanggan
2. Tanggal Pengujian : 26-Oktober-2009
3. Jenis Uji : Uji Tarik Semen Komposit
4. Preparasi Spesimen : sampel dipotong berdasarkan Kehendak Pelanggan
5. Pengondisian : dikondisikan pada suhu ruang 23°C dan RH 50% selama >40 jam

C. Hasil Uji

1. Kondisi pengujian :
   - Suhu ruang uji 23°C
   - Kelembaban ruang uji 50%
   - Kecepatan tarik 10 mm/menit
   - Skala *load cell* 20% dari 5000 kgf
2. Hasil Pengujian :

Tabel 1. Hasil Pengujian

Sampel	yield Stress Mpa	Yield Strain %GL	Tensile Stress Mpa	Tensile Strain %GL	Break Point Strain %GL	Break Point Stress Mpa	Break Point Elongation mm	Elastik Modulus Mpa
80A20B3L	33.089	3.2707	37.651	4.1923	4.4552	36.084	4.4633.	1939.0
80A20B	1.1351	0.0767	11.286	1.5565	1.5665	10.751	1.5667	1494.1
60A40B3L	26.657	4.2645	26.657	4.2645	4.5739	23.990	4.5833	1447.1
80A20B6L	69.719	8.3674	69.719	8.3674	9.1396	62.178	9.1533	2163.6
60A40B	1.6738	0.18	9.0120	2.7363	0.1866	1.6712	0.1867	46.233
60A40B6L	47.830	7.4229	47.830	7.4229	7.5061	46.536	7.5233	1435.0

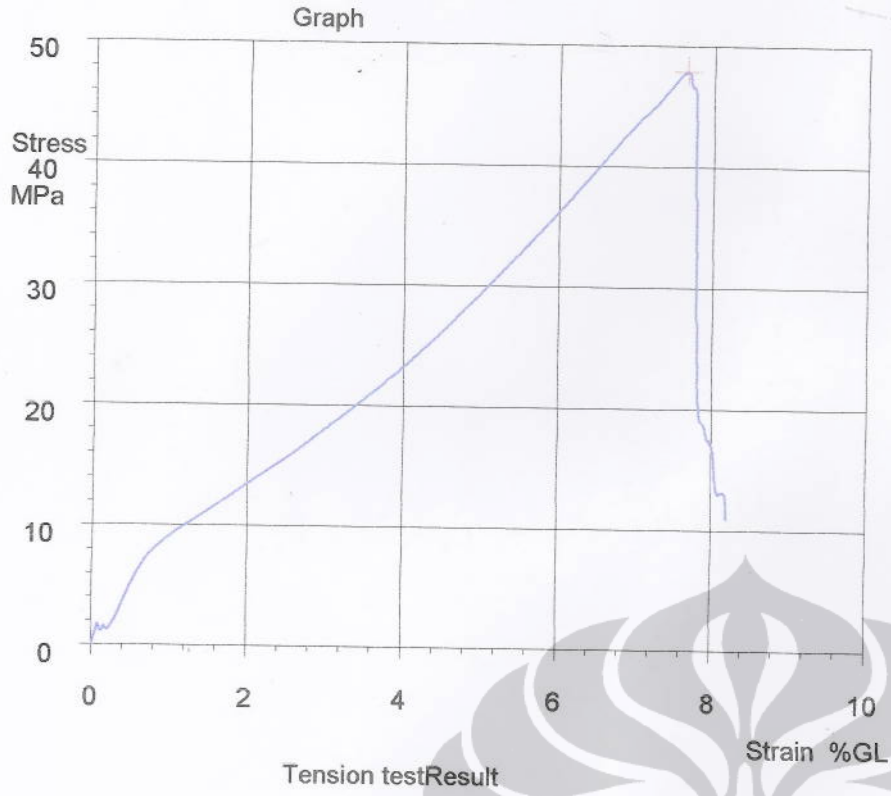
Keterangan :
- 1 Mpa = 10^7 dyne/cm^2 = 0,102 kgf/mm^2 = 145 psi = 2,089 x 10^4 lb/ft^2 = 9,869 atm.

3. Lampiran :
   - Cetakan grafik 6 sampel (6 lembar)

Bandung, 1 Desember 2009

A.H.Dawam Abdullah
Manajer Teknik

Catatan: Hasil ini hanya berlaku untuk sampel yang diuji di Laboratorium Uji Polimer – LIPI



Sample name	KOMPOSIT
Lot No.	60A40B6L
Preparation	Plate prepared by customer
Operator	Herlan
User	Jasa

sample No.	Color
1	
Average SS	

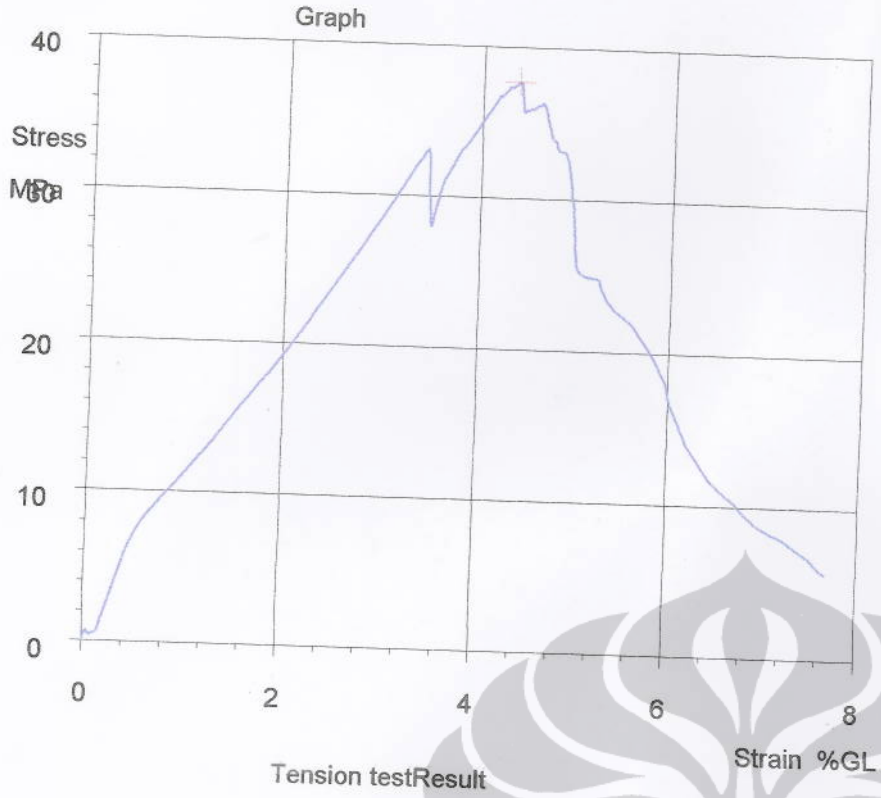
Tension testResult

Machine name	UCTSeries			Test type	Tension		
Load full scale	1000 kgf			Loadcell rating	5000 kgf		
Load range	20 %RO			Extensometer rating	20 cm		
Extensometer range	Not used			Test speed	10.0 mm/min		
chart speed X-T	10 mm/min			Machine rigidity	0 mm/kgf		
Point data load(Load)	1	20	40	Point data strain(Strai	1	50	100
kgf	60	80	100	%GL	150	200	250
Elastic modulus	Interval	0.5	1	Initial sample length	Distance	100 mm	
Load	Pitch	0.1 kgf		Origin of elongation	Init. load	0.01 kgf	
Elong adjust	No			Brake point	0.1 kgf		
Save SS curve	Yes						

Test date	2009/11/26	Temperature	23 C
Humidity	50 %RH	Sample name	KOMPOSIT
Lot No.	60A40B6L	Preparation	Plate prepared by customer
Operator	Herlan	User	Jasa
Comment 1	198-LUP-M-TT-Okt-09	Comment 2	Dikondisikan

TestID=1474	Width	Thickness	Upper yield	Upper yield	Maximum poin	Maximum poin	Break point	Break point	Break point
			Stress	Strain	Stress	Strain	Strain	Stress	Elongation
Test No	mm	mm	MPa	%GL	MPa	%GL	%GL	MPa	mm
1	30.800	8.3000	47.830	7.4229	47.830	7.4229	7.5061	46.536	7.5233
Average	30.800	8.3000	47.830	7.4229	47.830	7.4229	7.5061	46.536	7.5233
Max.	30.800	8.3000	47.830	7.4229	47.830	7.4229	7.5061	46.536	7.5233
Min.	30.800	8.3000	47.830	7.4229	47.830	7.4229	7.5061	46.536	7.5233
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	*******	*******	*******	*******	*******	*******	*******	*******	*******
Coefficient of variation	*******	*******	*******	*******	*******	*******	*******	*******	*******

TestID=1474	Elastic modu
Test No	MPa
1	1435.0
Average	1435.0
Max.	1435.0
Min.	1435.0
Range	0.0000
Standard Deviation(n-1)	*******
Coefficient of variation	*******



Tension testResult

Sample name	KOMPOSIT
Lot No.	80A20B3L
Preparation	Plate prepared by customer
Operator	Herlan
User	Jasa

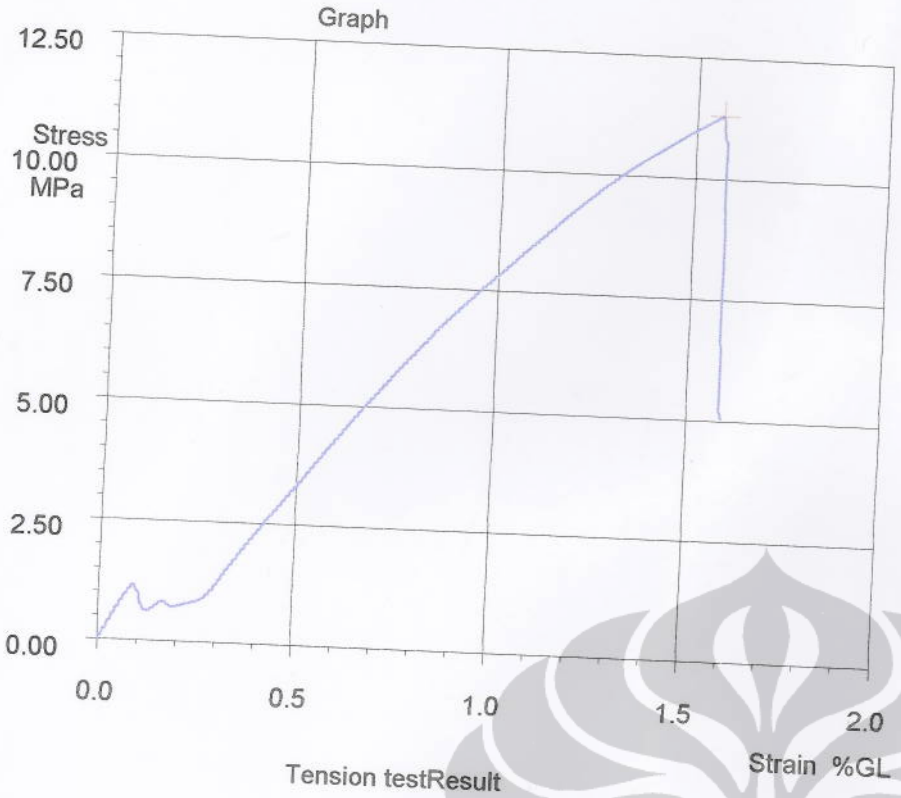
sample No.	Color
1	
Average SS	

Machine name	UCTSeries			Test type	Tension			
Load full scale	1000 kgf			Loadcell rating	5000 kgf			
Load range	20 %RO			Extensometer rating	20 cm			
Extensometer range	Not used			Test speed	10.0 mm/min			
chart speed X-T	10 mm/min			Machine rigidity	0 mm/kgf			
Point data load(Load)	1	20	40	Point data strain(Strai	1	50	100	
kgf	60	80	100	%GL	150	200	250	
Elastic modulus	Interval	0.5	1	Initial sample length	Distance	100 mm		
Load	Pitch	0.1 kgf		Origin of elongation	Init. load	0.01 kgf		
Elong adjust	No			Brake point	0.1 kgf			
Save SS curve	Yes							

Test date	2009/11/26	Temperature	23 C
Humidity	50 %RH	Sample name	KOMPOSIT
Lot No.	80A20B3L	Preparation	Plate prepared by customer
Operator	Herlan	User	Jasa
Comment 1	195-LUP-M-TT-Okt-09	Comment 2	Dikondisikan

TestID=1479 Test No	Width mm	Thickness mm	Upper yield Stress MPa	Upper yield Strain %GL	Maximum poin Stress MPa	Maximum poin Strain %GL	Break point Strain %GL	Break point Stress MPa	Break point Elongation mm
1	31.200	6.4000	33.089	3.2707	37.651	4.1923	4.4552	36.084	4.4633
Average	31.200	6.4000	33.089	3.2707	37.651	4.1923	4.4552	36.084	4.4633
Max.	31.200	6.4000	33.089	3.2707	37.651	4.1923	4.4552	36.084	4.4633
Min.	31.200	6.4000	33.089	3.2707	37.651	4.1923	4.4552	36.084	4.4633
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	*******	*******	*******	*******	*******	*******	*******	*******	*******
Coefficient of variation	*******	*******	*******	*******	*******	*******	*******	*******	*******

TestID=1479 Test No	Elastic modu MPa
1	1939.0
Average	1939.0
Max.	1939.0
Min.	1939.0
Range	0.0000
Standard Deviation(n-1)	*******
Coefficient of variation	*******



Sample name	KOMPOSIT
Lot No.	80A20B
Preparation	Plate prepared by customer
Operator	Herlan
User	Jasa

Sample No.	Color
1	
Average SS	

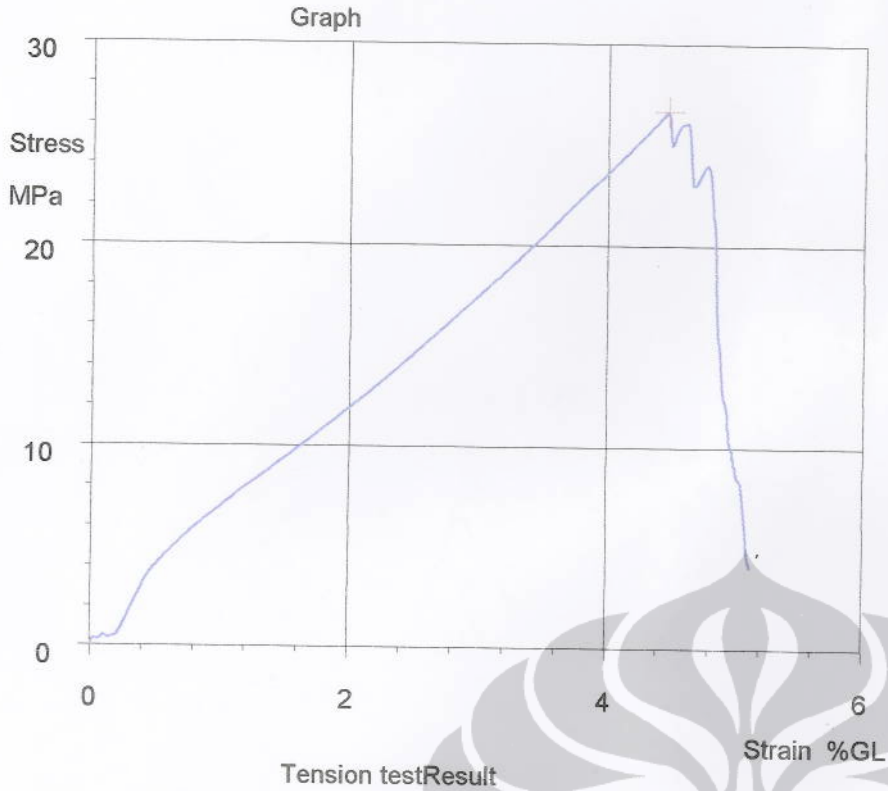
Tension testResult

Machine name	UCTSeries			Test type	Tension		
Load full scale	1000 kgf			Loadcell rating	5000 kgf		
Load range	20 %RO			Extensometer rating	20 cm		
Extensometer range	Not used			Test speed	10.0 mm/min		
chart speed X-T	10 mm/min			Machine rigidity	0 mm/kgf		
Point data load(Load) kgf	1	20	40	Point data strain(Strai %GL	1	50	100
	60	80	100		150	200	250
Elastic modulus Load	Interval	0.5	1	Initial sample length	Distance	100 mm	
	Pitch	0.1 kgf		Origin of elongation	Init. load	0.01 kgf	
Elong adjust	No			Brake point	0.1 kgf		
Save SS curve	Yes						

Test date	2009/11/26	Temperature	23 C
Humidity	50 %RH	Sample name	KOMPOSIT
Lot No.	80A20B	Preparation	Plate prepared by customer
Operator	Herlan	User	Jasa
Comment 1	193-LUP-M-TT-Okt-09	Comment 2	Dikondisikan

TestID=1478 Test No	Width mm	Thickness mm	Upper yield Stress MPa	Upper yield Strain %GL	Maximum poin Stress MPa	Maximum poin Strain %GL	Break point Strain %GL	Break point Stress MPa	Break point Elongation mm
1	31.400	7.7000	1.1351	0.0767	11.286	1.5565	1.5665	10.751	1.5667
Average	31.400	7.7000	1.1351	0.0767	11.286	1.5565	1.5665	10.751	1.5667
Max.	31.400	7.7000	1.1351	0.0767	11.286	1.5565	1.5665	10.751	1.5667
Min.	31.400	7.7000	1.1351	0.0767	11.286	1.5565	1.5665	10.751	1.5667
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	********	********	********	********	********	********	********	********	********
Coefficient of variation	********	********	********	********	********	********	********	********	********

TestID=1478 Test No	Elastic modu MPa
1	1494.1
Average	1494.1
Max.	1494.1
Min.	1494.1
Range	0.0000
Standard Deviation(n-1)	********
Coefficient of variation	********



Sample name	KOMPOSIT
Lot No.	60A40B3L
Preparation	Plate prepared by customer
Operator	Herlan
User	Jasa

sample No.	Color
1	
Average SS	

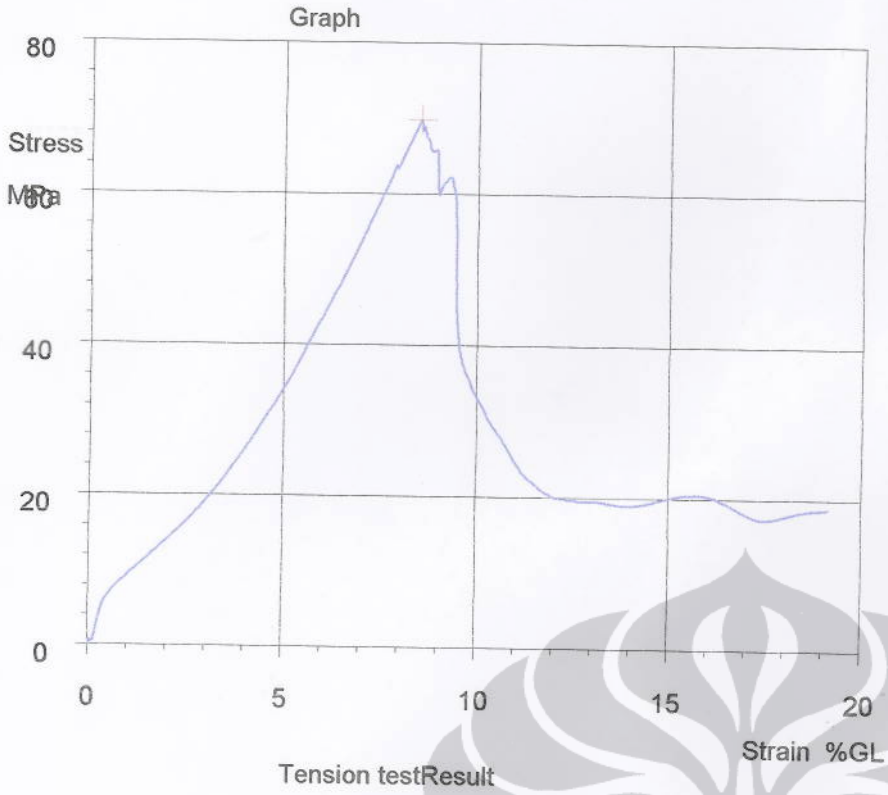
Tension testResult

Machine name	UCTSeries			Test type	Tension		
Load full scale	1000 kgf			Loadcell rating	5000 kgf		
Load range	20 %RO			Extensometer rating	20 cm		
Extensometer range	Not used			Test speed	10.0 mm/min		
chart speed X-T	10 mm/min			Machine rigidity	0 mm/kgf		
Point data load(Load)	1	20	40	Point data strain(Strai	1	50	100
kgf	60	80	100	%GL	150	200	250
Elastic modulus	Interval	0.5	1	Initial sample length	Distance	100 mm	
Load	Pitch	0.1 kgf		Origin of elongation	Init. load	0.01 kgf	
Elong adjust	No			Brake point	0.1 kgf		
Save SS curve	Yes						

Test date	2009/11/26	Temperature	23 C
Humidity	50 %RH	Sample name	KOMPOSIT
Lot No.	60A40B3L	Preparation	Plate prepared by customer
Operator	Herlan	User	Jasa
Comment 1	198-LUP-M-TT-Okt-09	Comment 2	Dikondisikan

TestID=1477 Test No	Width mm	Thickness mm	Upper yield Stress MPa	Upper yield Strain %GL	Maximum poin Stress MPa	Maximum poin Strain %GL	Break point Strain %GL	Break point Stress MPa	Break point Elongation mm
1	33.200	7.8000	26.657	4.2645	26.657	4.2645	4.5739	23.990	4.5833
Average	33.200	7.8000	26.657	4.2645	26.657	4.2645	4.5739	23.990	4.5833
Max.	33.200	7.8000	26.657	4.2645	26.657	4.2645	4.5739	23.990	4.5833
Min.	33.200	7.8000	26.657	4.2645	26.657	4.2645	4.5739	23.990	4.5833
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	********	********	********	********	********	********	********	********	********
Coefficient of variation	********	********	********	********	********	********	********	********	********

TestID=1477 Test No	Elastic modu MPa
1	1447.1
Average	1447.1
Max.	1447.1
Min.	1447.1
Range	0.0000
Standard Deviation(n-1)	********
Coefficient of variation	********



Sample name	KOMPOSIT
Lot No.	80A20B6L
Preparation	Plate prepared by customer
Operator	Herlan
User	Jasa

sample No.	Color
1	
Average SS	

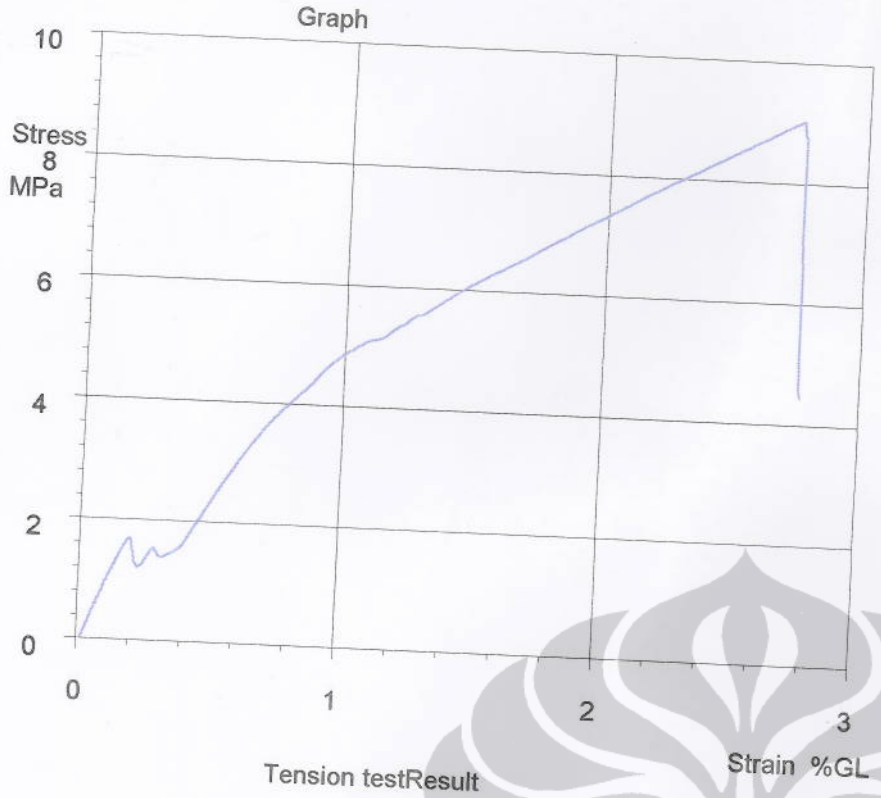
Tension testResult

Machine name	UCTSeries			Test type	Tension		
Load full scale	1000 kgf			Loadcell rating	5000 kgf		
Load range	20 %RO			Extensometer rating	20 cm		
Extensometer range	Not used			Test speed	10.0 mm/min		
chart speed X-T	10 mm/min			Machine rigidity	0 mm/kgf		
Point data load(Load)	1	20	40	Point data strain(Strai	1	50	100
kgf	60	80	100	%GL	150	200	250
Elastic modulus	Interval	0.5	1	Initial sample length	Distance	100 mm	
Load	Pitch	0.1 kgf		Origin of elongation	Init. load	0.01 kgf	
Elong adjust	No			Brake point	0.1 kgf		
Save SS curve	Yes						

Test date	2009/11/26	Temperature	23 C
Humidity	50 %RH	Sample name	KOMPOSIT
Lot No.	80A20B6L	Preparation	Plate prepared by customer
Operator	Herlan	User	Jasa
Comment 1	193-LUP-M-TT-Okt-09	Comment 2	Dikondisikan

TestID=1476 Test No	Width mm	Thickness mm	Upper yield Stress MPa	Upper yield Strain %GL	Maximum poin Stress MPa	Maximum poin Strain %GL	Break point Strain %GL	Break point Stress MPa	Break point Elongation mm
1	30.200	6.6000	69.719	8.3674	69.719	8.3674	9.1396	62.178	9.1533
Average	30.200	6.6000	69.719	8.3674	69.719	8.3674	9.1396	62.178	9.1533
Max.	30.200	6.6000	69.719	8.3674	69.719	8.3674	9.1396	62.178	9.1533
Min.	30.200	6.6000	69.719	8.3674	69.719	8.3674	9.1396	62.178	9.1533
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	*******	*******	*******	*******	*******	*******	*******	*******	*******
Coefficient of variation	*******	*******	*******	*******	*******	*******	*******	*******	*******

TestID=1476 Test No	Elastic modu MPa
1	2163.6
Average	2163.6
Max.	2163.6
Min.	2163.6
Range	0.0000
Standard Deviation(n-1)	*******
Coefficient of variation	*******



Sample name	KOMPOSIT
Lot No.	60A40B
Preparation	Plate prepared by customer
Operator	Herlan
User	Jasa

sample No.	Color
1	
Average SS	

Tension testResult

Machine name	UCTSeries			Test type	Tension		
Load full scale	1000 kgf			Loadcell rating	5000 kgf		
Load range	20 %RO			Extensometer rating	20 cm		
Extensometer range	Not used			Test speed	10.0 mm/min		
chart speed X-T	10 mm/min			Machine rigidity	0 mm/kgf		
Point data load(Load) kgf	1	20	40	Point data strain(Strai %GL	1	50	100
	60	80	100		150	200	250
Elastic modulus Load	Interval	0.5	1	Initial sample length	Distance	100 mm	
	Pitch	0.1 kgf		Origin of elongation	Init. load	0.01 kgf	
Elong adjust	No			Brake point	0.1 kgf		
Save SS curve	Yes						

Test date	2009/11/26	Temperature	23 C
Humidity	50 %RH	Sample name	KOMPOSIT
Lot No.	60A40B	Preparation	Plate prepared by customer
Operator	Herlan	User	Jasa
Comment 1	195-LUP-M-TT-Okt-09	Comment 2	Dikondisikan

TestID=1475 Test No	Width mm	Thickness mm	Upper yield Stress MPa	Upper yield Strain %GL	Maximum poin Stress MPa	Maximum poin Strain %GL	Break point Strain %GL	Break point Stress MPa	Break point Elongation mm
1	30.600	6.5000	1.6738	0.1800	9.0120	2.7363	0.1866	1.6712	0.1867
Average	30.600	6.5000	1.6738	0.1800	9.0120	2.7363	0.1866	1.6712	0.1867
Max.	30.600	6.5000	1.6738	0.1800	9.0120	2.7363	0.1866	1.6712	0.1867
Min.	30.600	6.5000	1.6738	0.1800	9.0120	2.7363	0.1866	1.6712	0.1867
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	********	********	********	********	********	********	********	********	********
Coefficient of variation	********	********	********	********	********	********	********	********	********

TestID=1475 Test No	Elastic modu MPa
1	46.233
Average	46.233
Max.	46.233
Min.	46.233
Range	0.0000
Standard Deviation(n-1)	********
Coefficient of variation	********

LABORATORIUM UJI POLIMER
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LAPORAN PENGUJIAN

Nomor: 194/Lap/LUP/M/Bending/Okt/09

Nama & Alamat Pelanggan : Rimbun Turnip
Balikpapan, Kaltim

Jenis Uji/Karakterisasi : Uji *Flexural* (*bending*)
Nama Sampel : Komposit
Nomor/Identifikasi Sampel : 194/LUP/M/Bending/Okt/09
Tanggal Penerimaan Sampel : 26 Oktober 2009

A. Alat Uji

1. Nama Alat : *Universal Testing Machine*
2. Pembuat dan Tipe : Orientec Co. Ltd, Model UCT-5T

B. Metode Uji

1. Metode Standar : Sesuai dengan kesepakatan client dengan mengacu pada ref. ASTMD 790
2. Tanggal Pengujian : 2-3 November 2009
3. Jenis Uji : " *Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials* ", metode 3 titik, prosedur A
4. Preparasi Spesimen : tidak ada preparasi, sampel terdiri dari 5 spesimen
5. Pengondisian : suhu ruang 23°C dan RH 50% selama >40 jam

C. Hasil Uji

1. Kondisi pengujian :
   - Ruang uji: suhu 23°C, kelembaban 50%
   - Kecepatan tekan: 2.5-2.9 mm/menit
   - Skala *load cell* : 1% dari 5000kgf
   - Pengukur dimensi : *vernier calliper*
   - Jarak antar tumpuan : 93-109 mm
2. Hasil Pengujian :

Tabel 1. Hasil Pengujian

Sampel	Flex.Strength	Flex.Strain	Mod.of Elastc.
	σm [MPa]	εm [mm/mm]	Eb [MPa]
60A40B	30.3	0.043	1250
60A40B 3L	46.6	0.050	1711
60A40B 6L	40.8	0.037	2587
80A20B	11.1	0.050	369
80A20B 3L	30.1	0.048	1880
80A20B 6L	28.3	0.013	2533

Keterangan :1 Mpa = 10^7 dyne/cm^2 = 0,102 kgf/mm^2 = 145 psi = 2,089 x 10^4 lb/ft^2 = 9,869 atm.

3. Lampiran :
   Tabel 2 : Rincian Hasil Pengujian
   Cetakan grafik 6 lembar

LABORATORIUM UJI POLIMER P2F - LIPI

Bandung, 1 Desember 2009

A.H. Dawam Abdullah
Manajer Teknik

Catatan: Hasil ini hanya berlaku untuk sampel yang diuji di Laboratorium Uji Polimer – LIPI

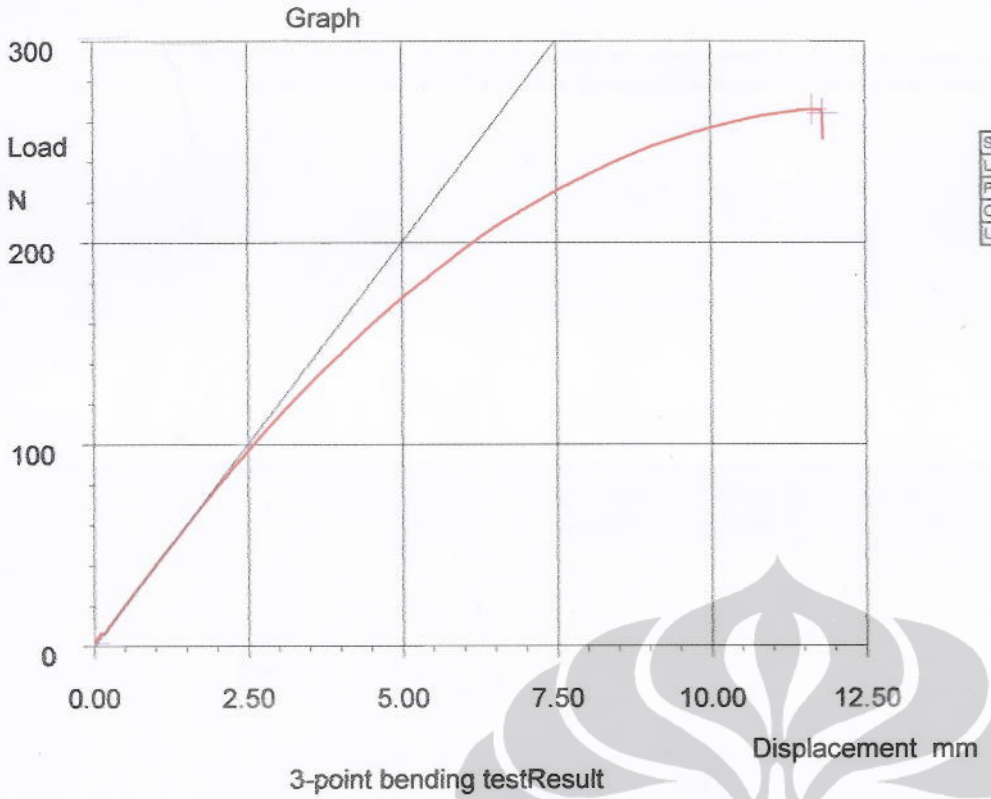
LAMPIRAN
No. : 194/LUP/M/Bending/Okt/09

Tabel 2. Rincian Hasil Pengujian

Nama Sampel	Thick d [mm]	Width b [mm]	Span L [mm]	Rate R [mm/min]	Max. Def. D [mm]	Max Load Pm [N]	Flex.Strength σm [MPa]	Max Displc. Dm [mm]	Flex.Strain εm [mm/mm]	Mod.of Elastc. Eb [MPa]
60A40B	6.4606	32.5	103	2.7	13.7	266	30.3	12	0.043	1250
60A40B 3L	5.832	32	93	2.5	12.4	363	46.6	12	0.050	1711
60A40B 6L	6.1874	28	99	2.6	13.2	295	40.8	10	0.037	2587
80A20B	6.4262	32.5	103	2.8	13.8	96	11.1	14	0.050	369
80A20B 3L	6.0006	32	96	2.6	12.8	241	30.1	12	0.048	1880
80A20B 6L	6.8078	32	109	2.9	14.5	256	28.3	4	0.013	2533

Keterangan :

Lebar di titik tekan : b, mm
Tebal di titik tekan : d, mm
Jarak antar tumpuan : L = 16 d, mm
Kecepatan tekan : R = 0,01 L^2/6d, mm/menit
Defleksi maksimum : D = 0,05 L^2/6d, mm/menit



Sample name	Komposit
Lot No.	60A40B
Preparation	tested as received
Operator	Indri
User	mahasiswa

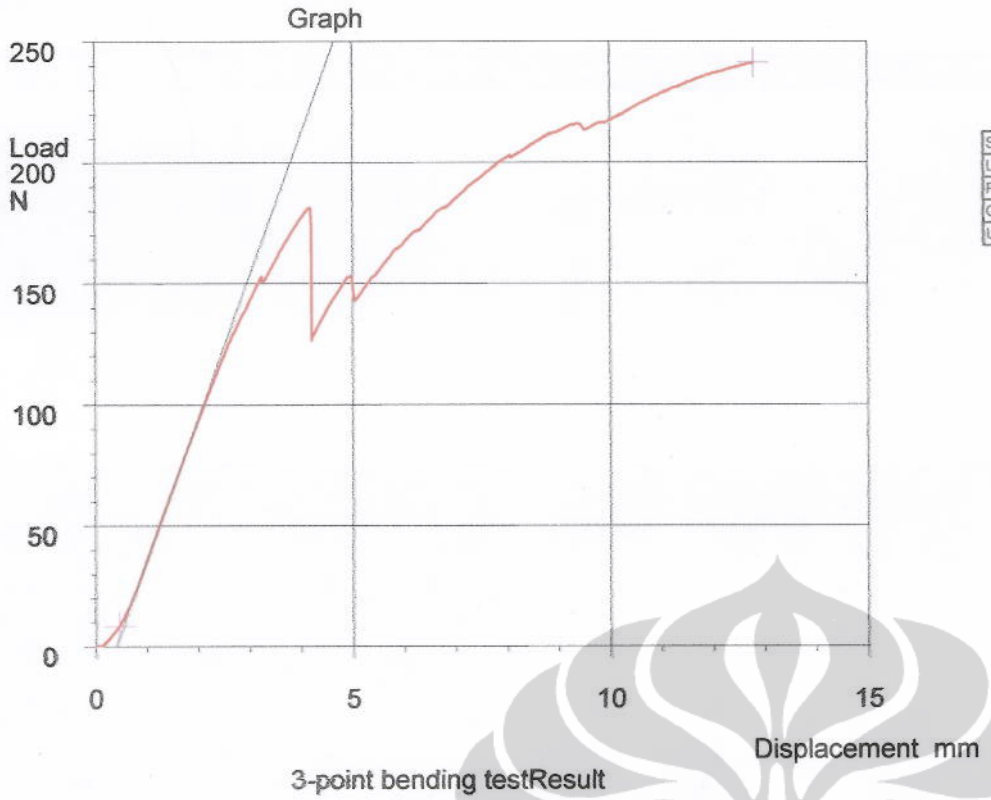
sample No.	Color
1	
Average SS	

3-point bending testResult

Machine name	UCTSeries			Test type	3-point bending			
Load full scale	50 kgf			Load cell rating	5000 kgf			
Load range	1 %RO			Strain meter 1 rating	10 mm			
Strain meter 1 range	Not used			Test speed	3.0 mm/min			
Chart speed OFF				Machine rigidity	0 mm/kgf			
Point data(Load)	0	0	0	Point data(Disp)	0	0	0	
N	0	0	0	mm	0	0	0	
Elastic modulus anal.	Interval	10	100	Initial sample length	Edge spar	103 mm		
Load	Pitch	10 N		Origin of elongation	Init. load	0.1 N		
Elong adjust	No			Break point measurem	1 N			
Save SS curve	Yes							

Test date	2009/11/02	Temperature	23 C
Humidity	50 %RH	Sample name	Komposit
Lot No.	60A40B	Preparation	tested as received
Operator	Indri	User	mahasiswa
Comment 1	3 point, proc. A	Comment 2	cond. 23, 50%, > 40 hrs

TestID=1388	Width	Height	Maximum poin	Maximum poin	Break point	Break point	Elastic modu
			Load	Displacement	Load	Displacement	
Test No	mm	mm	N	mm	N	mm	MPa
1	32.500	6.4610	265.93	11.640	263.81	11.810	1250.1
Average	32.500	6.4610	265.93	11.640	263.81	11.810	1250.1
Max.	32.500	6.4610	265.93	11.640	263.81	11.810	1250.1
Min.	32.500	6.4610	265.93	11.640	263.81	11.810	1250.1
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	*******	*******	*******	*******	*******	*******	*******
Coefficient of variation	*******	*******	*******	*******	*******	*******	*******



Sample name	Komposit
Lot No.	80A20B 3L
Preparation	tested as received
Operator	Indri
User	Mahasiswa

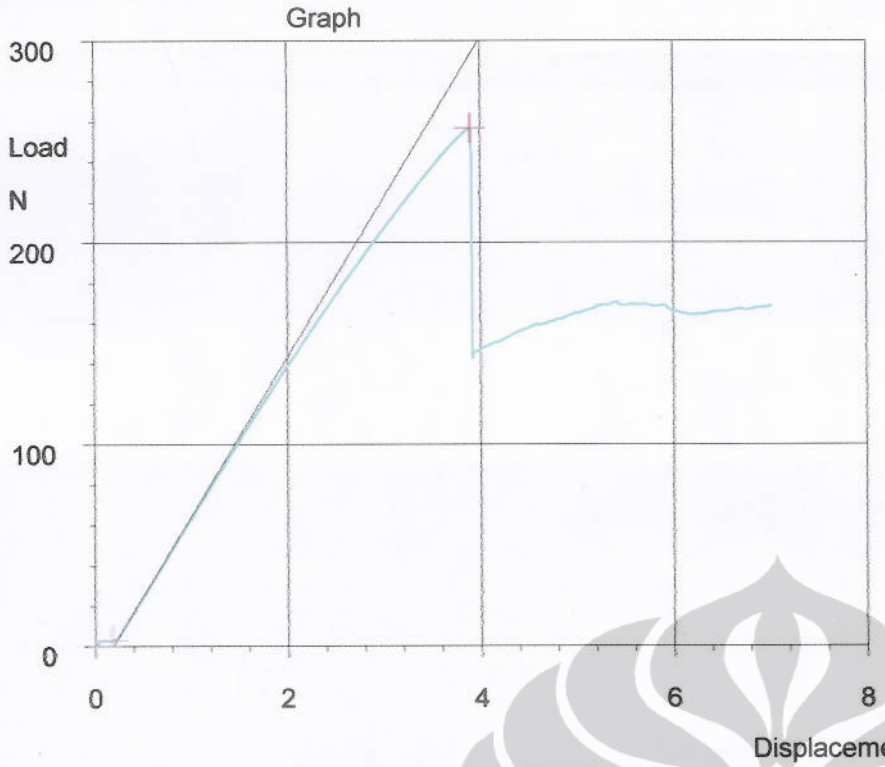
sample No.	Color
1	
Average SS	

3-point bending testResult

Machine name	UCTSeries			Test type	3-point bending		
Load full scale	50 kgf			Load cell rating	5000 kgf		
Load range	1 %RO			Strain meter 1 rating	10 mm		
Strain meter 1 range	Not used			Test speed	3.0 mm/min		
Chart speed OFF				Machine rigidity	0 mm/kgf		
Point data(Load)	0	0	0	Point data(Disp)	0	0	0
N	0	0	0	mm	0	0	0
Elastic modulus anal.	Interval	10	100	Initial sample length	Edge spar	96 mm	
Load	Pitch	10 N		Origin of elongation	Init. load	0.1 N	
Elong adjust	No			Break point measurem	1 N		
Save SS curve	Yes						

Test date	2009/11/02	Temperature	23 C
Humidity	50 %RH	Sample name	Komposit
Lot No.	80A20B 3L	Preparation	tested as received
Operator	Indri	User	Mahasiswa
Comment 1	3 point, proc. A - ASTM D790	Comment 2	cond. 23, 50%, > 40 hrs

TestID=1391	Width	Height	Maximum poin	Maximum poin	Break point	Break point	Elastic modu
			Load	Displacement	Load	Displacement	
Test No	mm	mm	N	mm	N	mm	MPa
1	32.000	6.0010	241.08	12.330	241.08	12.330	1879.6
Average	32.000	6.0010	241.08	12.330	241.08	12.330	1879.6
Max.	32.000	6.0010	241.08	12.330	241.08	12.330	1879.6
Min.	32.000	6.0010	241.08	12.330	241.08	12.330	1879.6
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	********	********	********	********	********	********	********
Coefficient of variation	********	********	********	********	********	********	********



Sample name	Komposit
Lot No.	80A20B 6L
Preparation	Mahasiswa
Operator	Indri
User	Mahasiswa

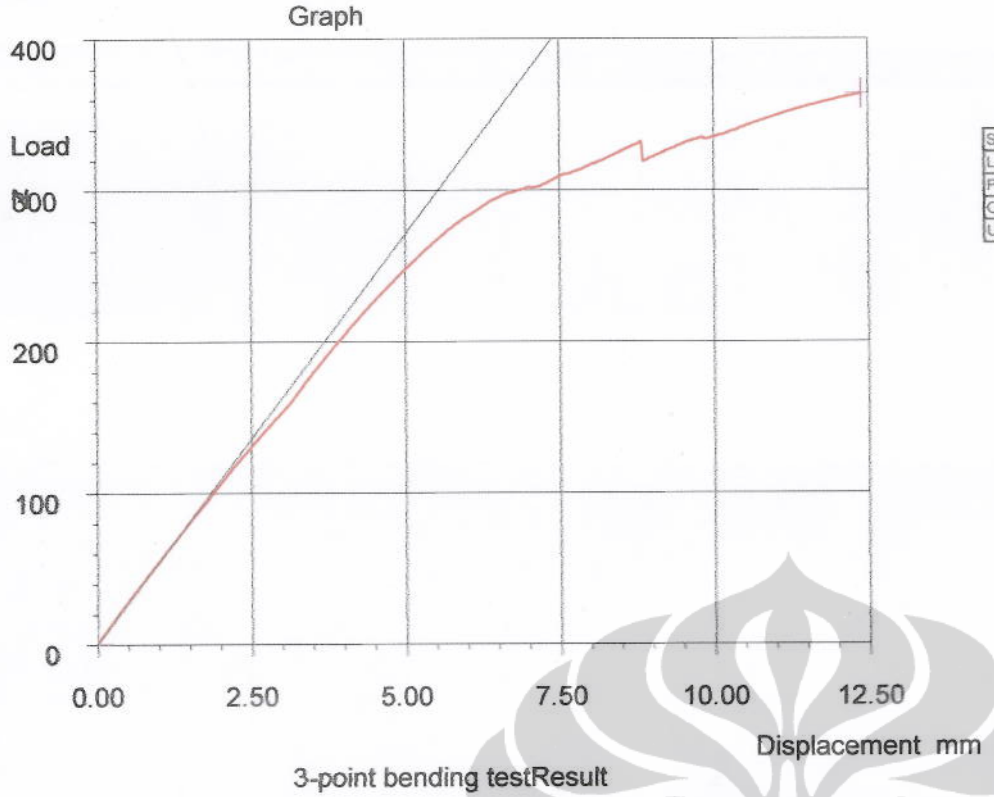
sample No.	Color
1	
Average SS	

3-point bending testResult

Machine name	UCTSeries			Test type	3-point bending			
Load full scale	50 kgf			Load cell rating	5000 kgf			
Load range	1 %RO			Strain meter 1 rating	10 mm			
Strain meter 1 range	Not used			Test speed	3.0 mm/min			
Chart speed OFF				Machine rigidity	0 mm/kgf			
Point data(Load)	0	0	0	Point data(Disp)	0	0	0	
N	0	0	0	mm	0	0	0	
Elastic modulus anal.	Interval	1	10	Initial sample length	Edge spar	109 mm		
Load	Pitch	2 N		Origin of elongation	Init. load	0.1 N		
Elong adjust	No			Break point measurem	1 N			
Save SS curve	Yes							

Test date	2009/11/03	Temperature	23 C
Humidity	50 %RH	Sample name	Komposit
Lot No.	80A20B 6L	Preparation	Mahasiswa
Operator	Indri	User	Mahasiswa
Comment 1	3 point, proc. A, ASTM D790	Comment 2	cond. 23, 50%, > 40 hrs

TestID=1395 Test No	Width mm	Height mm	Maximum poin Load N	Maximum poin Displacement mm	Break point Load N	Break point Displacement mm	Elastic modu MPa
1	32.000	6.8080	256.38	3.7100	256.32	3.7200	2533.3
Average	32.000	6.8080	256.38	3.7100	256.32	3.7200	2533.3
Max.	32.000	6.8080	256.38	3.7100	256.32	3.7200	2533.3
Min.	32.000	6.8080	256.38	3.7100	256.32	3.7200	2533.3
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	*******	*******	*******	*******	*******	*******	*******
Coefficient of variation	*******	*******	*******	*******	*******	*******	*******



Sample name	Komposit
Lot No.	60A40B 3L
Preparation	tested as received
Operator	Indri
User	research institution

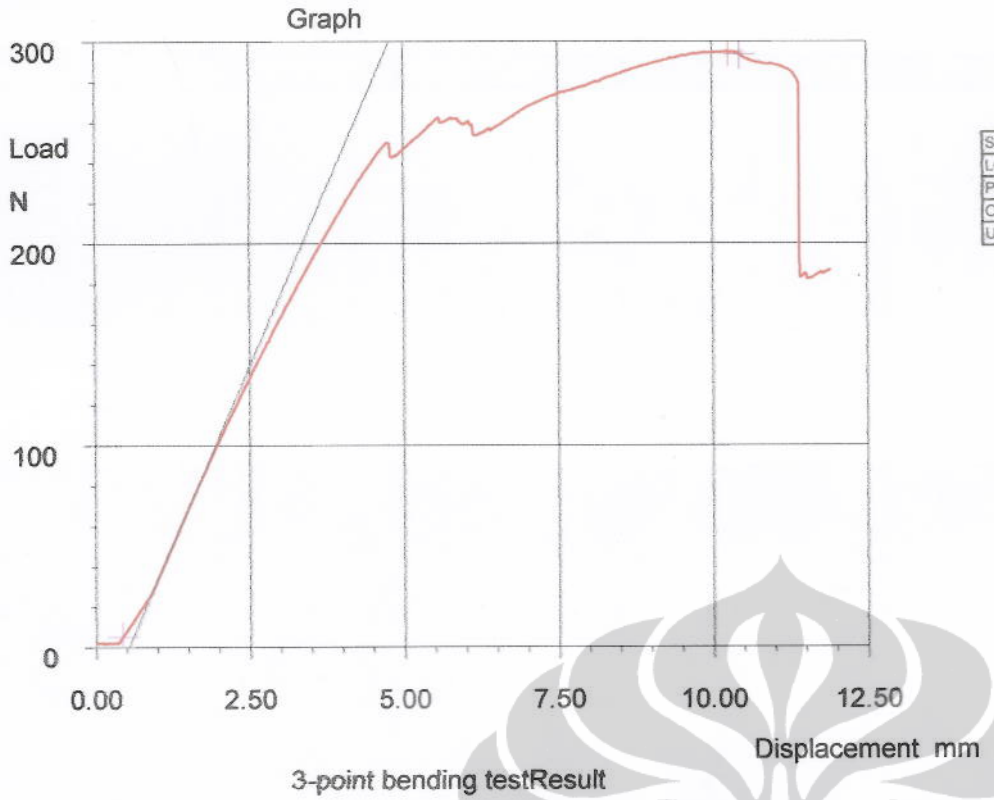
sample No.	Color
1	
Average SS	

3-point bending testResult

Machine name	UCTSeries			Test type	3-point bending		
Load full scale	50 kgf			Load cell rating	5000 kgf		
Load range	1 %RO			Strain meter 1 rating	10 mm		
Strain meter 1 range	Not used			Test speed	3.0 mm/min		
Chart speed OFF				Machine rigidity	0 mm/kgf		
Point data(Load)	0	0	0	Point data(Disp)	0	0	0
N	0	0	0	mm	0	0	0
Elastic modulus anal.	Interval	1	10	Initial sample length	Edge spar	93 mm	
Load	Pitch	2 N		Origin of elongation	Init. load	0.1 N	
Elong adjust	No			Break point measurem	1 N		
Save SS curve	Yes						

Test date	2009/11/02	Temperature	23 C
Humidity	50 %RH	Sample name	Komposit
Lot No.	60A40B 3L	Preparation	tested as received
Operator	Indri	User	research institution
Comment 1	3 point, proc. A - ASTM D790	Comment 2	cond. 23, 50%, > 40 hrs

TestID=1389	Width	Height	Maximum poin Load	Maximum poin Displacement	Break point Load	Break point Displacement	Elastic modu
Test No	mm	mm	N	mm	N	mm	MPa
1	32.000	5.8320	363.46	12.383	363.46	12.390	1710.8
Average	32.000	5.8320	363.46	12.383	363.46	12.390	1710.8
Max.	32.000	5.8320	363.46	12.383	363.46	12.390	1710.8
Min.	32.000	5.8320	363.46	12.383	363.46	12.390	1710.8
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	*******	*******	*******	*******	*******	*******	*******
Coefficient of variation	*******	*******	*******	*******	*******	*******	*******



Sample name	Komposit
Lot No.	60A40B 6L
Preparation	tested as received
Operator	Indri
User	Mahasiswa

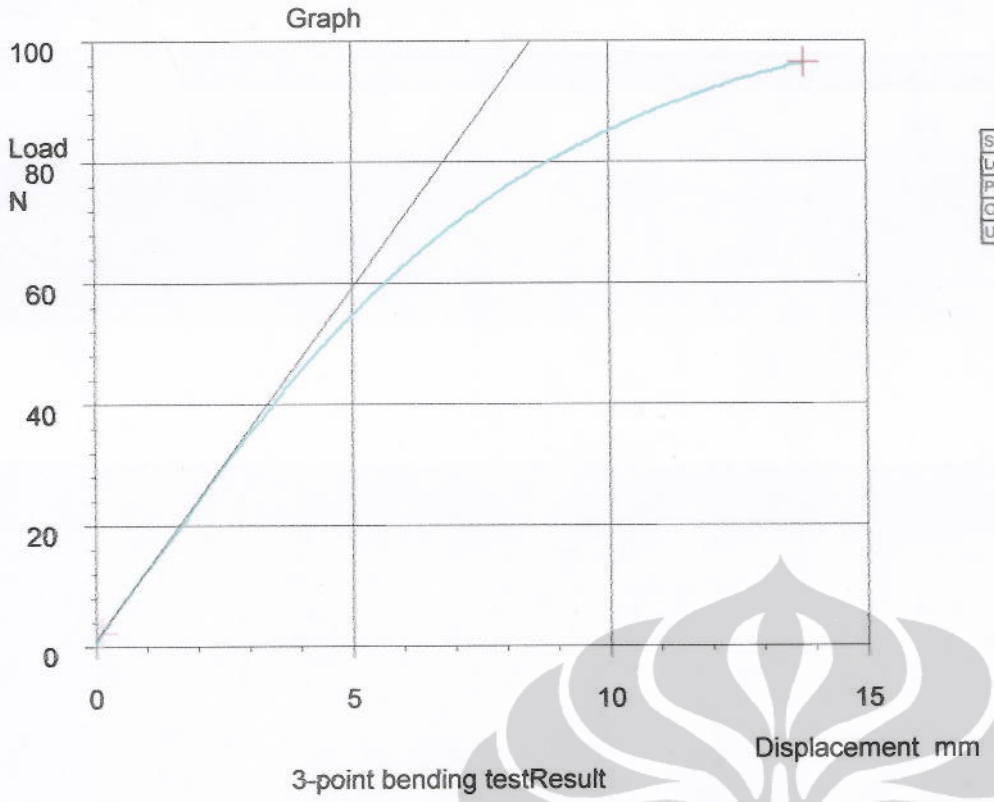
sample No.	Color
1	
Average SS	

3-point bending testResult

Machine name	UCTSeries			Test type	3-point bending			
Load full scale	50 kgf			Load cell rating	5000 kgf			
Load range	1 %RO			Strain meter 1 rating	10 mm			
Strain meter 1 range	Not used			Test speed	3.0 mm/min			
Chart speed OFF				Machine rigidity	0 mm/kgf			
Point data(Load)	0	0	0	Point data(Disp)	0	0	0	
N	0	0	0	mm	0	0	0	
Elastic modulus anal.	Interval	20	100	Initial sample length	Edge spar	99 mm		
Load	Pitch	10 N		Origin of elongation	Init. load	0.1 N		
Elong adjust	No			Break point measurem	1 N			
Save SS curve	Yes							

Test date	2009/11/02	Temperature	23 C
Humidity	50 %RH	Sample name	Komposit
Lot No.	60A40B 6L	Preparation	tested as received
Operator	Indri	User	Mahasiswa
Comment 1	3 point, proc. A - ASTM D790	Comment 2	cond. 23, 50%, > 40 hrs

TestID=1390 Test No	Width mm	Height mm	Maximum poin Load N	Maximum poin Displacement mm	Break point Load N	Break point Displacement mm	Elastic modu MPa
1	28.000	6.1870	294.86	9.8333	293.47	10.013	2586.6
Average	28.000	6.1870	294.86	9.8333	293.47	10.013	2586.6
Max.	28.000	6.1870	294.86	9.8333	293.47	10.013	2586.6
Min.	28.000	6.1870	294.86	9.8333	293.47	10.013	2586.6
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	*******	*******	*******	*******	*******	*******	*******
Coefficient of variation	*******	*******	*******	*******	*******	*******	*******



Sample name	Komposit
Lot No.	80A20B
Preparation	tested as received
Operator	Indri
User	Mahasiswa

sample No.	Color
1	
Average SS	

3-point bending testResult

Machine name	UCTSeries			Test type	3-point bending			
Load full scale	50 kgf			Load cell rating	5000 kgf			
Load range	1 %RO			Strain meter 1 rating	10 mm			
Strain meter 1 range	Not used			Test speed	3.0 mm/min			
Chart speed OFF				Machine rigidity	0 mm/kgf			
Point data(Load)	0	0	0	Point data(Disp)	0	0	0	
N	0	0	0	mm	0	0	0	
Elastic modulus anal.	Interval	1	10	Initial sample length	Edge spa	103 mm		
Load	Pitch	2 N		Origin of elongation	Init. load	0.1 N		
Elong adjust	No			Break point measurem	1 N			
Save SS curve	Yes							

Test date	2009/11/03	Temperature	23 C
Humidity	50 %RH	Sample name	Komposit
Lot No.	80A20B	Preparation	tested as received
Operator	Indri	User	Mahasiswa
Comment 1	3 point, proc. A - ASTM D790	Comment 2	cond. 23, 50%, > 40 hrs

TestID=1394	Width	Height	Maximum poin	Maximum poin	Break point	Break point	Elastic modu
			Load	Displacement	Load	Displacement	
Test No	mm	mm	N	mm	N	mm	MPa
1	32.500	6.4260	96.400	13.667	96.276	13.687	368.91
Average	32.500	6.4260	96.400	13.667	96.276	13.687	368.91
Max.	32.500	6.4260	96.400	13.667	96.276	13.687	368.91
Min.	32.500	6.4260	96.400	13.667	96.276	13.687	368.91
Range	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Standard Deviation(n-1)	********	********	********	********	********	********	********
Coefficient of variation	********	********	********	********	********	********	********

BPPT
BADAN PENGKAJIAN DAN PENERAPAN TEKNOLOGI

STP
SENTRA TEKNOLOGI POLIMER

Serpong, 11 Desember 2009

No. : 0458/BPTP/BPPT/XII/09
Perihal : Laporan Hasil Uji
Lampiran : -

Kepada Yth,
Universitas Indonesia
Kampus Baru UI, Depok 16424
U/p. Bpk. Rimbun Turnip

Dengan hormat,

Terima kasih atas kepercayaan yang Bapak berikan kepada kami. Berikut ini kami kirimkan Laporan Pengujian untuk sampel tipe 60A & 80A dengan no. laporan R109537.

Sebagai informasi bahwa Laporan Pengujian yang kami keluarkan merupakan sertifikat uji untuk sampel uji dan bukan untuk produk. Semua hasil pengujian yang dikeluarkan oleh STP bersifat rahasia dan hanya dikeluarkan untuk pelanggan yang bersangkutan.

Harapan kami, kerjasama ini tidak berhenti sampai di sini saja namun dapat terjalin di kesempatan yang akan datang. Saran ataupun masukan lain dari Bapak juga sangat kami harapkan sehingga STP bisa menjadi bagian dari kemajuan perusahaan/instansi Bapak.

Terlampir kuesioner kepuasan pelanggan yang kami harapkan dapat kami terima kembali setelah di isi sebagai bahan evaluasi terhadap pelayanan STP.

Atas perhatian dan kerjasamanya diucapkan terima kasih.

SENTRA TEKNOLOGI POLIMER
Manajer Pemasaran,

Erny Soekotjo

Balai Pengkajian Teknologi Polimer
Gedung 460, Kawasan PUSPIPTEK
Serpong, Tangerang 15314 - Indonesia.
Tel : 62-21-75872032, 7563360
Fax : 62-21-7560057 email : stpoffice@sentrapolimer.com

KAN Komite Akreditasi Nasional Laboratorium Penguji LP-106-IDN

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Laporan Pengujian

No.Lap. : R109537 **No. Order : J1090396** **Tanggal : 20-11-2009**

Pelanggan	:	**Universitas Indonesia** Kampus Baru UI Depok 16424
Kontak Person	:	Bpk. Rimbun Turnip
Jenis Material	:	• Sampel 60A40B • Sampel 60A40B3L • Sampel 60A40B6L • Sampel 80A20B • Sampel 80A20B3L • Sampel 80A20B6L
Penerimaan Sampel	:	30 Oktober 2009
Tanggal Pengujian	:	6 – 17 November 2009
Tipe Pengujian	:	Impact Charpy (ISO 179 : 97)

KONDISI PENGUJIAN

Impact Charpy

Sampel uji berbentuk spesimen dari pelanggan dikondisikan pada temperatur 23°C dan kelembaban relatif 50 % selama lebih dari 40 jam sebelum dilakukan pengujian. Pengujian dilakukan pada spesimen tanpa *notch* (*un-notch*) dengan posisi *edgewise* dengan kecepatan *impact* 2,9 m/s. Jumlah spesimen yang diuji adalah sebanyak 3 buah. Kondisi ruang pada saat pengujian dilakukan pada temperatur 24,1°C dan kelembaban relatif 56,0 %.

Kawasan PUSPIPTEK - Gedung 460 , Serpong Tangerang 15314 - Indonesia
Tel : 62-21-758.720.32, 756.0562 ext. 3418. Fax : 62-21-756.0057; e-mail : stpoffice@sentrapolimer.com

HASIL PENGUJIAN

Hasil pengujian *impact charpy* dapat dilihat pada tabel 1 di bawah ini:

Tabel 1: Hasil Uji *Impact Charpy*

No.	Kode Sampel	*Impact Charpy* [kJ/m^2]	Tipe Kerusakan*)
1.	60A40B	3,76 ± 0,86	C
2.	60A40B3L	23,00 ± 5,45	C
3.	60A40B6L	13,22 ± 2,49	NB
4.	80A20B	2,20 ± 0,56	C
5.	80A20B3L	9,46 ± 1,05**)	C
6.	80A20B6L	6,46 ± 3,33	NB

*) Tipe kerusakan : C = *complete break*
NB = *non break*

**) Merupakan nilai dari 2 kali pengukuran karena dari 3 spesimen yang diuji terdapat 1 buah spesimen yang memiliki nilai yang sangat jauh dibandingkan spesimen yang lain yaitu 40,14 kJ/m^2

Pengujian Fisik & Mekanik
Manajer Teknis

STP SENTRA TEKNOLOGI POLIMER

Bambang Afrinaldi

ORIGINAL

Kawasan PUSPIPTEK - Gedung 460, Serpong-Tangerang 15314 - Indonesia
Tel : 62-21-758.720.32, 756.0562 ext. 3418. Fax : 62-21-756.0057; e-mail : stpoffice@sentrapolimer.com

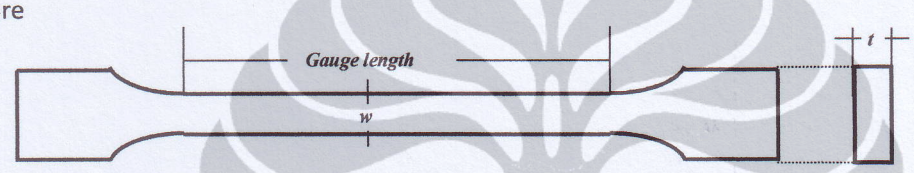
BALIKPAPAN TRAINING CENTRE (UPTD-BLKI)

Jln. Sepinggan Baru No. 31, Telp./Fax. 0542-762681, Balikpapan, Kaltim
GOTECH Testing Machine Inc.-U60-Ver. 20040511-N10

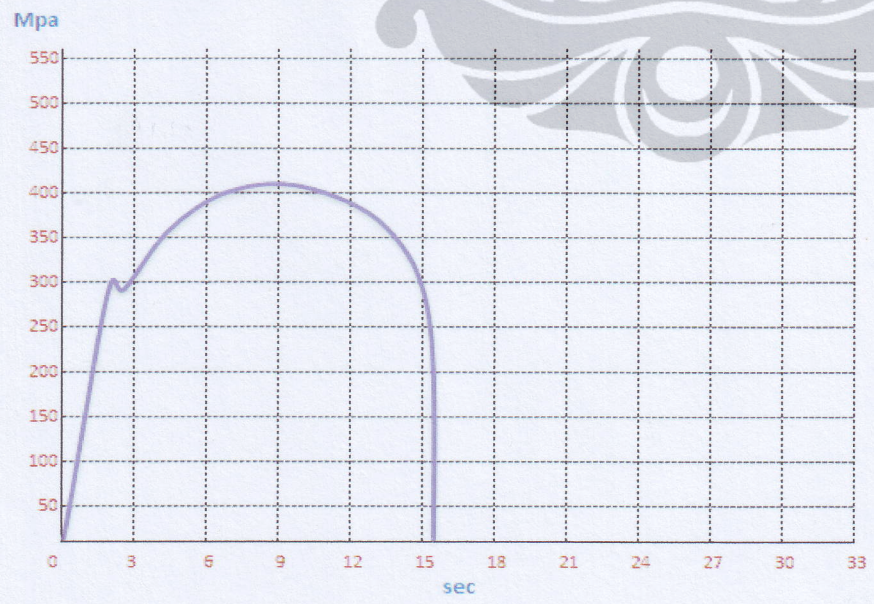
TENSILE TEST REPORT

Report No.	:	UPTD-09/RT-001	*Standard*	:	ASTM E8-00
Customer	:	Rimbun Turnip	*Material*	:	Steel API 5L Gr.B
Date of test	:	October 25th, 2009	*Testing machine*	:	GOTECH Testing Machine Capacity 30 tonnes

Sample figure



Material Code	Cross Section (mm)	Area (mm^2)	Gauge Length (mm)	Yield Strength	Tensile Strength	Elongation (%)
L1	w = 12.70 t = 7.80	99.06	50.00	**301.27** Mpa **30.73** Kgf/mm2	**414.61** Mpa **42.29** Kgf/mm2	28.00%



Test performed by,

Rimbun Turnip

Supervised & agreed by,
Lead of Material Testing Laboratory UPTD-BLKI

PEMERINTAH PROPINSI KALIMANTAN TIMUR
DISNAKERTRANS
UPTD BLKI
BALIKPAPAN

Suhartono, ST, MMPd.

1 Mpa = 0.102 kgf/mm2

BALIKPAPAN TRAINING CENTRE (UPTD-BLKI)

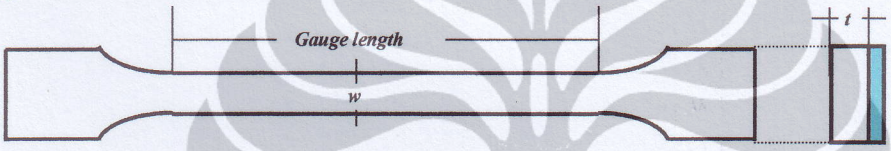
Jln. Sepinggan Baru No. 31, Telp./Fax. 0542-762681, Balikpapan, Kaltim

GOTECH Testing Machine Inc.-U60-Ver. 20040511-N10

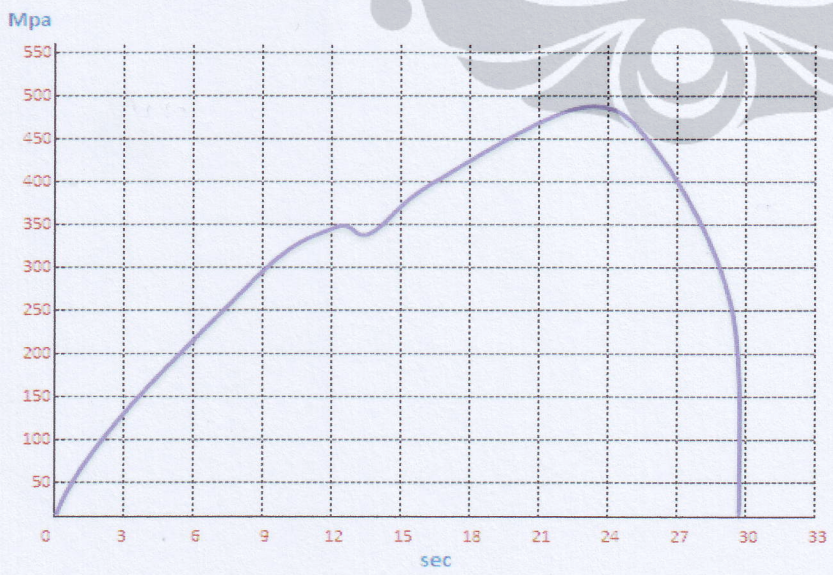
TENSILE TEST REPORT

Report No.	:	UPTD-09/RT-002	*Standard*	:	ASTM E8-00
Customer	:	Rimbun Turnip	*Material*	:	Steel API 5L Gr.B + Epoxy + Fiber
Date of test	:	October 25th, 2009	*Testing machine*	:	GOTECH Testing Machine Capacity 30 tonnes

Sample figure



Material Code	Cross Section (mm)	Area (mm^2)	Gauge Length (mm)	Yield Strength	Tensile Strength	Elongation (%)
L180A20B3L	w = 12.70 t = 7.80	99.06	50.00	**348.94** Mpa **35.59** Kgf/mm2	**486.46** Mpa **49.62** Kgf/mm2	33.33%



Test performed by,

Rimbun Turnip

Supervised & agreed by,
Lead of Material Testing Laboratory UPTD-BLKI

PEMERINTAH PROPINSI KALIMANTAN TIMUR
DISNAKERTRANS
UPTD BLKI
BALIKPAPAN

Suhartono, ST, MMPd.

1 Mpa = 0.102 kgf/mm2

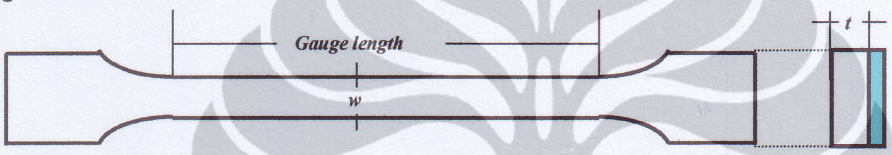
BALIKPAPAN TRAINING CENTRE (UPTD-BLKI)

Jln. Sepinggan Baru No. 31, Telp./Fax. 0542-762681, Balikpapan, Kaltim
GOTECH Testing Machine Inc.-U60-Ver. 20040511-N10

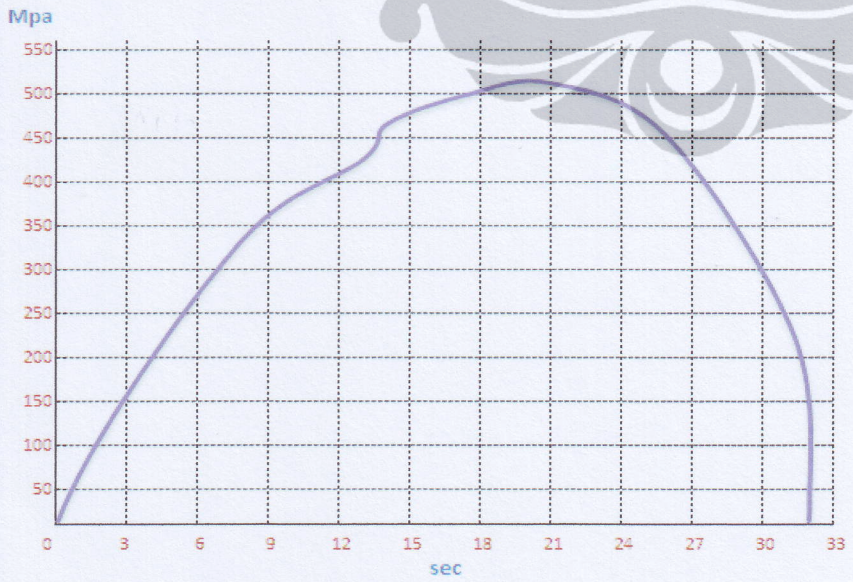
TENSILE TEST REPORT

Report No.	:	UPTD-09/RT-003	*Standard*	:	ASTM E8-00
Customer	:	Rimbun Turnip	*Material*	:	Steel API 5L Gr.B + Epoxy + Fiber
Date of test	:	October 25th, 2009	*Testing machine*	:	GOTECH Testing Machine Capacity 30 tonnes

Sample figure



Material Code	Cross Section (mm)	Area (mm^2)	Gauge Length (mm)	Yield Strength	Tensile Strength	Elongation (%)
L180A20B6L	w = 12.70 t = 7.80	99.06	50.00	**465.95** Mpa **47.53** Kgf/mm2	**526.97** Mpa **53.75** Kgf/mm2	35.56%



Test performed by,

Rimbun Turnip

Supervised & agreed by,
Lead of Material Testing Laboratory UPTD-BLKI

PEMERINTAH PROPINSI KALIMANTAN TIMUR
DISNAKERTRANS
UPTD BLKI
BALIKPAPAN

Suhartono, ST, MMPd.

1 Mpa = 0.102 kgf/mm2

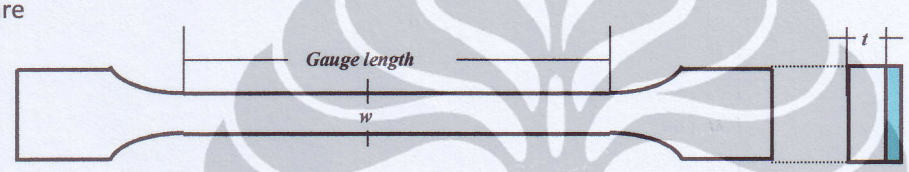
BALIKPAPAN TRAINING CENTRE (UPTD-BLKI)

Jln. Sepinggan Baru No. 31, Telp./Fax. 0542-762681, Balikpapan, Kaltim
GOTECH Testing Machine Inc.-U60-Ver. 20040511-N10

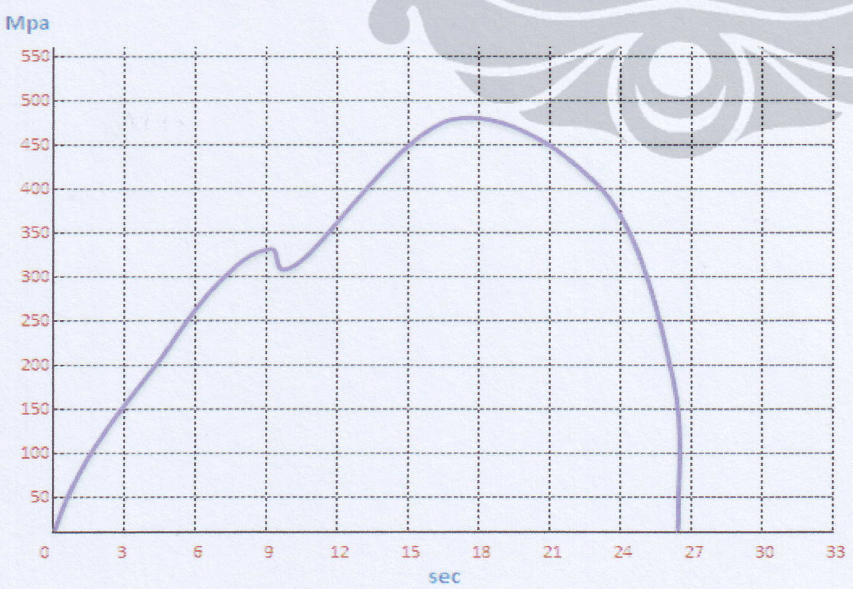
TENSILE TEST REPORT

Report No.	:	UPTD-09/RT-004	*Standard*	:	ASTM E8-00
Customer	:	Rimbun Turnip	*Material*	:	Steel API 5L Gr.B + Epoxy + Fiber
Date of test	:	October 25th, 2009	*Testing machine*	:	GOTECH Testing Machine Capacity 30 tonnes

Sample figure



Material Code	Cross Section (mm)	Area (mm^2)	Gauge Length (mm)	Yield Strength	Tensile Strength	Elongation (%)
L160A40B3L	w = 12.70 t = 7.80	99.06	50.00	**338.51** Mpa **34.53** Kgf/mm2	**470.50** Mpa **47.99** Kgf/mm2	28.89%



Test performed by,

Rimbun Turnip

Supervised & agreed by,
Lead of Material Testing
Laboratory UPTD-BLKI

PEMERINTAH PROPINSI KALIMANTAN TIMUR
DISNAKERTRANS
UPTD BLKI
BALIKPAPAN

Suhartono, ST, MMPd.

1 Mpa = 0.102 kgf/mm2

BALIKPAPAN TRAINING CENTRE (UPTD-BLKI)

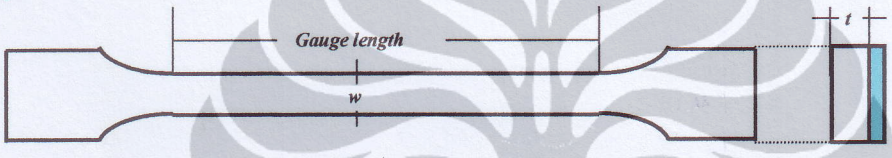
Jln. Sepinggan Baru No. 31, Telp./Fax. 0542-762681, Balikpapan, Kaltim

GOTECH Testing Machine Inc.-U60-Ver. 20040511-N10

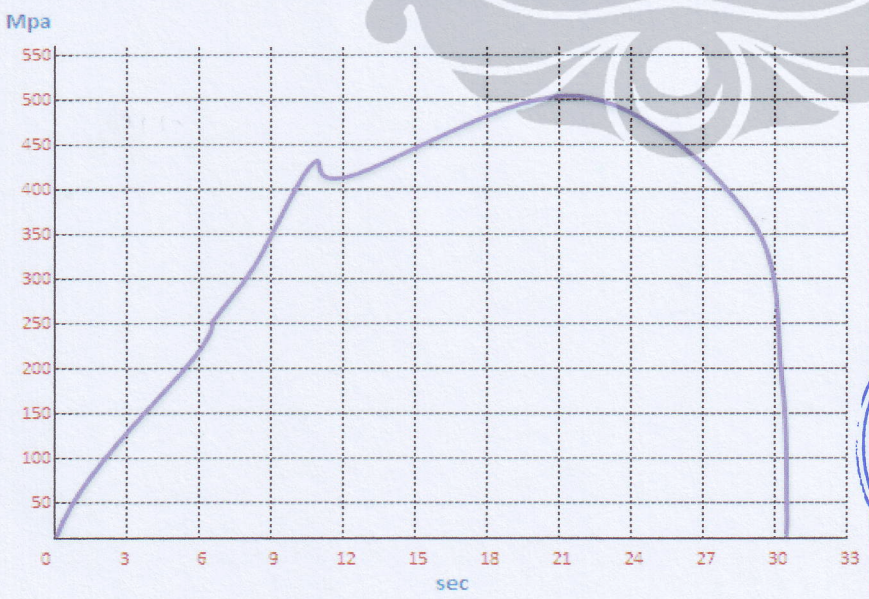
TENSILE TEST REPORT

Report No.	:	UPTD-09/RT-005	*Standard*	:	ASTM E8-00
Customer	:	Rimbun Turnip	*Material*	:	Steel API 5L Gr.B + Epoxy + Fiber
Date of test	:	October 25th, 2009	*Testing machine*	:	GOTECH Testing Machine Capacity 30 tonnes

Sample figure



Material Code	Cross Section (mm)	Area (mm^2)	Gauge Length (mm)	Yield Strength	Tensile Strength	Elongation (%)
L160A40B6L	w = 12.70 t = 7.80	99.06	50.00	**433.17** Mpa **44.18** Kgf/mm2	**502.46** Mpa **51.25** Kgf/mm2	37.78%



Test performed by,

Rimbun Turnip

Supervised & agreed by,
Lead of Material Testing Laboratory UPTD-BLKI

PEMERINTAH PROPINSI KALIMANTAN TIMUR
DISNAKERTRANS
UPTD BLKI
BALIKPAPAN

Suhartono, ST, MMPd.

1 Mpa = 0.102 kgf/mm2

BALIKPAPAN TRAINING CENTRE (UPTD-BLKI)

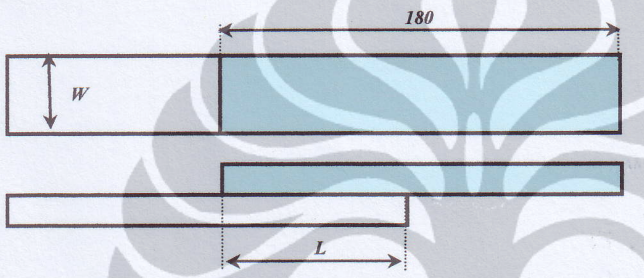
Jln. Sepinggan Baru No. 31, Telp./Fax. 0542-762681, Balikpapan, Kaltim

GOTECH Testing Machine Inc.-U60-Ver. 20040511-N10

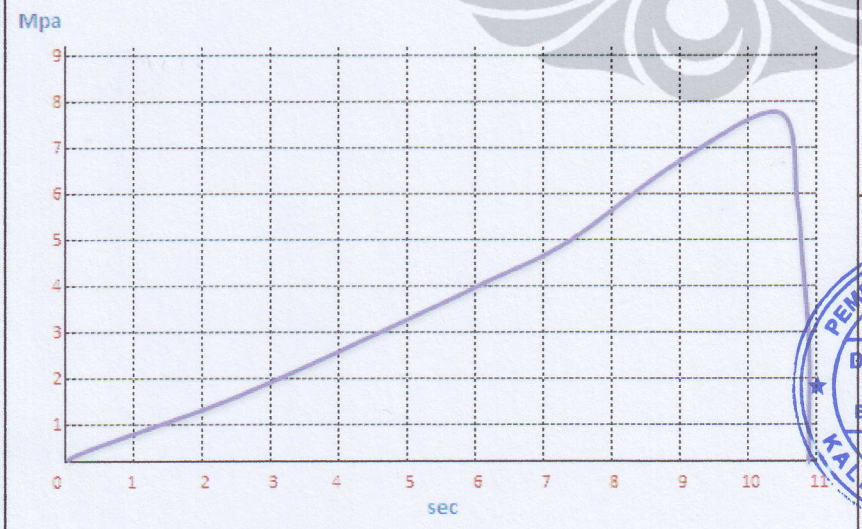
BONDING TEST REPORT

Report No.	:	UPTD-09/RT-006	*Standard*	:	ASTM E8-00
Customer	:	Rimbun Turnip	*Material*	:	Epoxy VS Steel API 5L Gr.B
Date of test	:	October 25th, 2009	*Testing machine*	:	GOTECH Testing Machine Capacity 30 tonnes

Sample figure



Material Code	Cross Section (mm)	Area (mm^2)	Gauge Length (mm)	Yield Strength	Tensile Strength	Elongation (%)
EpVSL1	W = 20.00 L = 80.00	1,600.00	180.00	**7.88** Mpa **0.80** Kgf/mm2	**7.88** Mpa **0.80** Kgf/mm2	0.00%



Test performed by,

Rimbun Turnip

Supervised & agreed by,
Lead of Material Testing Laboratory UPTD-BLKI

PEMERINTAH PROPINSI KALIMANTAN TIMUR
DISNAKERTRANS UPTD BLKI BALIKPAPAN

Suhartono, ST, MMPd.

1 Mpa = 0.102 kgf/mm2

BALIKPAPAN TRAINING CENTRE (UPTD-BLKI)

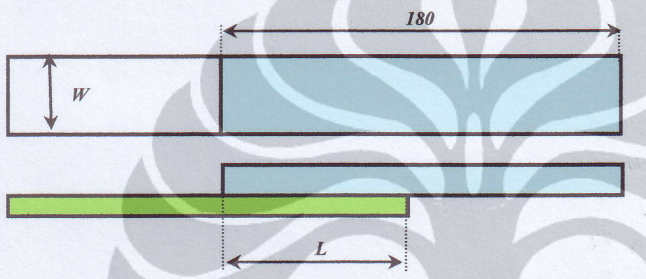
Jln. Sepinggan Baru No. 31, Telp./Fax. 0542-762681, Balikpapan, Kaltim

GOTECH Testing Machine Inc.-U60-Ver. 20040511-N10

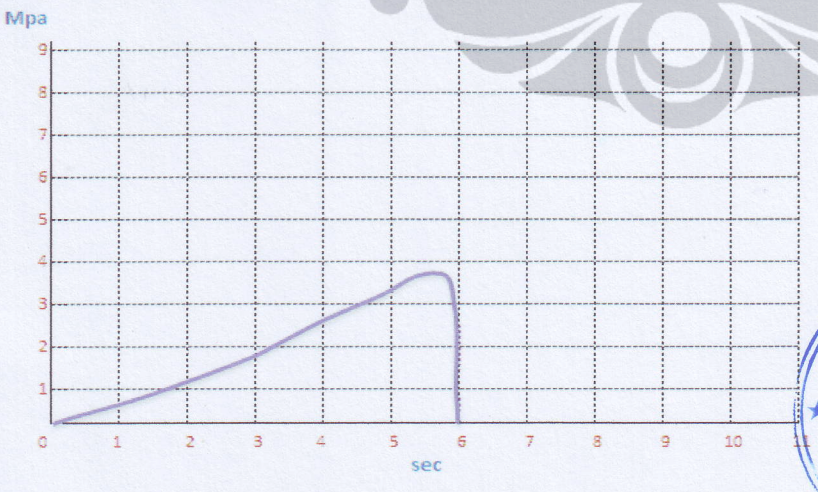
BONDING TEST REPORT

Report No.	:	UPTD-09/RT-007	*Standard*	:	ASTM E8-00
Customer	:	Rimbun Turnip	*Material*	:	Epoxy VS Fiber
Date of test	:	October 25th, 2009	*Testing machine*	:	GOTECH Testing Machine Capacity 30 tonnes

Sample figure



Material Code	Cross Section (mm)	Area (mm^2)	Gauge Length (mm)	Yield Strength	Tensile Strength	Elongation (%)
EpVSFb	W = 20.00 L = 80.00	1,600.00	180.00	**3.81** Mpa **0.39** Kgf/mm2	**3.81** Mpa **0.39** Kgf/mm2	0.00%



Note :
Bonding between Epoxy and Fiber was not break
Break happened on Epoxy layer

Test performed by,

Rimbun Turnip

Supervised & agreed by,
Lead of Material Testing Laboratory UPTD-BLKI

PEMERINTAH PROPINSI KALIMANTAN TIMUR
DISNAKERTRANS
UPTD BLKI
BALIKPAPAN

Suhartono, ST, MMPd.

1 Mpa = 0.102 kgf/mm2

UNIVERSITAS INDONESIA
FAKULTAS TEKNIK

KAMPUS BARU U.I. DEPOK 16424
TELEPON : 7863503, 7863504, 7863505, 7270011, 78888430,
7863311, 78887861, 78888076, FAX. 7270050

Nomor : ///7 /PT02.FT04/N/2009
Lampiran : ---
Perihal : Permohonan Pengujian

Kepada : Yth. Kepala Laboratorium Uji Polimer
Pusat Penelitian Fisika, LIPI
Jl. Cisitu 21/154D
Bandung

Dalam rangka penelitian tesis mahasiswa Program Pascasarjana Departemen Teknik Metalurgi dan Material, Fakultas Teknik Universitas Indonesia berikut ini :

Nama Mahasiswa : Rimbun Turnip
N.P.M : 0806422965

Mahasiswa kami bermaksud untuk melakukan pengujian berupa Tengle Strength dan Flexural Test di Laboratorium Uji Polimer, Pusat Penelitian Fisika LIPI.

Demikian kami sampaikan, atas perhatian dan bantuannya kami ucapkan terima kasih.

Depok, 21 Oktober 2009

Dept. Teknik Metalurgi & Material
Fakultas Teknik – UI
Sekretaris,

Dr. Ir. Winarto, M.Sc
NIP. 19640724 198811 1 001

STP
SENTRA TEKNOLOGI POLIMER

KONFIRMASI ORDER

369 , 1 DES '09

Tanggal : 02/11/09
Nomor : C1090396
Perihal : Testing
No. Order : J1090396
Lampiran : -

Yth. : Universitas Indonesia
U.p. : Bapak Rimbun Turnip
Tel : 021 08125361729
Fax : 021 0

Dengan hormat,

Berdasarkan permohonan Bapak untuk dilakukannya pengujian dan mengacu pada penawaran No.Q1090745, bersama ini kami sampaikan konfirmasi biaya, sebesar : Rp. 1.728.702 (Satu juta tujuh ratus dua puluh delapan ribu tujuh ratus dua rupiah) dengan perincian berikut:

No.	Uraian Jasa	Metode	Standard	Biaya/unit	Kuantitas	Jumlah
1.	Impact charpy	-	-	Rp324,412	6 sample	Rp1,946,472
	Preparasi sample	Milling	-	Rp155,783	6 sample	Rp934,698
					TOTAL BIAYA	Rp.2,881,170
					DISCOUNT MAHASISWA 40%	Rp.1,152,468
					TOTAL BIAYA SETELAH DISCOUNT	Rp1,728,702

Selain itu kami sampaikan hal-hal sebagai berikut :

1. Pembayaran mohon ditransfer ke :
   Bank Mandiri Cabang TNG Serpong (eks. BDN)
   a/n Balai Pengkajian Teknologi Polimer
   No. Rekening 101-0002145801
2. Bukti transfer pembayaran mohon di fax ke STP 021-7560057
3. Harga tidak termasuk PPN 10%

Demikian kami sampaikan dan bilamana masih ada yang belum jelas, kiranya dapat menghubungi kami.

Atas perhatian dan kerjasamanya diucapkan terima kasih.

SENTRA TEKNOLOGI POLIMER
Manajer Pemasaran

Erny Soekotjo

Balai Pengkajian Teknologi Polimer
Gedung 460, Kawasan PUSPIPTEK
Serpong, Tangerang 15314 - Indonesia
Tel : 62-21-75872032, 7563360, 7560562 ext. 3416
Fax : 62-21-7560057, e-mail : stpoffice@sentrapolimer.com

KAN Komite Akreditasi Nasional Laboratorium Penguji LP-106-IDN

TÜVRheinland® CERT Certified Management System according to ISO 9001:2000

UNIVERSITAS INDONESIA
FAKULTAS TEKNIK

KAMPUS BARU U.I. DEPOK 16424
Dekanat : (021) 7863504, 7863505, Fax. 7270050
PPSTD : (021) 7270011, 7863311, Fax. 7863503
Pusat Administrasi dan Humas : (021) 78888430, 78887861, 78849046, Fax. PAF 7863507, Fax. Humas 78888076

Nomor : 118 /PT02.FT04/N/2009
Lampiran : ---
Perihal : Permohonan Pengujian

Kepada : Yth. Kepala Sentra Polimer
Badan Pengkajian Teknologi Polimer - BPPT
Gedung 460, Kawasan Puspiptek
Cisauk, Tangerang

Dalam rangka penelitian tesis mahasiswa Program Pascasarjana Departemen Teknik Metalurgi dan Material, Fakultas Teknik Universitas Indonesia berikut ini :

Nama Mahasiswa : Rimbun Turnip
N.P.M : 0806422965

Mahasiswa kami bermaksud untuk melakukan pengujian berupa Impact di Sentra Polimer, Badan Pengkajian Teknologi Polimer – BPPT.

Demikian kami sampaikan, atas perhatian dan bantuannya kami ucapkan terima kasih.

Depok, 21 Oktober 2009

Dept. Teknik Metalurgi & Material
Fakultas Teknik – UI
Sekretaris,

Dr. Ir. Winarto, M.Sc
NIP. 19640724 198811 1 001