

**TEST REPORT**

<b>Report No.</b> MAN:HL:1548008979	<b>ISSUE DATE: 16-Dec-2024</b>
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**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 :**

<b>SAMPLE DESCRIPTION</b>	4 MIL CLEAR SAFETY FILM
<b>COLOUR</b>	CLEAR
<b>STYLE NO</b>	4 MIL CLEAR SAFETY FILM
<b>ORDER NO.</b>	2300015636 / WSC
<b>SKU NO./ ITEM NO.</b>	SAFETY WINDOW FILM
<b>COUNTRY OF DESTINATION</b>	INDIA
<b>COUNTRY OF ORIGIN</b>	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](mailto:Feedback.HLT@sgs.com)

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**TEST RESULTS:-**

**1. PEEL ADHESION TEST :-**

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

**Test Condition: Type Of Macine 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	1.407
2	1.089
3	1.283
4	1.383
5	1.248
<b>Mean</b>	1.282
<b>Standard Deviation</b>	0.127

**Tested By:** CLEAR SAFETY FILM

**Note:** 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	0.119	136.0	200
2	0.120	132.0	190
3	0.120	131.0	190
4	0.120	140.0	200
5	0.120	144.0	210
<b>Mean</b>		137.0	198
<b>Standard Deviation</b>		5.46	8.4

S. No.	Observation (Cross direction)		
	Thickness (mm)	Tensile Strength at Break (Mpa)	% Elongation at break
1	0.120	167.0	140
2	0.120	170.0	130
3	0.121	172.0	140
4	0.120	183.0	140
5	0.119	176.0	130
<b>Mean</b>		174.0	136
<b>Standard Deviation</b>		6.19	5.5

**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	119	63.3	6.4
2	117	52.8	6.4
3	117	55.6	6.2
4	119	54.5	7.7
5	117	51.2	6.8
6	116	54.2	5.7
7	119	59.6	5.9
8	119	53.9	7.3
9	118	51.0	6.5
10	117	54.2	6.9
<b>Average</b>	118	55.0	6.6
<b>Standard Deviation</b>	1	3.79	0.61

**Direction**

**Cross Direction**

Sr No.	Thickness (micron)	Maximum Tear Resistance Force (N)	Maximum Extension (mm)
1	119	55.8	6.8
2	118	60.2	5.5
3	120	48.9	5.0
4	118	59.4	5.7
5	121	59.4	6.7
6	120	49.1	5.5
7	120	54.5	5.2
8	119	49.6	6.1
9	121	54.5	5.3
10	122	53.3	5.5
<b>Average</b>	120	54.5	5.7
<b>Standard Deviation</b>	1	4.32	0.61

**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	32.17	1.47	23.17
2	32.77	1.55	23.88
3	32.53	1.46	23.32
4	32.22	1.45	23.05
5	32.02	1.46	22.91
6	32.18	1.46	23.40
7	30.68	1.48	21.68
8	31.46	1.44	22.38
9	31.62	1.53	22.86
10	31.50	1.48	22.18
<b>Avg.</b>	31.91	1.48	22.88
<b>Std. Dev.</b>	0.61	0.03	0.65

**Tested Item:** CLEAR SAFETY FILM

**Note:-**

- Testing speed has been specified by the customer.
- Above all Testing has been performed on adhesive surface by removing protection layer (Liner film ) removed as per customer request.

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### Sample as Received



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