

Test Report

AKRITI PRECISION SYSTEMS PVT.LTD.

REPORT NUMBER: 4789653176-NABL-S1

PROJECT NUMBER: 4789653176

ULR NUMBER: TC616820100000728F



TC- 6168

Select the applicable test

locations:

☒ LOCATION 1:

UL India Private Limited,
Laboratory building, Kalyani
Platina Campus, Sy.no.129/4, EPIP
Zone, Phase II, Whitefield,
Bangalore – 560 066
P:91-80-41384400

☐ LOCATION 2:

UL India Private Limited,
Oak building, Kalyani Platina
Campus, Sy.No.129/4,
EPIP Zone, Phase II, Whitefield,
Bangalore, Karnataka – 560 066

☐ LOCATION 3:

UL India Private Limited, 30/A, I
Stage, Vishveshwarya Industrial
Estate, Doddanekkundi Industrial
Area, Bangalore - 560048



TEST DISCIPLINE: MECHANICAL
PRODUCT GROUP: PLASTICS AND PLASTIC PRODUCTS

General details

Customer / Applicant	AKRITI PRECISION SYSTEMS PVT.LTD. C-003, 1, LVS Elite, KV Layout, Anandapura, TC Palya, KR Puram Bangalore, Karnataka, 560036 ,India		
Manufacturer	AKRITI PRECISION SYSTEMS PVT.LTD.		
Program	NABL		
Item Under Test	Laminate - 6 mm thickness		
Model	NA		
Number of Samples	2		
UL Sample Identification	3351656, 3351657	Refer Summary of Test results for multiple samples	
Manufacturer Serial Number	NA		
Condition of IUT on receipt	Good		
Date of Receipt	11 November 2020		
Applicable Standard	Refer page no - 5		
Date of Testing (Start date)	20 November 2020	End Date	23 November 2020
UL general^ ambient condition	Temperature in °C		(23 ± 2)°C
	Relative humidity in %		(50 ±10)° %
Date of Issue	27 November 2020		
Test In-charge	Pooranik Priybrat		

Fill in the rows with information or add hyphen (-)

Lata Patil Project Engineer Associate	V V Ray Staff Engineer
Reviewed by	Authorized signatory

Disclaimer

The issuance of this report in no way implies Listing, Classification or Recognition by UL and does not authorize the use of UL Listing, Classification or Recognition Marks or any other reference to UL on the product or system. UL authorizes the above named company to reproduce this Report provided it is reproduced in its entirety. UL's name or marks cannot be used in any packaging, advertising, promotion or marketing relating to the data in this Report, without UL's prior written permission. The results of testing in this report apply only to the sample product/item, which was tested. UL Lab has not participated in the sample selection for Electrical, Electronics, Mechanical, Radiology and Chemical disciplines, with exception to Chemical lab, Gurugram Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. The applicable standard ambient condition supersedes the lab general ambient conditions and are recorded in datasheets available in the lab.

12-LO-F0851, Issue 17.0



Table of Contents

General details	2
Project scope	4
Description of Item under Test	4
Summary of Test Results	4
Master Equipment and Calibration details	5
Test Results	6
Photographs	12



Project scope

Determination of following properties for the Laminate - 6 mm thickness

- Tensile properties as per the standard ASTM D3039-17
- Flexural properties as per the standard ASTM D7264 - 15

Description of Item under Test (IUT)

Client has submitted the test coupons

Sample ID	Quantity	Sample Description	Test Name
3351656	1	Laminate – 6 mm thickness	Tensile properties
3351657	1	Laminate – 6 mm thickness	Flexural Properties

Summary of Test Results

Sample Description	Sample ID	Test Name	UOM	Results
Laminate - 6 mm thickness	3351656	Tensile Strength	MPa	347
		Modulus of Elasticity	GPa	25.5
	3351657	Flexural Strength	MPa	319.09
		Flexural Modulus	GPa	25.81

12-LO-F0851, Issue 17.0



Master Equipment and Calibration details

	Test Name	Inst SnR	Id Number	Description	Date Equipment Used	Last Cal Date	Expiration Date
1	Tensile	Instrument	156049	Universal testing Machine	2020-11-20	2020-OCT-06	2021-OCT-06
2	Tensile	Instrument	156066	Measuring Tool, Caliper, Digital or Analog	2020-11-20	2020-JUN-27	2021-JUN-27
3	Tensile	Instrument	156058	Psychrometer, Thermo-Hygrometer	2020-11-20	2020-JUN-30	2021-JUN-30
4	Tensile	Instrument	156069	Metal Scale (Composite Lab)	2020-11-20	2020-JUN-29	2021-JUN-29
5	Tensile	Instrument	156065	Measuring Dimensional, Micrometer, Digital or Analog	2020-11-20	2020-JUN-29	2021-JUN-28
6	Flexural	Instrument	156049	Universal testing Machine	2020-11-23	2020-OCT-06	2021-OCT-06
7	Flexural	Instrument	156058	Psychrometer, Thermo-Hygrometer	2020-11-23	2020-JUN-30	2021-JUN-30
8	Flexural	Instrument	156066	Measuring Tool, Caliper, Digital or Analog	2020-11-23	2020-JUN-27	2021-JUN-27
9	Flexural	Instrument	156065	Measuring Dimensional, Micrometer, Digital or Analog	2020-11-23	2020-JUN-29	2021-JUN-28

Test methodology adopted

- ASTM D3039 -17- Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials
- ASTM D7264 - 15 - Standard Test Method for Flexural Properties of Polymer Matrix Composite Materials

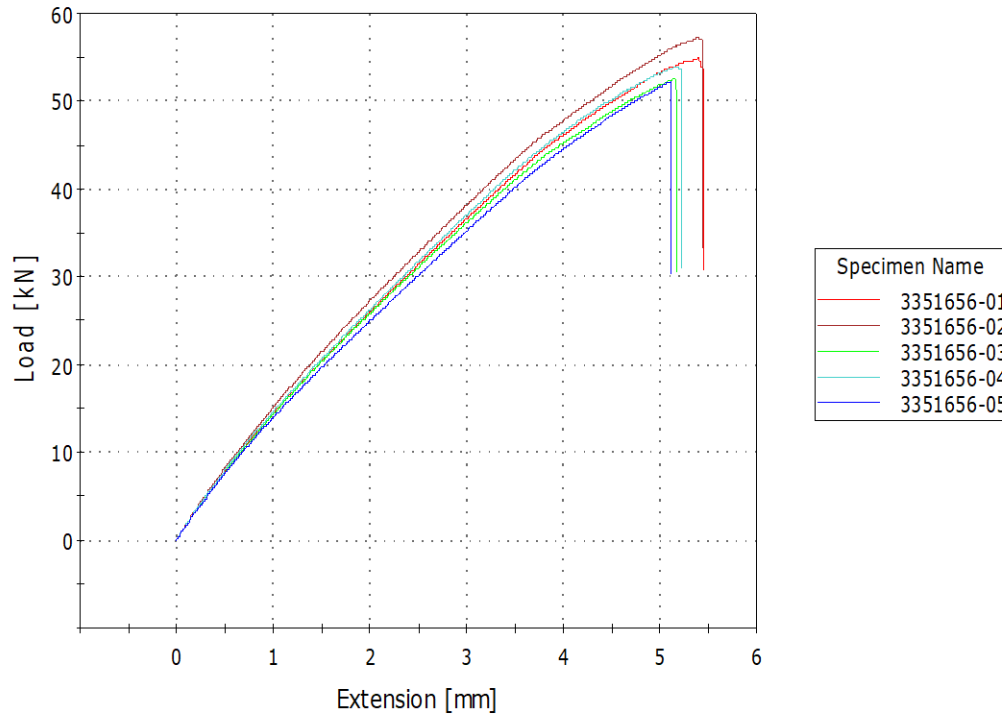
12-LO-F0851, Issue 17.0



Test Results

Tensile Properties

Reference Standard	ASTM D3039 -17
Sample ID	3351656
Ply Orientation	0/90
No. of specimen in the sample	5
Avg. Ply Thickness	6.00 mm
Conditioning parameter	NA
Relative Humidity	44.20 %
Temperature	22.7 °C
Grip type	Hydraulic Wedge Grip
Grip Pressure	30 Bar
Extensometer Type	Clip-on
Test Machine	Instron 5985
Test speed	2.0 mm/min
Test Date and Engineer name	23.11.2020 & Priybrat Pooranik



Plot : Load Vs Extension



Test Results:

	Specimen label	Thickness [mm]	Width [mm]	Area [mm ²]	Maximum Load [kN]	Ultimate tensile strength [MPa]	Tensile Chord modulus of elasticity* [GPa]	Ultimate tensile strain [%]	Failure Code
1	3351656-01	6.20	25.1	10.00	55	354	23.5	3.71	LAT
2	3351656-02	6.24	25.0	10.00	57	367	28.9	3.54	LAT
3	3351656-03	6.24	25.1	10.00	53	335	24.7	3.44	LGM
4	3351656-04	6.24	25.1	10.00	54	345	23.2	3.34	LGM
5	3351656-05	6.23	25.1	10.00	52	335	27.3	3.21	LAT
	Minimum	6.20	25.0	10.00	52	335	23.2	3.21	
	Maximum	6.24	25.1	10.00	57	367	28.9	3.71	
	Mean	6.23	25.1	10.00	54	347	25.5	3.45	
	S.D.	0.0173	0.028	0.000	2.040	13.4	2.474	0.189	
	COV	0.278	0.11	0.00	3.76	3.86	9.69	5.49	

*Strain range (0.001 -0.003) mm/mm

For Failure Code, Refer Fig-4 of ASTM D 3039 -17



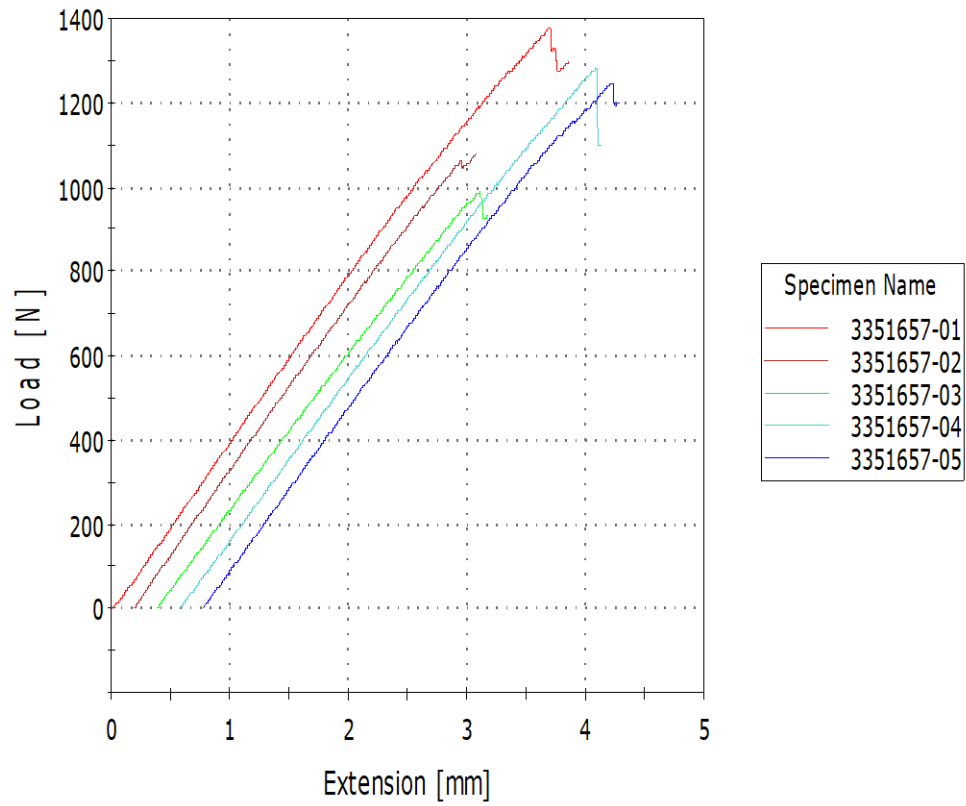
Flexural Properties

Method description	ASTM D 7264 - 2015
Test Equipment details	Type of test machine: Instron 5985 Grip type: Hydraulic
Loading Nose and supports	Contact surface: Cylindrical Type: Rotable Diameter of loading nose and supports:10mm
Specimen preparation method	Labeling scheme:2565346 Coupon cutting method: Specimen was prepared by using saw cutting under water coolant Specimen geometry: Flat rectangular
Sample ID	3351657
Average ply thickness of material	6.0 mm
Test humidity	51.9 %
Test temperature	24.0 °C
Test speed	1.00 mm/min
Test Date & engineer name	20.11.2020; Pooranik Priybrat
Test procedure used	A
Number of specimens tested	5
Support span to thickness ratio	16:1
Support span (L)	96.0 mm

12-LO-F0851, Issue 17.0

Report Number: 4789653176-NABL-S1

ULR Number: TC616820100000728F



Plot : Load Vs Extension

12-LO-F0851, Issue 17.0

UL India Private Limited
Registered Office: Kalyani Platina - Block I, 3rd Floor
No. 24, EPIP Zone, Phase II, Whitefield, Bangalore - 560066, India
T: 91.80.4138.4400 / F: 91.80.2841.3759 / W: ul.com
CIN: U74200KA1997PTC023189

Page 10 of 13

This document is digitally signed and does not require signature on all pages



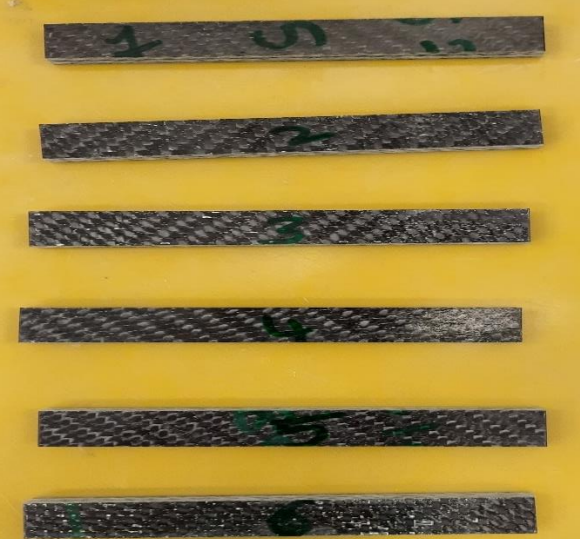



Results Table

	Specimen label	Width [mm]	Thickness [mm]	Maximum Flexural Load [kN]	Flexure stress at Maximum Flexural Load [MPa]	Flexural Modulus [GPa]	Flexural strain at Maximum Flexure Load [mm/mm]
1	3351657-01	13.8	6.26	1.38	366.19	26.40	0.02
2	3351657-02	13.8	6.28	1.08	284.91	26.19	0.01
3	3351657-03	13.8	6.22	0.991	266.85	25.24	0.01
4	3351657-04	13.8	6.22	1.28	345.09	25.77	0.01
5	3351657-05	13.8	6.26	1.25	332.40	25.45	0.01
Minimum		13.8	6.22	0.991	266.85	25.24	0.01
Maximum		13.8	6.28	1.38	366.19	26.40	0.02
Mean		13.8	6.25	1.20	319.09	25.81	0.01
SD		0.018	0.027	0.157	41.742	0.489	0.002
COV		0.1314	0.4295	13.1298	13.0816	1.8939	12.9513



Photographs

Tensile test	<p>Image 1</p> 	<p>Image 2</p> 
Flexural test	<p>Image 3</p> 	<p>Image 4</p> 
	Before	After

12-LO-F0851, Issue 17.0

Report Number: 4789653176-NABL-S1
ULR Number: TC616820100000728F



*****End of Report*****

12-LO-F0851, Issue 17.0

UL India Private Limited
Registered Office: Kalyani Platina - Block I, 3rd Floor
No. 24, EPIP Zone, Phase II, Whitefield, Bangalore - 560066, India
T: 91.80.4138.4400 / F: 91.80.2841.3759 / W: ul.com
CIN: U74200KA1997PTC023189

Page 13 of 13

This document is digitally signed and does not require signature on all pages