TEST REPORT OF 12 MIL CLEAR SAFETY FILM
GARWARE SUN CONTROL WINDOW FILM

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes Test report of 12 MIL CLEAR SAFETY FILM Garware Clear Safety Window film. The report includes tested properties of an abrasion resistant safety window film applied to the interior surface of window glass to impart safety and solar control performance for solar heat and UV reduction, glare reduction and other characteristics. The film is called 12 MIL CLEAR SAFETY FILM Garware Solar Control Window film.

1.02 DEFINITIONS

A. Visible light transmittance :-: It is the ratio of visible solar energy (380 to 750 nm) that passes through a glazing system to the total visible solar energy falling on the system..

B. Visible light reflectance :- It is the total percentage of visible light reflected by a glazing system that can be seen visually.

C. Ultraviolet light transmittance :- This is the ratio of solar ultraviolet energy (300 nm to 380 nm) that is transmitted by the glazing system to the total solar ultraviolet energy falling on the glazing system.

D. Solar Energy Transmitted:- It is the ratio of the total solar energy passing through a glazing system to the amount of total solar energy falling on that glazing system.

E. Solar Energy Reflected:- This is the ratio of total solar energy directly reflected by the glazing system to the amount of total solar energy falling on that glazing system.

F. Solar Energy Absorbed :- The ratio of total solar energy directly absorbed by the glazing system to the amount of total solar energy falling on that glazing system.

G. Total Solar Energy Rejected :-: It is the sum of incident solar energy rejected by a glazing system (solar energy reflectance and part of solar absorption which is re-radiated outward)

H. Shading Coefficient:- Shading Coefficient is the ratio of solar heat gain through a given glazing system to that of a standard plane glass. (1/8 inch or 3mm thickness) under the same test conditions Lower the shading coefficient value better is the sun control capability.

I. U factor :- U factor is a measure of the rate of heat conductivity of a glazing system, and it is independent of solar radiation. When multiplied by the difference between indoor and outdoor temperature in Fahrenheit, it gives the amount of heat in BTUs/hours/square foot of glazing.

J. Emissivity: The ability of a surface to absorb far-infrared heat and to reflect it. The lower the emissivity, the lower the far-infrared heat absorption and the greater the far-infrared heat reflectance.

K. Luminous Efficacy: Ratio of visible light transmission to shading coefficient for a glazing system

L. Solar Heat Gain Coefficient: The fraction of incident solar radiation that actually passes through that window, including solar energy that is both directly transmitted and that which is absorbed and subsequently released inwardly by re-radiation and conduction. SHGC is expressed as a number between 0 and 1. The lower a window's solar heat gain coefficient, the less solar heat it transmits. This number is the mathematical complement of the TSER value: The sum of the TSER (Total Solar Energy Rejection, in decimal form) of a glazing system and its SHGC value is 1; therefore, 1 - TSER = SHGC

1.04 TEST REPORT

A. Thermal and Optical Performance Properties: Measured and calculated values of performance properties on 1/8 inch clear glass, as determined according to procedures indicated in BSEN & ASTM Standards

Product Name : 12 MIL CLEAR SAFETY FILM

1.	Thickness (Mil) :	12.0
2.	Visible Light Transmittance :	88%
4.	Visible Light Reflectance Exterior :	10 %
5.	Visible Light Reflectance Interor :	9 %
6.	Solar Transmittance :	80 %
7.	Solar Reflectance :	9%
8.	Solar Absorptance :	11 %
9.	Ultraviolet Transmission :	<1%
10.	Total Solar Energy Rejected :	17 %
11.	Shading Coefficient :	0.96
12	Emissivity :	0.89
13.	U Value (Day Winter) :	1.12
14.	Solar Heat Gain Coefficient :	0.84
15.	Luminous Efficacy :	0.92
16.	Glare Reduction :	3

A. UV Transmission is less than 1 percent when measured in accordance with BS EN 410.

B. Scratch Resistance: Difference in Haze value after performing abrasion resistance test is 3.10 tested as per ASTM D 1044, using 100 revolutions, CS-10F wheel and 500 g weight

C. Mechanical Performance Properties: Provide glazing films with mechanical performance properties specified based on manufacturer's published test data, as determined according to procedures indicated in ASTM Standards

Product Name : 12 MIL CLEAR SAFETY FILM

1.	Thickness (Mil) :	12.0
2.	No of layers :	Two
3.	Tensile Strength in PSI :	28446
4.	Break Strength in Lbs/in :	340
5.	% Elongation at break :	160
6.	Peel Strength in Gram/in :	2000
7.	Abrasion Resistance :	5% Haze increase

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