

LAMPIRAN

Lampiran 1 *Mechanical testing result of composite laminate sample* dari ITB



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MECHANICAL TESTING RESULT OF COMPOSITE LAMINATE SAMPLE

Customer Information

Dimas Mugi
Mahasiswa/Dosen Non ITB

1. 3 POINT BENDING TEST

Testing Information

Machine : UTM Tensilon RTF-1310 / MSAT002
Testing Code : TENS 025
Amount of Sample : 2
Standard : ASTM D790 – Procedure A, Type II
Testing Operator : Rizky Nugraha
Date : Wednesday, July 3 , 2024

Table 1. Sample Information

No.	Item	SAMPLE CODE	
		B1	B2
1.	Material	Kevlar-Glass-Kevlar	Kevlar-Carbon-Kevlar
2.	Width ⁽¹⁾ , mm	15.75	13.16
3.	Thickness ⁽¹⁾ , mm	1.37	1.28
4.	Area, mm ²	21.577	16.845
5.	Overall length ⁽¹⁾ , mm	50	50
6.	Support Span, mm	22	20.5
8.	Test speed, mm/min	0.6	0.5

Table 2. Testing Result

No.	Item	B1	B2
1.	Yield Force (Offset 0.2%), N	49.4935	67.3066
2.	Yield Strength (Offset 0.2%), MPa	55.2510	95.9902
3.	Strain at Yield (Offset 0.2%), mm/mm	0.0237	0.0281
4.	Force at 5% Max. Strain, N	71.774	81.141
5.	Strength at 5% Max. Strain, MPa	80.12	115.72
6.	Elastic Modulus, MPa	2538.84	3669.66

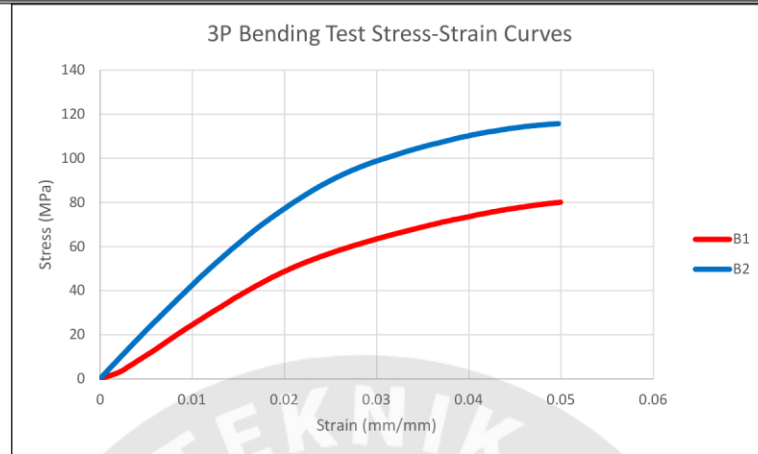


Fig1. 3 Point Bending Test Stress-Strain Curves

2. TENSILE TEST

Testing Information

Machine : UTM Tensilon RTF-1310 / MSAT002
Testing Code : TENS 026
Amount of Sample : 2
Standard : ASTM D3039
Testing Operator : Rizky Nugraha
Date : Wednesday, July 3, 2024

Table 3. Sample Information

No.	Item	SAMPLE CODE	
		T1	T2
1.	Material	Kevlar-Glass-Kevlar	Kevlar-Carbon-Kevlar
2.	Width ⁽¹⁾ , mm	25.65	24.36
3.	Thickness ⁽¹⁾ , mm	1.32	1.26
4.	Area, mm ²	33.858	30.694
5.	Overall length ⁽¹⁾ , mm	255	255
6.	Gauge length, mm	200	
7.	Grips separation, mm	200	
8.	Test speed, mm/min	2	



Table 4. Testing Result

No.	Item	T1	T2
1.	Yield Force (Offset 0.2%), N	1413.6530	2593.4615
2.	Yield Strength (Offset 0.2%), MPa	41.7524	84.4941
3.	Elongation at Yield (Offset 0.2%), mm	2.5	2.24
4.	Maximum Force, N	2268.7304	5487.5275
5.	Ultimate Tensile Strength, MPa	67.0072	178.7817
6.	Elongation at Maximum Force, mm	10.08	5.22
7.	Elastic Modulus, MPa	3987.08	9174.64
8.	Failure Code	SGB	SGT

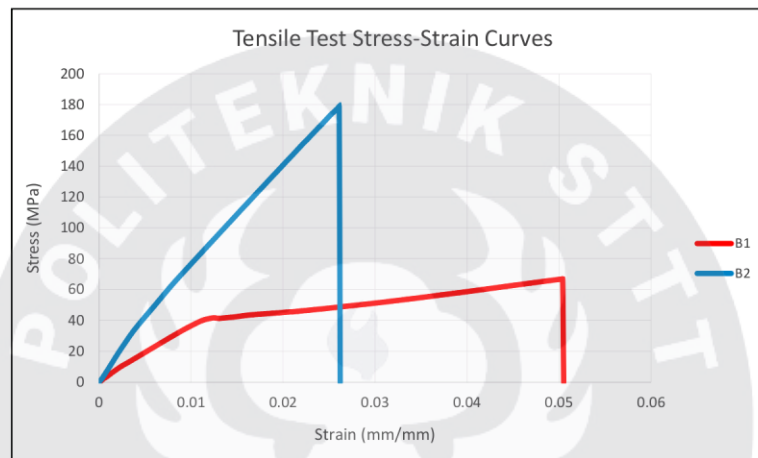
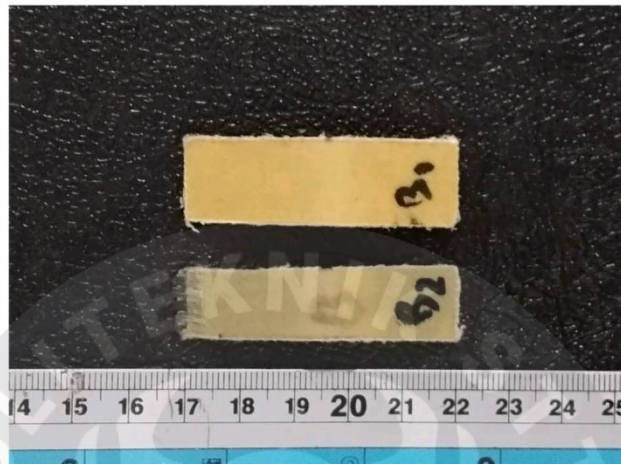


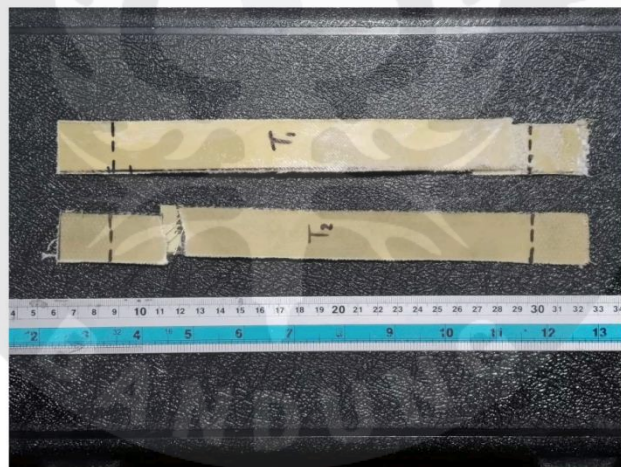
Fig2. Tensile Test Stress-Strain Curves



APPENDIX-A TESTING SAMPLE



1. Bending Test Sample



2. Tensile Test Sample



APPENDIX-B TESTING SAMPLE



1. T1 – Failure : SGB (Splitting – in Gage – at Bottom)



2. T2 – Failure : (Splitting – in Gage – at Top)