

LAMPIRAN



LP 1. Pohon sisal (*agave sisalana*)



LP 2. Proses pemotongan daun sisal sebelum tahap pengeringan



LP 3. Pengupasan serat sisal untuk memisahkan serat dari jaringan daun



LP 4. Penyisiran serat sisak



LP 5. Pengeringan serat sisal



LP 6. Proses pembuatan cetakan



LP 7. Penuangan resin ke cetakan



LP 8. Penyusunan serat ke cetakan



LP 9. Pemotongan spesimen



LP 10. Hasil pembuatan spesimen bending



LP 11. Hasil pembuatan spesimen impak



LP 12. Proses pengujian bending



LP 13. Proses pengujian impak



LP 14. Hasil pengujian bending



LP 15. Hasil pengujian impak



LP 16. Pengamatan spesimen struktur makro

Tabel Jadwal Penelitian

No	Urutan Penelitian	Bulan -ke					
		I	II	III	IV	V	VI
1	Proposal						
2	Persiapan Bahan						
3	Pembuatan Cetakan						
4	Pengambilan Data						
5	Pengelolaan Data						
6	Seminar Hasil						
7	Ujian Tutup						



KEMENTERIAN KETENAGAKERJAAN RI
DIREKTORAT JENDERAL
PEMBINAAN PELATIHAN VOKASI DAN PRODUKTIVITAS
BBPVP Makassar

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Laman : <http://www.naker.go.id>

SURAT KETERANGAN

Nomor : B. 91/ WORKSHOP LAS/ BBPVP - MKS/ VIII/ 2025

yang bertandatangan dibawah ini :

Nama : Haeruddin Hafid, ST.,MT

NIP : 19770201 200912 1 001

yang Ini menerangkan bahwa :

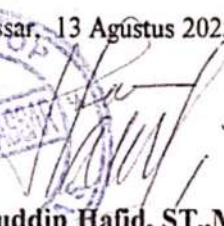
No	Nama Mahasiswa	Judul Tugas Akhir
	Ones Siporus Toding / 220212105	Pengaruh Presentase Serat Sisal Terhadap Kekuatan Tarik dan Struktur Makro Komposit Serat Sisal Bermatriks Polyester
2	Ignasius Rolan / 1224212005	Dampak Panjang Serat Sisal Terhadap Kekuatan Bending dan Ketangguhan Komposit Serat Sisal Bermatriks Polyester
3	Yusdar Menta / 124212006	Pengaruh Panjang Serat Terhadap Kekuatan Tarik dan Struktur Makro Komposit Serat Sisal Bermatriks Polyester
4	Junaedy Tandepadang / 1224212019	Study Pengaruh Orientasi Sudut Serat Sisal Terhadap Kekuatan Tarik dan Struktur Makro Komposit Serat Sisal Bermatriks Polyester

5	Leonard Alvin / 1224212016	Pengaruh Orientasi Sudut Terhadap Kekuatan Bending dan Ketangguhan Komposit Serat Sisal Bermatriks Polyester
6	Desar Susanto / 1224212007	Pengaruh Lama Perendaman Serat Sisal Terhadap Kekuatan Tarik dan Struktur Makro Komposit Serat Sisal Bermatriks Polyester
7	Arclaus Denni Frissi / 220212107	Efektifitas Presentase Serat Sisal Terhadap Kekuatan Bending dan Ketangguhan Komposit Serat Sisal Bermatriks Polyester

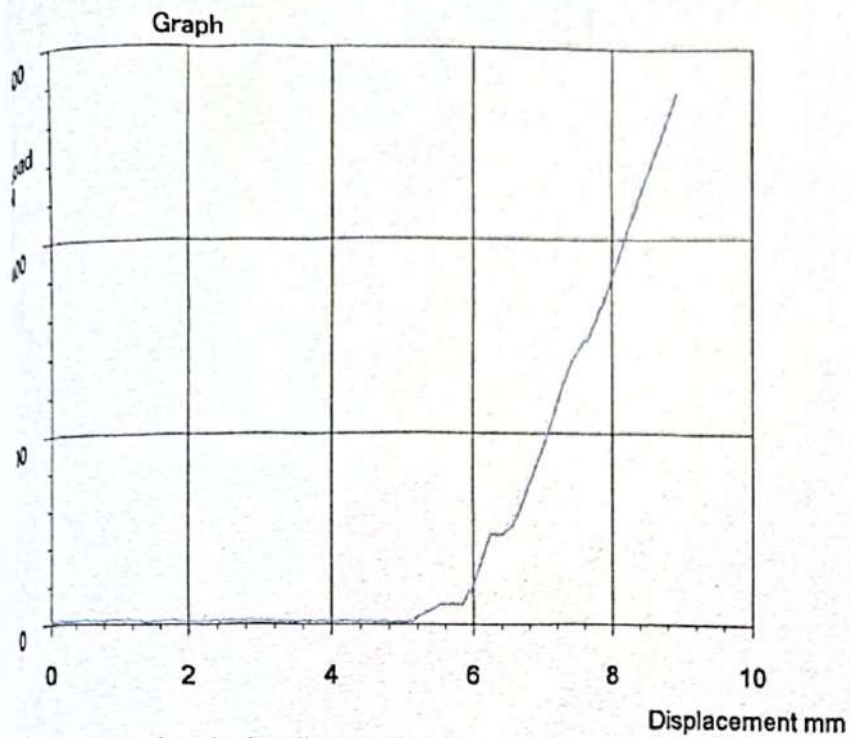
hwa benar telah melaksanakan Pengujian di Workshop Las Balai Besar Pelatihan Vokasi dan Produktivitas Makassar pada tanggal 12-13 Agustus 2025

Demikian surat keterangan ini kami berikan, untuk dipergunakan sebagai mana mestinya.

Makassar, 13 Agustus 2025



Haeruddin Hafid, ST.,MT.
NIP. 19770201 200912 1 001

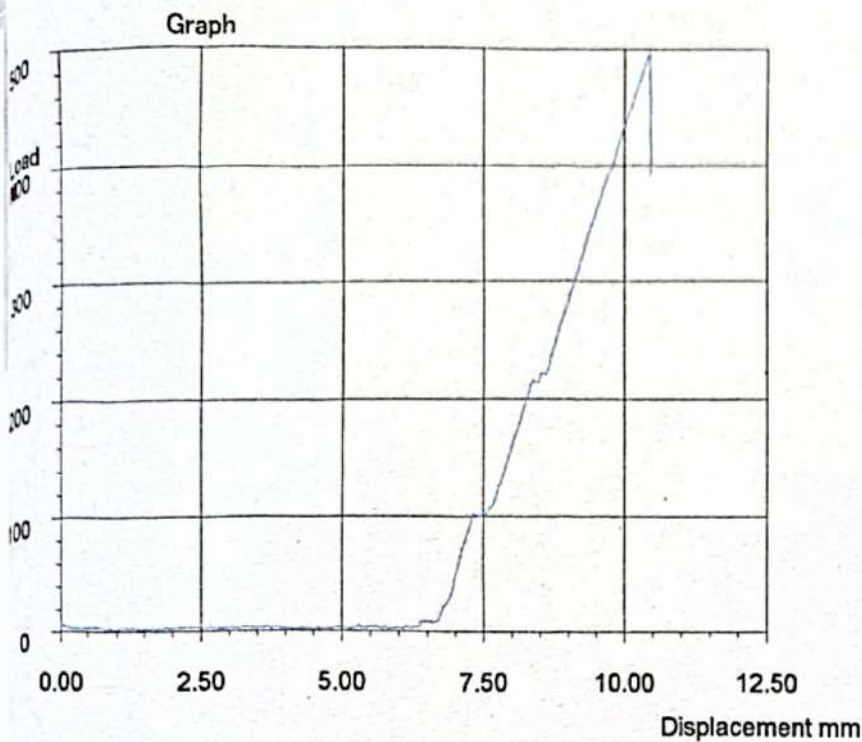


sample No.	Color
1	Blue
Average SS	Black

Machine name				Test type	3-point bending		
Train input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Long adjust	No				Break point measure	0.5 kN	
Ave SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Test No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 2 %, Resin 98 %	Comment 2	A5

TestID=3919	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm ²	Load	Displacement
1	20.000	10.000	200.00	554.81	*****



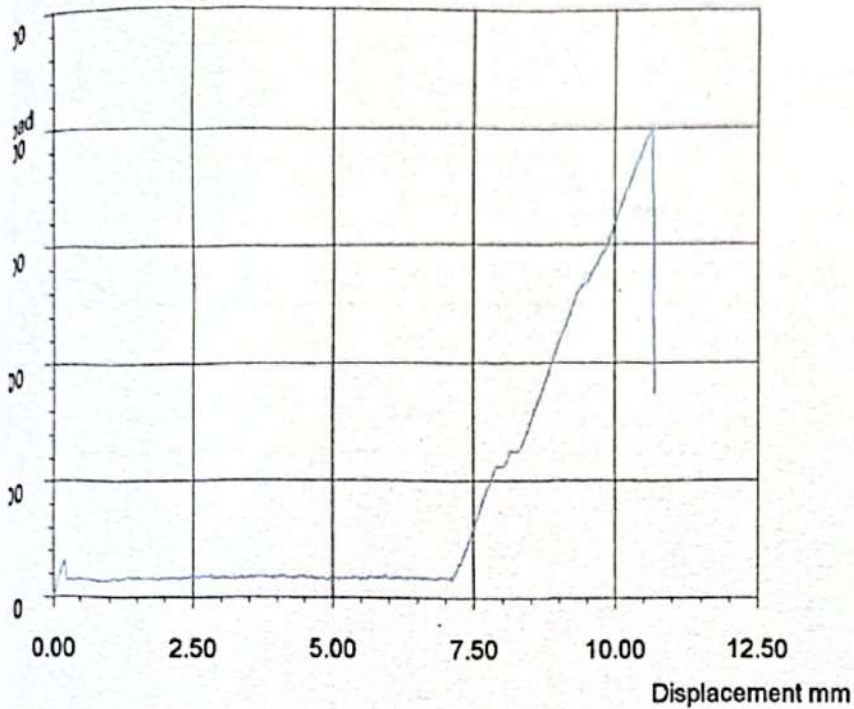
sample No	Color
1	
Average SS	

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 4 %, Resin 96 %	Comment 2	A1

TestID=3920	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	495.64	*****

Graph

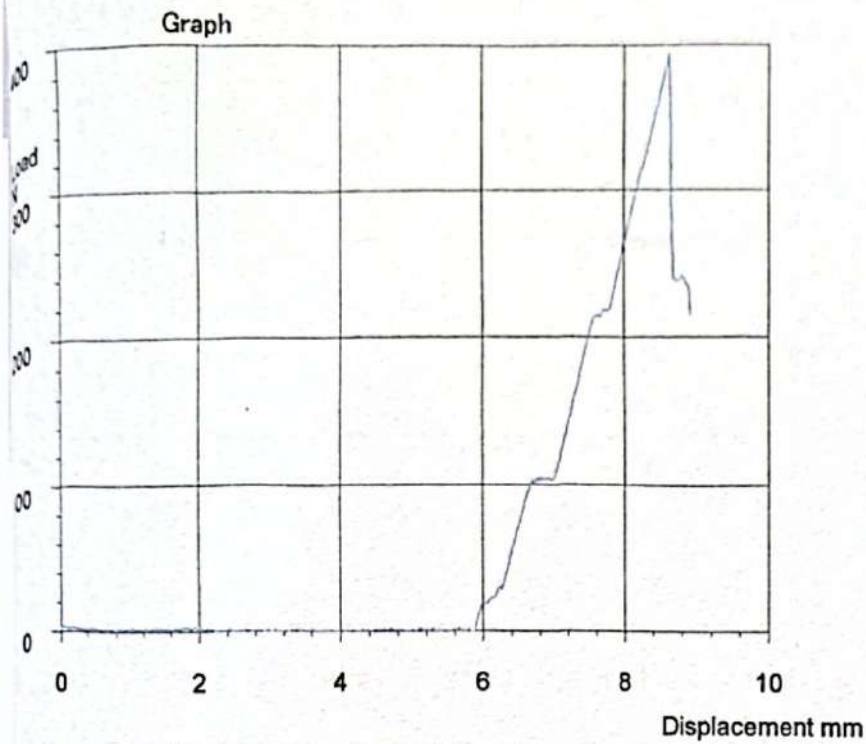


3-point bending testResult

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	mm	0	0	0
Elastic modulus anal.	Interval	1	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 4 %, Resin 96 %	Comment 2	A2

TestID=3921	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	401.03	*****



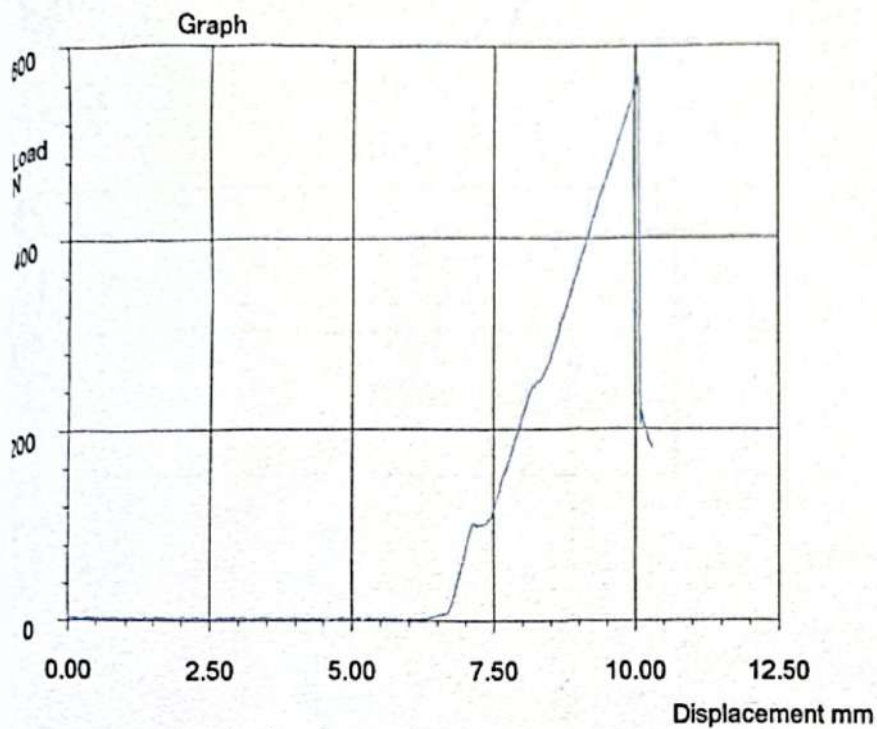
sample No.	Color
1	blue
Average SS	black

3-point bending testResult

Machine name		Test type	3-point bending
Strain input 1	Not used	Test speed	5.0 mm/min
Chart speed	OFF	Machine rigidity	0 mm/kgf
Point data(Load)	0	Point data(Disp)	0
	0		0
Elastic modulus anal.	Interval	Initial sample length	Edge spa
Load	Pitch	Origin of elongation	Init. load
Along adjust	No	Break point measurem	0.5 kN
Save SS curve	Yes		

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 4 %, Resin 96 %	Comment 2	A3

TestID=3922	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	392.89	*****

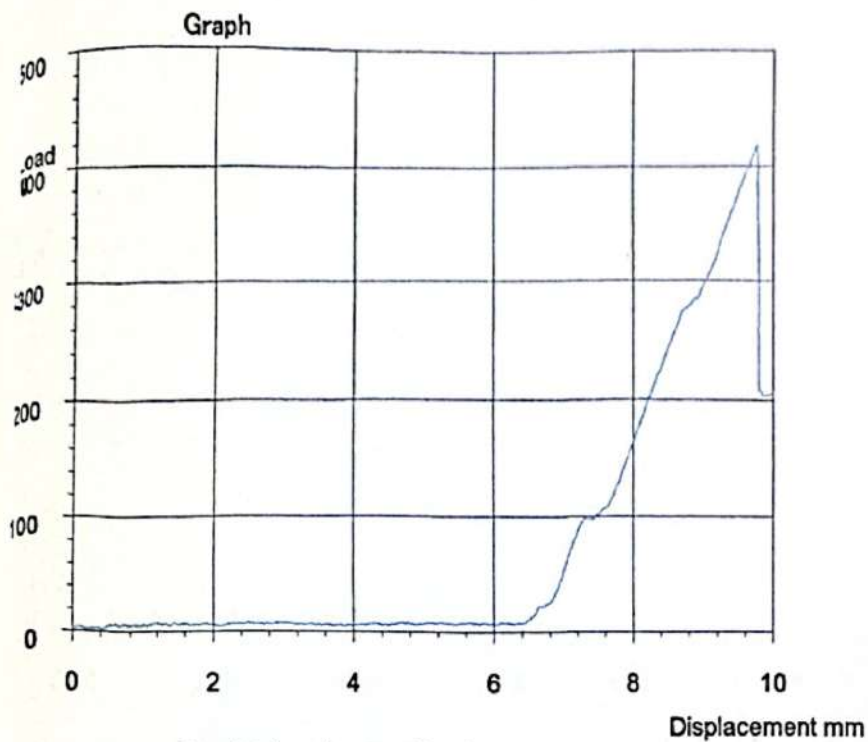


sample No	Color
1	
Average SS	

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	mm	0	0	0
Elastic modulus anal.	Interval	1	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 2 %, Resin 98 %	Comment 2	A3

TestID=3917	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	569.69	*****

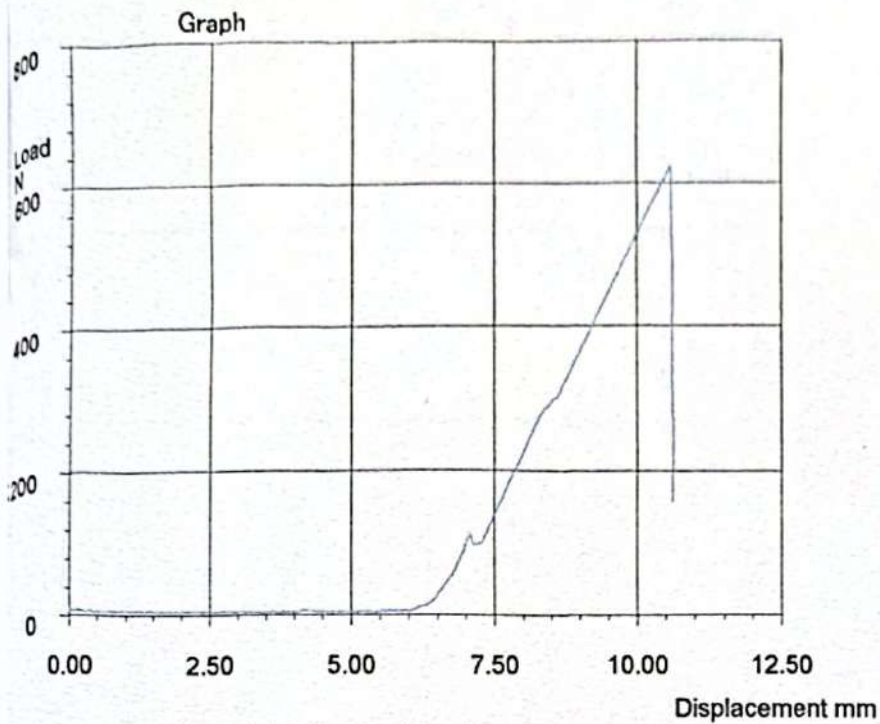


sample No.	Color
1	Blue
Average SS	Black

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 2 %, Resin 98 %	Comment 2	A2

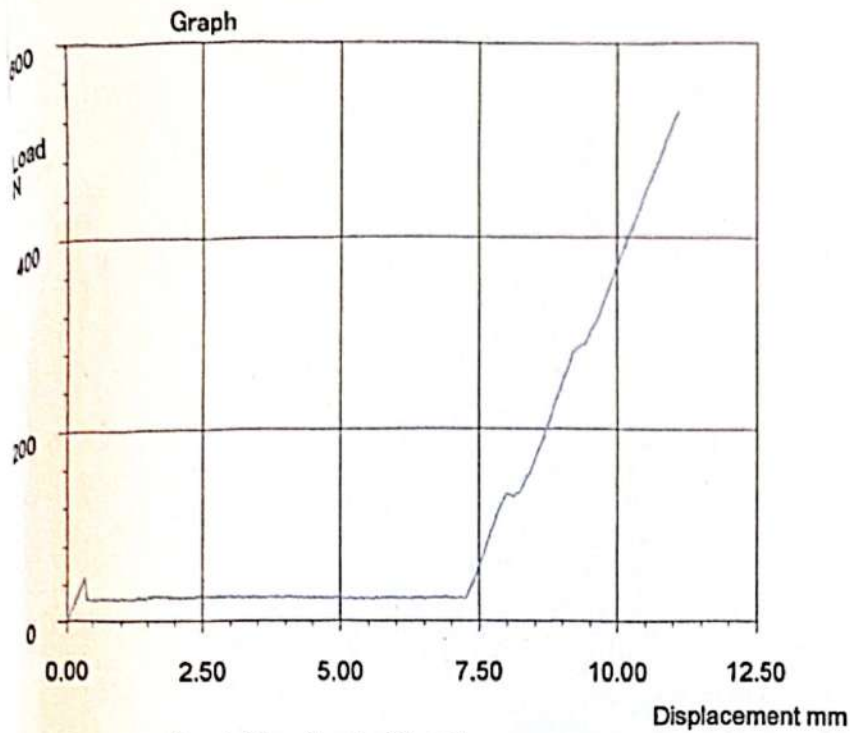
TestID=3916	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	417.58	*****



Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 2 %, Resin 98 %	Comment 2	A4

TestID=3918	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	N	mm
				622.86	*****

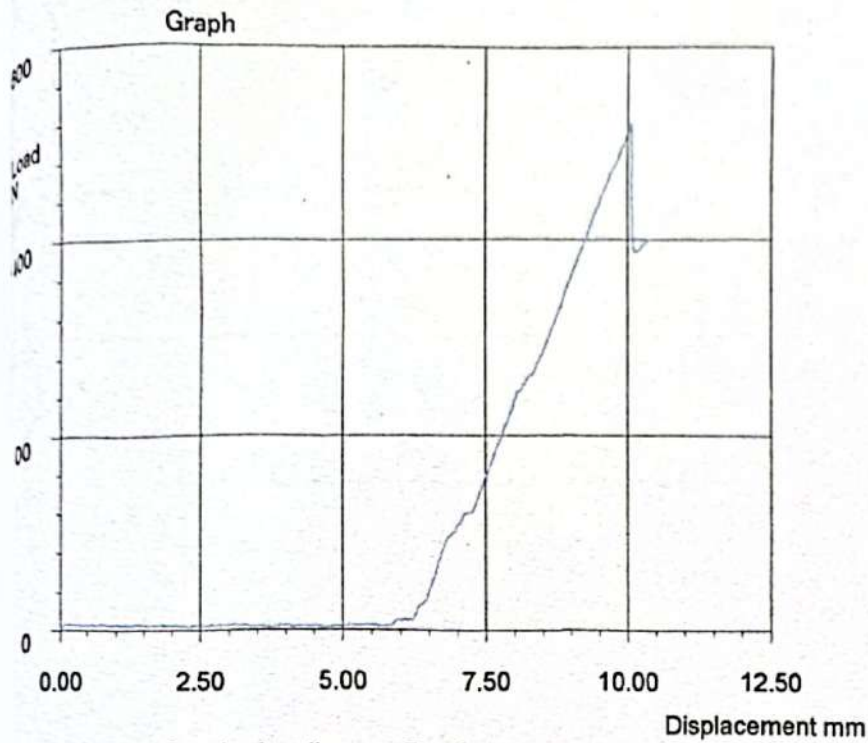


Sample No.	Color
1	
Average SS	

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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		mm	0	0
Elastic modulus anal.	Interval	1	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12		Temperature	25 C	
Humidity	60 %RH		Sample name	Serat Sisal	
*Lot No.			Preparation		
Operator	Haeruddin Hafid, ST.,M.T.		User	Arclaus Denni Frissi	
Comment 1	Serat 2 %, Resin 98 %		Comment 2	A1	

TestID=3915	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	530.42	*****

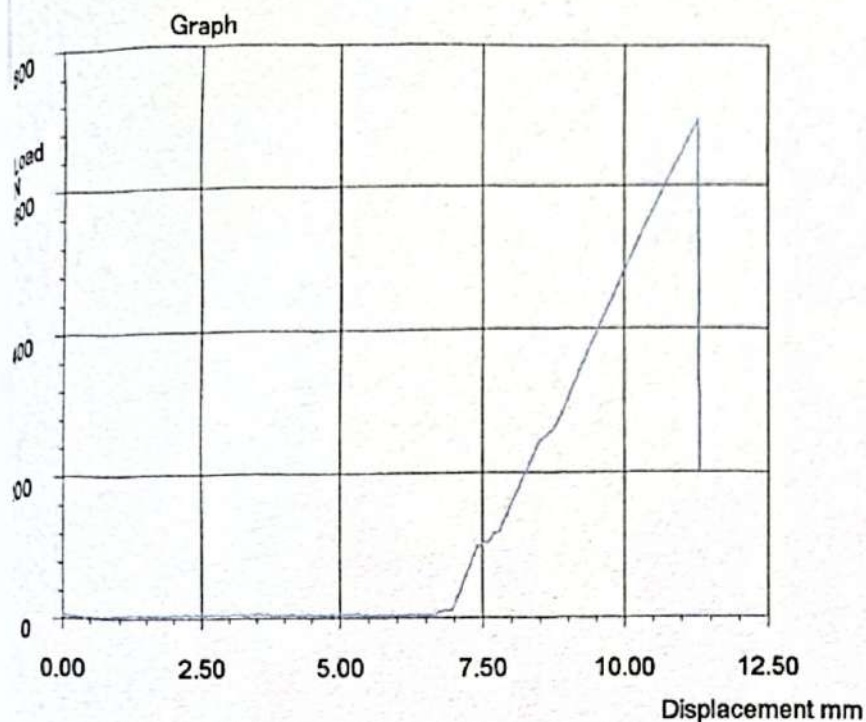


sample No	Color
1	—
Average SS	—

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 4 %, Resin 96 %	Comment 2	A4

TestID=3923	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	520.41	*****



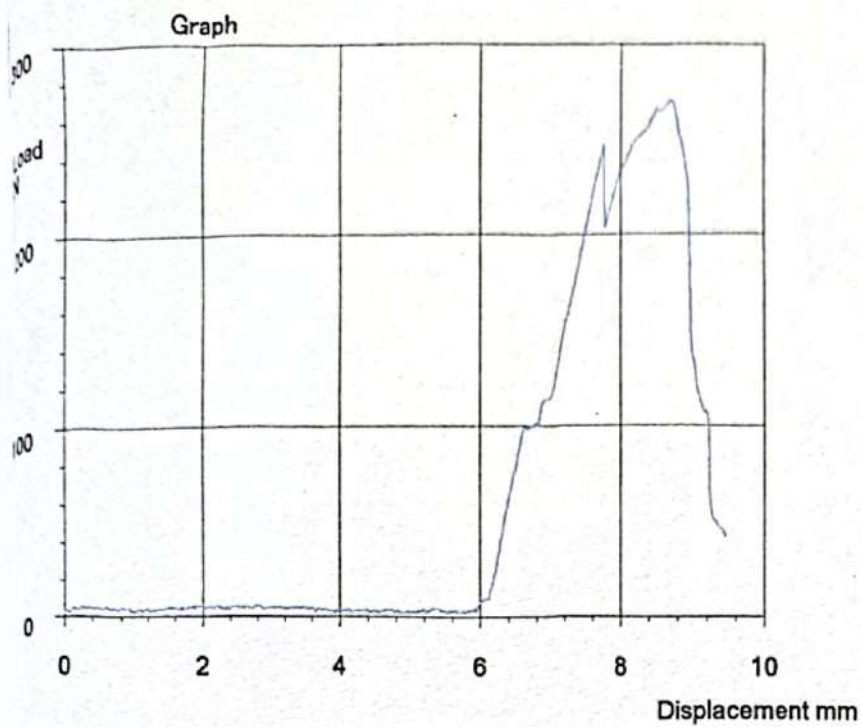
sample No	Color
1	
Average SS	

3-point bending testResult

Machine name				Test type	3-point bending
Strain input 1	Not used			Test speed	5.0 mm/min
Chart speed	OFF			Machine rigidity	0 mm/kgf
Point data(Load)	N	0	0	Point data(Disp)	0
		0	0	mm	0
Elastic modulus anal.	Interval	1	100	Initial sample length	Edge spa 100 mm
Load	Pitch	5 N		Origin of elongation	Init. load 0.3 %RO
Elong adjust	No			Break point measurem	0.5 kN
Save SS curve	Yes				

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 4 %, Resin 96 %	Comment 2	A5

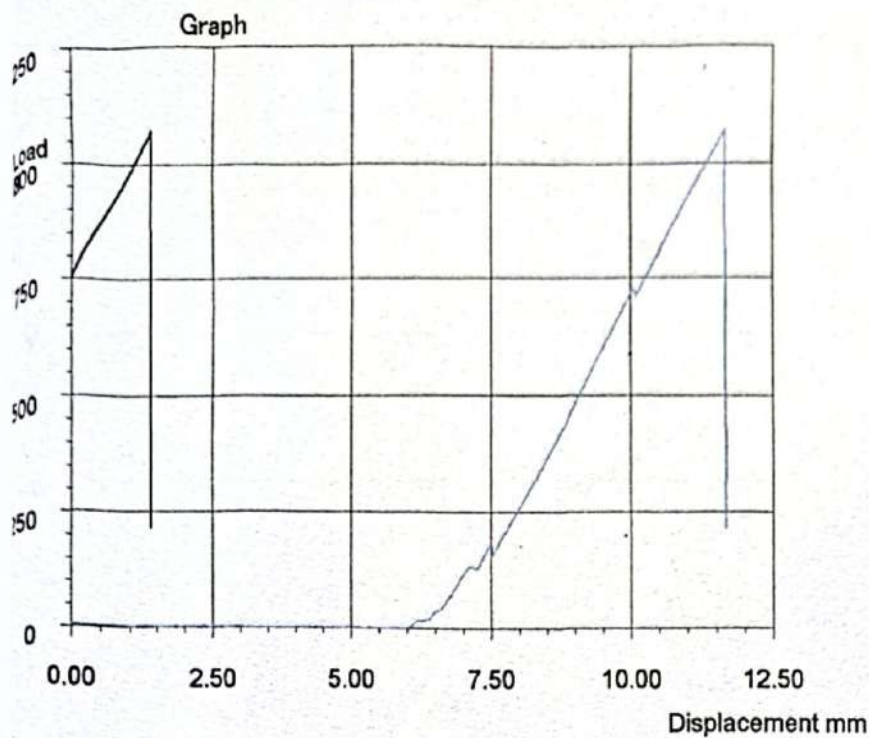
TestID=3924	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	692.63	*****



Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 mm/min		
Chart speed OFF				Machine rigidity	0 mm/kgf		
Point data(Load)	N	0	0	Point data(Disp)	0	0	0
		0	0		0	0	0
Elastic modulus anal.	Interval	1	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 6 %, Resin 94 %	Comment 2	A1

TestID=3925	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	270.45	*****

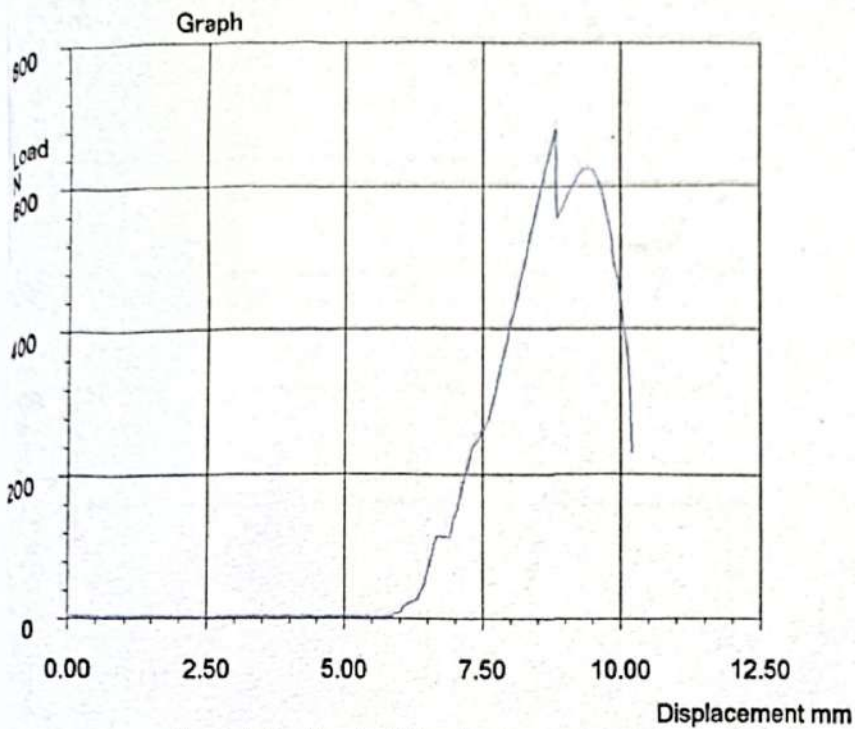


sample No	Color
1	blue
Average SS	black

Machine name				Test type	3-point bending
Strain input 1	Not used			Test speed	5.0 mm/min
Chart speed	OFF			Machine rigidity	0 mm/kgf
Point data(Load)	0	0	0	Point data(Disp)	0
N	0	0	0	mm	0
Elastic modulus anal.	Interval	1	100	Initial sample length	Edge spa 100 mm
Load	Pitch	5 N		Origin of elongation	Init. load 0.3 %RO
Elong adjust	No			Break point measure	0.5 kN
Save SS curve	Yes				

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 6 %, Resin 94 %	Comment 2	A2

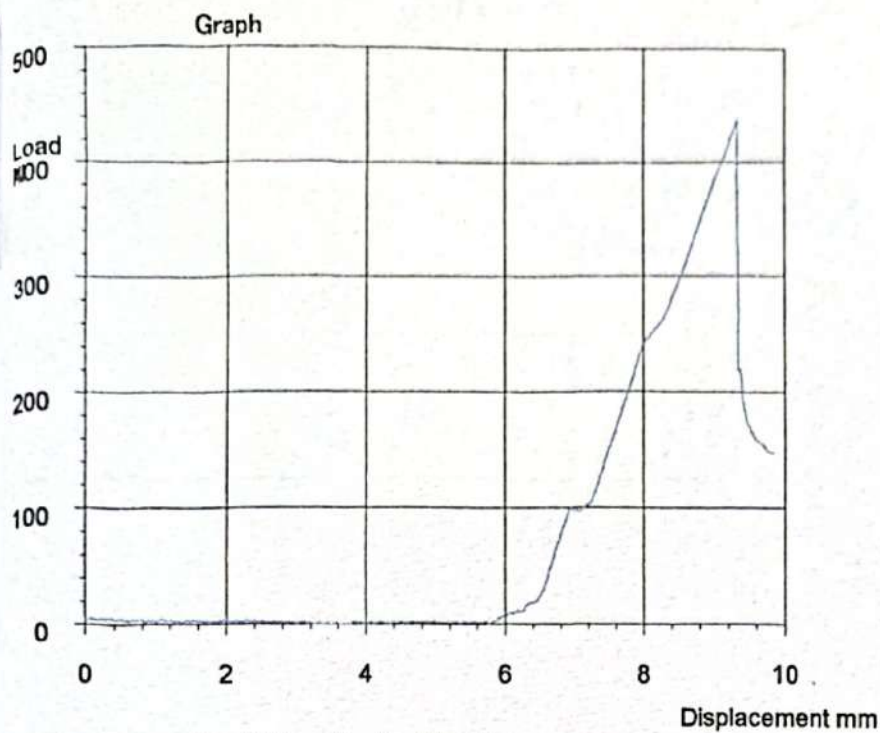
Test/D=3926	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	1070.6	1.3747



Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 6 %, Resin 94 %	Comment 2	A3

TestID=3927	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	680.40	*****

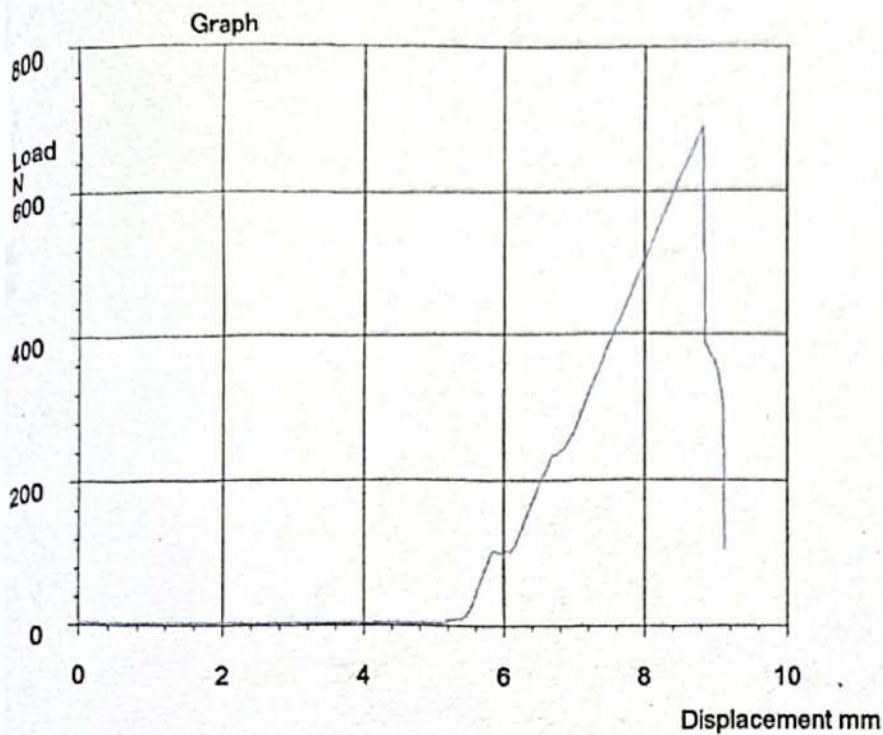


sample No	Color
1	Blue
Average SS	Black

Machine name	Not used			Test type	3-point bending
Strain input 1	Not used			Test speed	5.0 mm/min
Chart speed OFF	Not used			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	100	Initial sample length	Edge spa 100 mm
Load	Pitch	5 N		Origin of elongation	Init. load 0.3 %RO
Elong adjust	No			Break point measurem	0.5 kN
Save SS curve	Yes				

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 6 %, Resin 94 %	Comment 2	A4

TestID=3928	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	N	mm
				436.36	*****

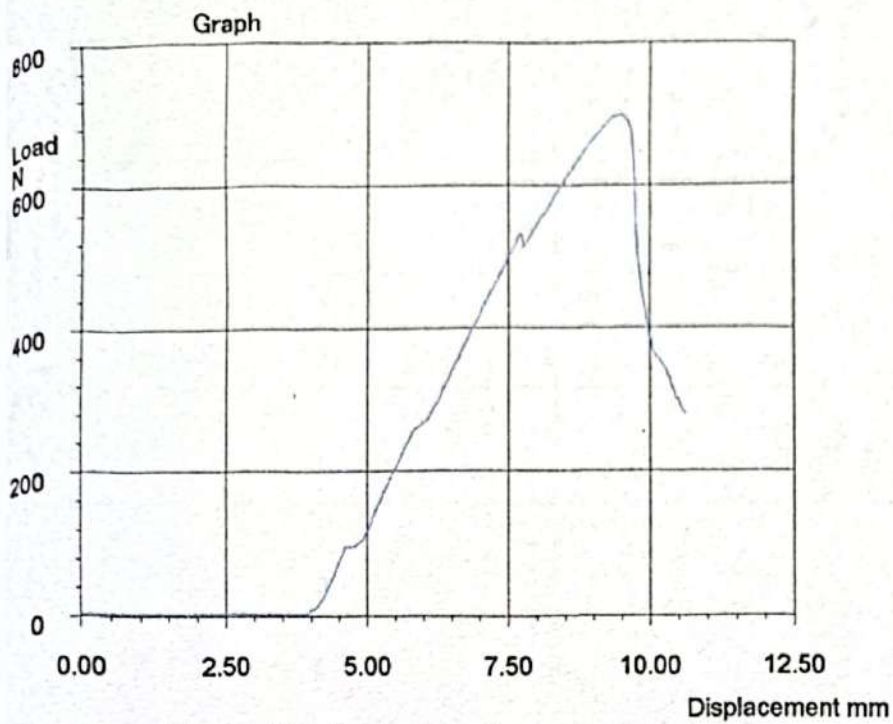


sample No	Color
1	Blue
Average SS	Black

Machine name				Test type	3-point bending
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa 100 mm
Load	Pitch	5 N		Origin of elongation	Init. load 0.3 %RO
Elong adjust	No			Break point measurem	0.5 kN
Save SS curve	Yes				

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 6 %, Resin 94 %	Comment 2	A5

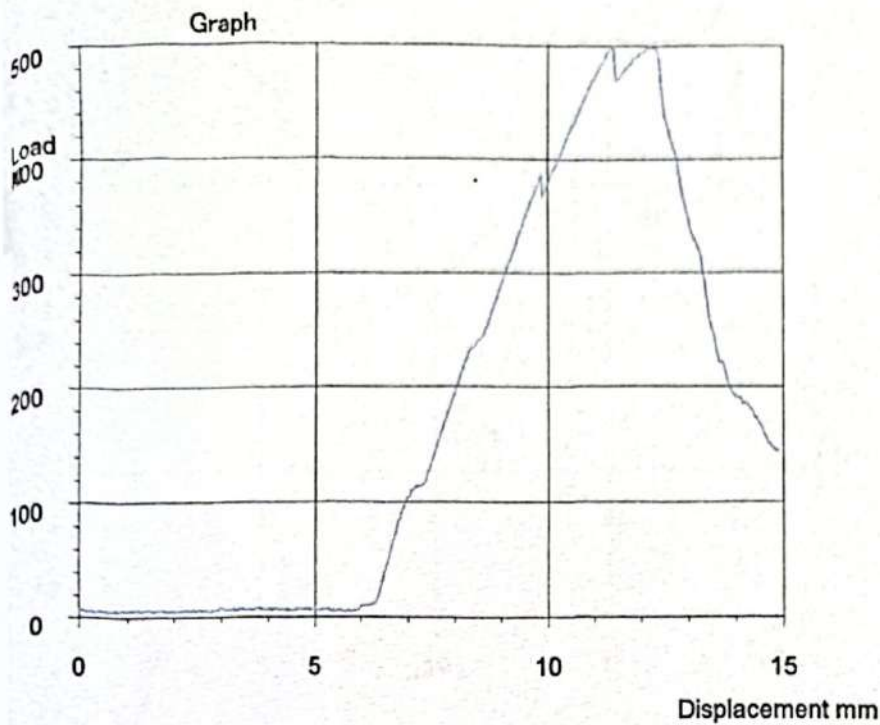
TestID=3929	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	686.68	*****



Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 8 %, Resin 92 %	Comment 2	A1

TestID=3930	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	698.00	*****

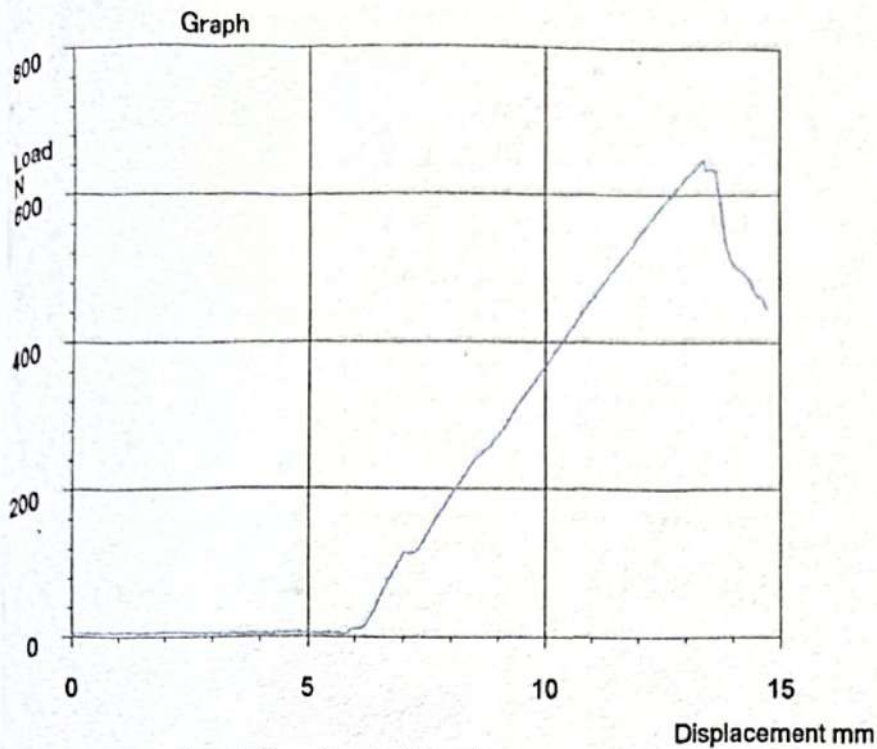


sample No	Order
1	Order
Average SS	Order

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 8 %, Resin 92 %	Comment 2	A2

TestID=3931	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	499.80	*****

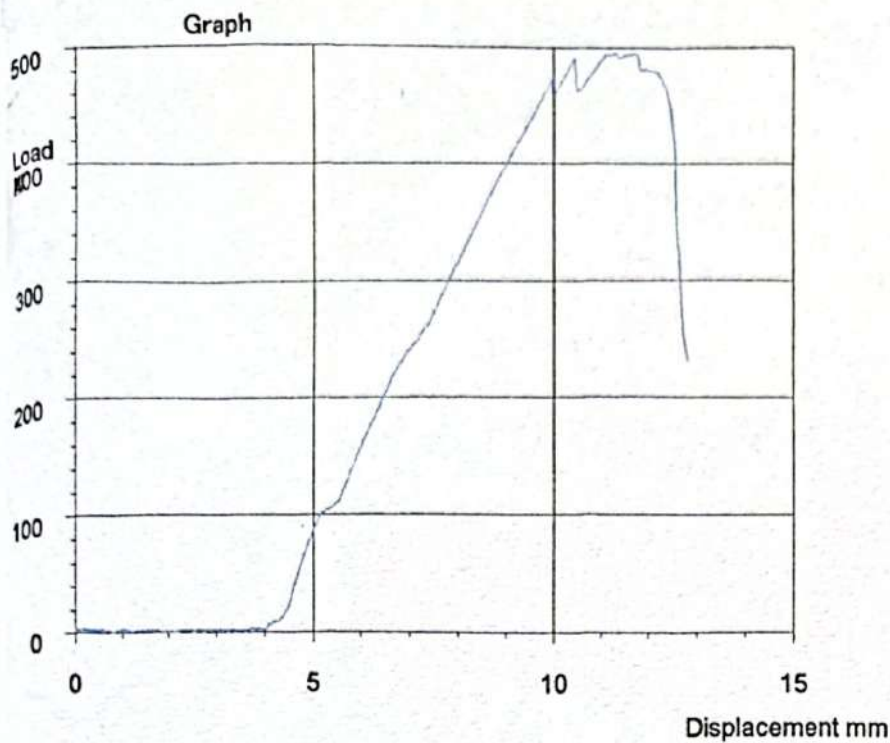


Sample No.	Color
1	blue
Average SS	black

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 10 %, Resin 90 %	Comment 2	A4

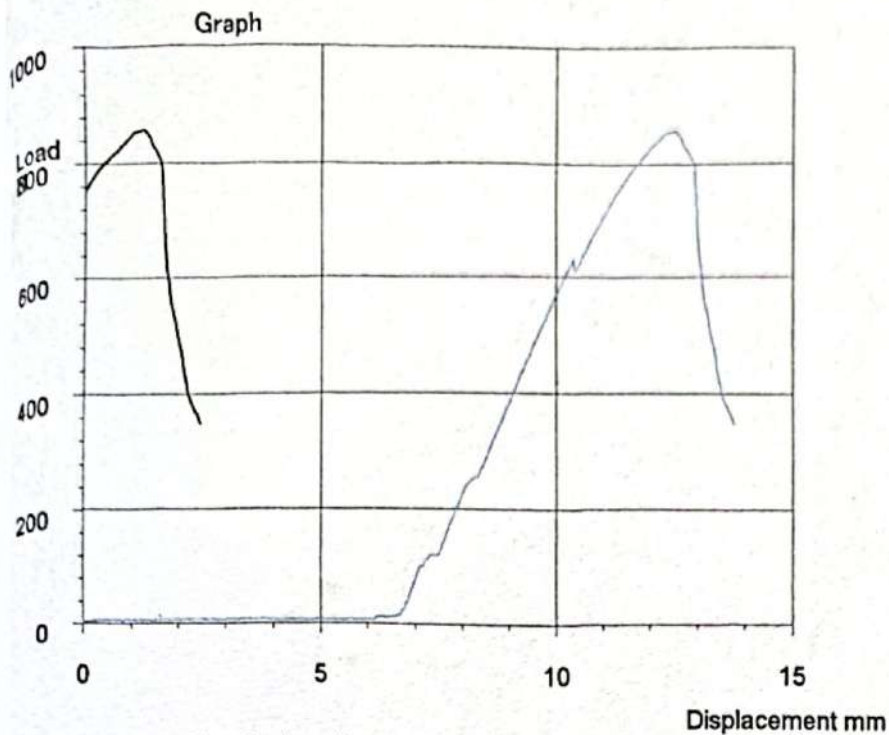
TestID=3938	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	646.82	*****



Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	mm	0	0	0
Elastic modulus anal.	Interval	1	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST, M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 10 %, Resin 90 %	Comment 2	A5

TestID=3939	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	495.68	*****

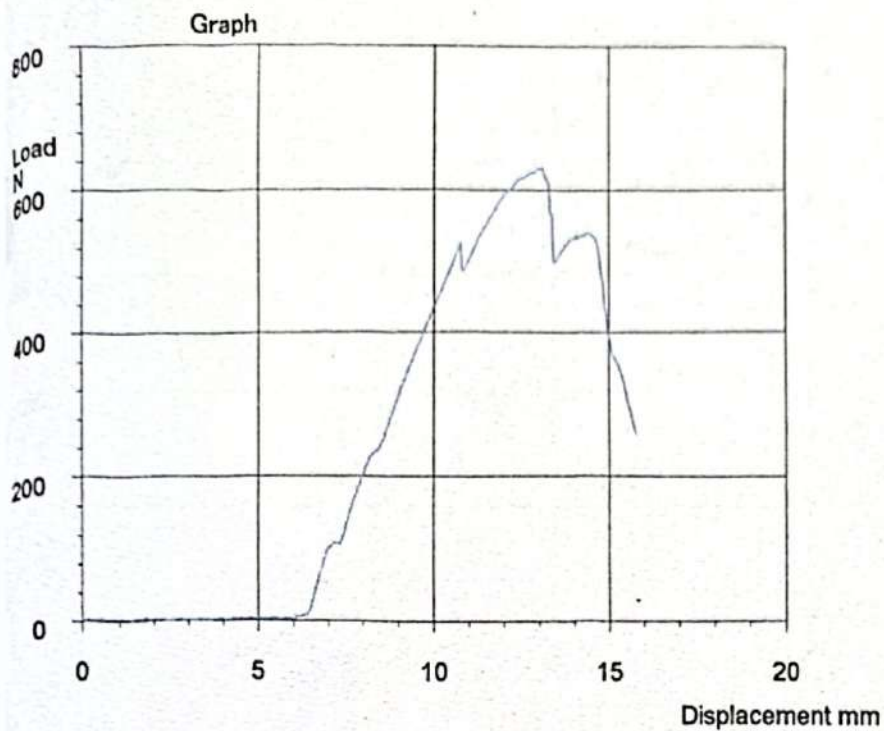


Sample No	Color
1	Blue
Average SS	Black

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 8 %, Resin 92 %	Comment 2	A4

TestID=3933	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	857.30	2.4305
				N	mm

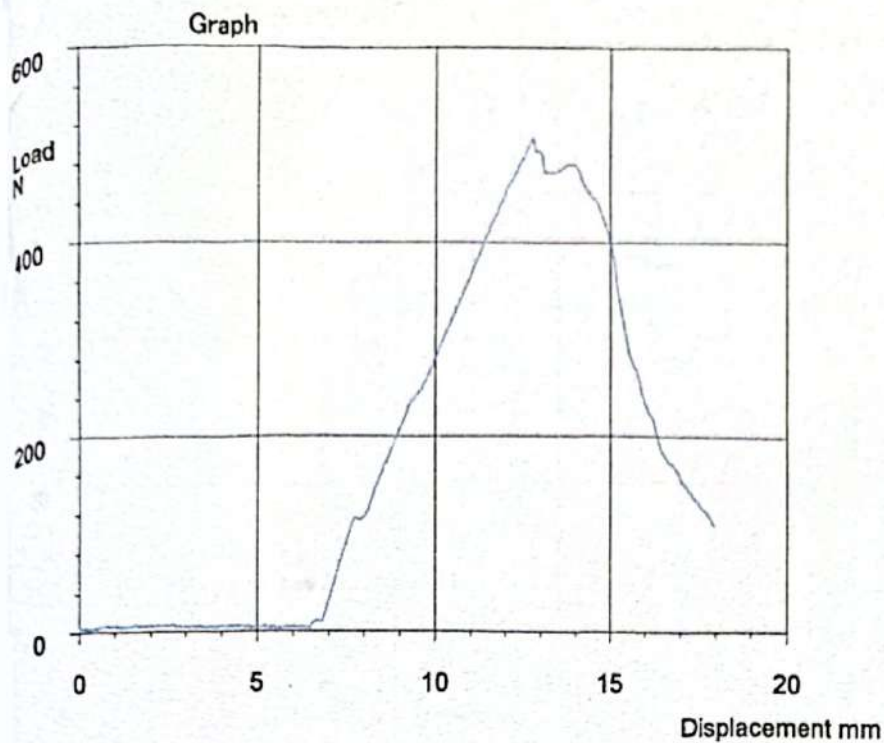


Sample No	Color
1	Blue
Average SS	Black

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST, M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 8 %, Resin 92 %	Comment 2	A3

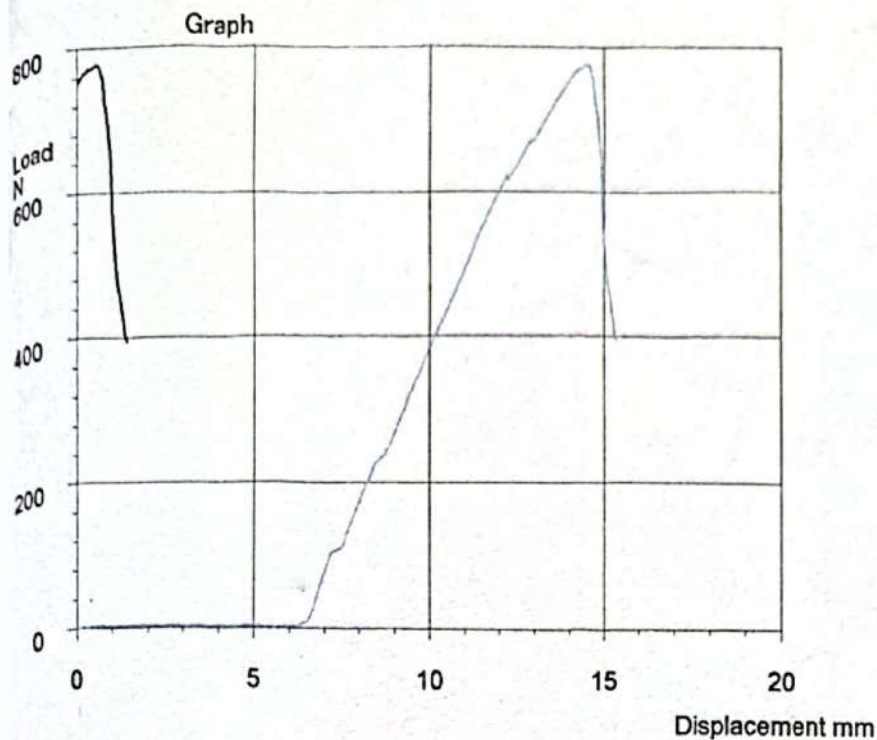
TestID=3932	Width	Height	Sectional ar	Maximum point	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	630.81	*****



Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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		mm	0	0
Elastic modulus anal.	Interval	1	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 10 %, Resin 90 %	Comment 2	A3

TestID=3937	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	506.82	*****

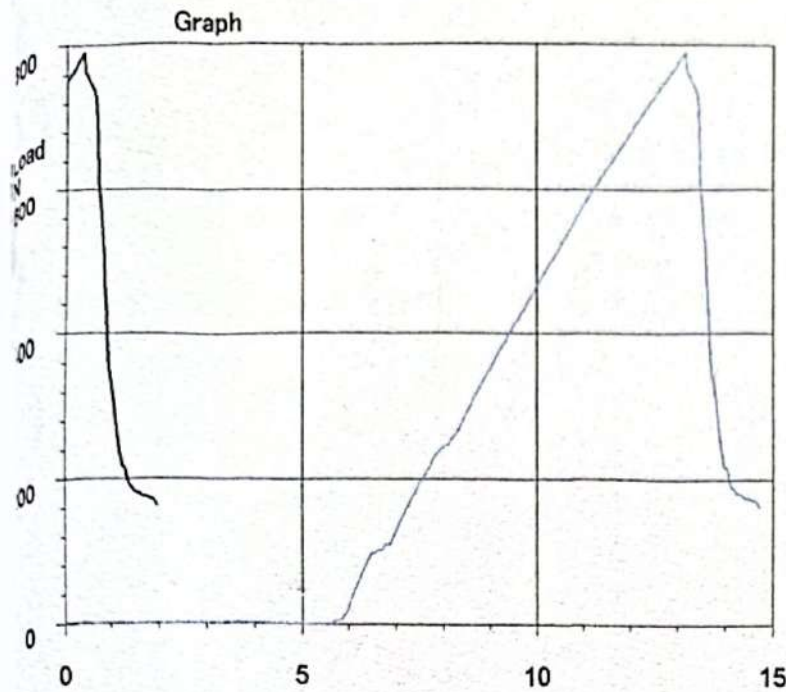


sample No.	Color
1	Blue
Average SS	Black

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 10 %, Resin 90 %	Comment 2	A2

TestID=3936	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	776.37	1.3749

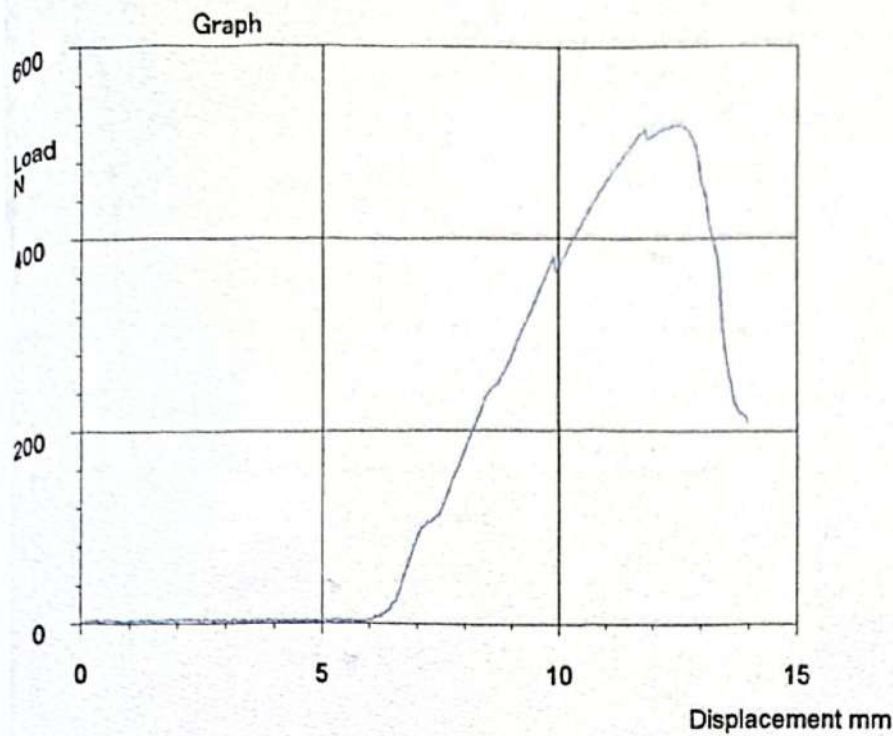


3-point bending testResult

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST.,M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 10 %, Resin 90 %	Comment 2	A1

TestID=3935	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm ²	Load	Displacement
1	20.000	10.000	200.00	788.34	1.9527



Sample No	Color
1	Blue
Average SS	Black

Machine name				Test type	3-point bending		
Strain input 1	Not used			Test speed	5.0 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	100	Initial sample length	Edge spa	100 mm	
Load	Pitch	5 N		Origin of elongation	Init. load	0.3 %RO	
Elong adjust	No			Break point measurem	0.5 kN		
Save SS curve	Yes						

Test date	2025/08/12	Temperature	25 C
Humidity	60 %RH	Sample name	Serat Sisal
Lot No.		Preparation	
Operator	Haeruddin Hafid, ST., M.T.	User	Arclaus Denni Frissi
Comment 1	Serat 8 %, Resin 92 %	Comment 2	A5

TestID=3934	Width	Height	Sectional ar	Maximum poin	Break point
Test No	mm	mm	mm2	Load	Displacement
1	20.000	10.000	200.00	N	mm
				519.35	*****