

**TEST REPORT****Report No. MAN:HL:1548008977****ISSUE DATE: 16-Dec-2024**

GARWARE HI-TECH FILMS LTD.
WALUJ MIDC AREA, AURANGABAD PUNE ROAD
CHHATRAPATI SAMBHAJINAGAR-431133
CONTACT PERSON: PK NAIKNAWARE

THE FOLLOWING SAMPLE(S) WAS/WERE SUBMITTED AND IDENTIFIED BY/ON BEHALF OF THE CUSTOMER AS :

SAMPLE DESCRIPTION	7 MIL CLEAR SAFETY FILM
COLOUR	CLEAR
STYLE NO	7 MIL CLEAR SAFETY FILM
ORDER NO.	2300015636 / WSC
SKU NO./ ITEM NO.	SAFETY WINDOW FILM
COUNTRY OF DESTINATION	INDIA
COUNTRY OF ORIGIN	INDIA

LAB PROVIDED DETAILS:**CONDITION OF SAMPLE** COMPLETE AND OK**THE LOCATION OF PERFORMANCE OF THE LABORATORY ACTIVITIES:** SGS MANESAR LABORATORY**SAMPLE RECD ON** 27-Nov -2024 **TESTING PERIOD :** 27-Nov-2024 - 16-Dec-2024**SUMMARY OF TEST RESULTS:**

TESTS	PASS	FAIL	REMARKS
1. PEEL ADHESION TEST			SEE RESULT
2. TENSILE STRENGTH TEST			SEE RESULT
3. TEAR RESISTANCE TEST			SEE RESULT
4. PUNCTURE RESISTANCE TEST			SEE RESULT

Remarks: P=Pass

F=Fail

TEST(S) RESULT & METHOD: PLEASE REFER TO NEXT PAGE(S). RESULTS APPLY TO THE SAMPLE AS RECEIVED**Per Pro SGS India Pvt. Ltd.**

SANDIP BHUSHAN
TECHNICAL MANAGER
Authorized Signatory-Mechanical

Email your Test Report Related Enquiries at Feedback.HLT@sgs.com

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Statement of conformity is based on comparison of measurement result(s) with the applicable limit(s) according to the specification in the respective standard or as shared by the customer. Measurement Uncertainty is not taken into account unless otherwise requested in writing. Sample is not drawn by the Laboratory.

Connectivity and product, Testing Laboratory, Plot no. 21, Sector 3, IMT Manesar, Gurugram District, Haryana- 122050 (India) t: (+91-124 678 7600

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TEST RESULTS:-

1. PEEL ADHESION TEST :-

METHOD: ASTM D 3330 / D 3330M-04 (2018)

Test Condition: Type Of Machine Used : UTM
Speed Of Peeling : 5 mm/sec
Sample Length : 297mm
Test Panel Material : Stainless Steel
Sample Width : 24mm
Test Method : A
Peeling Angle : 180°
Dwell Time : 72 Hours

S.NO.	Test Result (Peeling Strength N/10mm)
1	1.402
2	1.341
3	1.313
4	1.555
5	1.355
Mean	1.393
Standard Deviation	0.096

Tested By: CLEAR SAFETY FILM

Note: Peeling angle is not maintained 180° due to rigidity of sample.
Dwell time has been specified by the customer.

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2. TENSILE STRENGTH TEST:

Method: ASTM D 882: 2018

Type of Machine Used: UTM

Test Speed: 500 mm/ min

Sample Size: Width: 10mm, Length: 150 mm,

Initial Grip Separation: 50 mm

Sample Type : Anisotropic

S. No.	Observation (Machine direction)		
	Thickness (mm)	Tensile Strength at Break (Mpa)	% Elongation at break
1	0.211	141.0	140
2	0.210	141.0	140
3	0.209	135.0	130
4	0.210	133.0	140
5	0.210	129.0	150
Mean		136.0	140
Standard Deviation		5.22	7.1

S. No.	Observation (Cross direction)		
	Thickness (mm)	Tensile Strength at Break (Mpa)	% Elongation at break
1	0.210	162.0	110
2	0.208	156.0	110
3	0.209	164.0	98
4	0.207	160.0	110
5	0.210	163.0	100
Mean		159.0	106
Standard Deviation		3.87	6.1

Tested Item: CLEAR SAFETY FILM

Note:

- Testing has been performed as per customer request.

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3. TEAR RESISTANCE TEST:-

Method: ASTM D 1004-21

Test Conditions:

Instrument Type : UTM
Sample type : Anisotropic
Speed of Testing : 51 mm/min
No. of sample tested : 10 (Each Direction)
Sample Size : Width: 0.750", Length: 4"
Direction : Machine direction

Sr No.	Thickness (micron)	Maximum Tear Resistance Force (N)	Maximum Extension (mm)
1	208	96.0	6.9
2	206	94.5	5.7
3	208	94.3	5.9
4	208	99.6	6.2
5	211	102.0	6.0
6	210	91.6	5.8
7	208	88.7	5.9
8	211	90.6	6.7
9	211	96.4	6.8
10	209	100.0	6.7
Average	209	95.4	6.3
Standard Deviation	2	4.32	0.5

Direction

Cross Direction

Sr No.	Thickness (micron)	Maximum Tear Resistance Force (N)	Maximum Extension (mm)
1	210	96.2	7.0
2	209	90.0	6.7
3	210	92.5	8.0
4	211	91.8	8.7
5	209	106.0	6.2
6	209	104.0	7.5
7	209	84.7	6.7
8	210	92.7	7.2
9	209	88.2	7.1
10	209	85.6	7.0
Average	210	93.2	7.2
Standard Deviation	1	7.12	

Tested Item: CLEAR SAFETY FILM

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4. PUNCTURE RESISTANCE TEST:

Method: EN 14477: 2004

Test Conditions:

Instrument Type : UTM

Speed of Testing : 5 mm/sec

No. of sample tested : 10

Side of the specimen Penetrated : Outer to inner (Non Adhesive to adhesive side)

S. No.	Test Result		
	Puncture Force at Break (N)	Elongation at break (mm)	Energy (mJ)
1	57.33	1.49	38.67
2	55.38	1.43	36.83
3	57.39	1.48	39.52
4	57.15	1.48	38.95
5	57.53	1.52	41.06
6	55.47	1.44	37.58
7	57.04	1.52	40.38
8	55.54	1.4	37.41
9	57.41	1.52	40.33
10	58.08	1.50	40.70
Avg.	56.83	1.48	39.14
Std. Dev.	0.98	0.04	1.50

Tested Item: CLEAR SAFETY FILM

Note:-

- Testing speed has been specified by the customer.
- Above all Testing has been performed on semi rigid sheet having adhesive and removing protection layer (Liner film removed as per customer request.

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Sample as Received



*****END OF REPORT*****

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