

LX Glas Corp., R&D Center
 296, Oehang 1-gil, Gunsan-si, Jeollabuk-do, (54008), Korea TEL (063) 460-1333 FAX (063) 467-2985

Report No.	20240697	Date of Receipt	2024-06-12	Date of test	2024-06-20 ~ 2024-06-28	
Client	SANGBO corp.			Name	Yong han Shin	
Address	(10016) 50, Daeseomyeong-ro, Tong Jin-Eup, Gimpo, Gyeong Gi Do, Korea 10016			Uses	Quality Control	
Test Sample	FX90 TB27		Test Item	Optical Properties		

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Test Results

- Test method used : ISO 9050:2003, 3.2 Performance of optical measurements
 KS L 2016:2014, 6.3 Performance of optical measurements; JIS A 5759:2016, 6. Measurement method
 KS L 2514:2011, 4.Measurement of spectral transmission and reflection factor
- Instrument : 1) FT-IR, Spectrophotometer, Nicolet, 6700, U.S.A.
 2) UV-VIS-NIR Spectrophotometer, Perkin-Elmer, Lambda 950 & 1050, U.S.A.
- Testing environment : Temperature : min 21 °C, max 25 °C, Humidity : min 60 % R.H., max 65 % R.H.
- Location of Test : Permanent Testing Lab On Site Testing
 (Address : 296, Oehang 1-gil, Gunsan-si, Jeollabuk-do, Republic of Korea)
- Test Results :

Test Item	Symbol	Unit	ISO 9050 :2003	KS L 2016 :2014	JIS A 5759 :2016	KS L 2514 :2011
Solar Energy Transmittance	TE	%	19.38	19.9	19.4	18.5
Visible Light Transmittance	TL	%	30.46	30.0	30.5	30.5
Ultra Violet Transmittance	TUV	%	0.24		0.2	0.2
Solar Energy Reflectance(Ext.)	RE(e)	%	9.52	9.8	9.5	9.2
Solar Energy Reflectance(Int.)	RE(i)	%	11.00	11.1	11.0	10.8
Visible Light Reflectance(Ext.)	RL(e)	%	13.78	13.7	13.8	13.8
Visible Light Reflectance(Int.)	RL(i)	%	14.00	14.0	14.0	14.0
Solar Energy Absorbance(Ext.)	AE(e)	%	71.10	70.4	71.1	72.3
Correct Emissivity(Ext.)	E(e)	-				0.84
Correct Emissivity(Int.)	E(i)	-				0.84
Shading Coefficient	SC	-		0.50	0.50	
U-Value (Winter)	U-Value	W/m ² K		5.9	6.0	
Solar Heat Gain Coefficient	SHGC	-			0.44	0.43
Solar Factor	S Factor	%	37.73			

- * Measuring condition(TL% & RL%) : ISO 9050, JIS A 5759 & KS L 2514 : D65/2, KS L 2016 : A/2
- ** Measuring condition(TE%, RE% & AE%) : AM=1.5(300 nm ~ 2 500 nm)
- *** Measuring condition(TUV%) : AM=1.5(300 nm ~ 380 nm), Film side (attached 3 mm Clear Glass) : Inside

' Continued '

Affirmation Measurements performed by Name : Kim, Shin Ae 	Approved by Title : Technical Manager Name : Lee, Soo Yeon 
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03 - 07 - 2024

LX Glas Corp., Director of R&D Center

Accredited by KOLAS, Republic of KOREA



- The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
- The above test report can not be used for any advertisement & lawsuit and for other purpose than submitted.
- The above test certificate is the accredited test result by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA.

5. Test Results (Continued) :

Test Item	Symbol (Unit)	ISO 9050 :2003	KS L 2514 :2011
* Total Solar Energy Rejected	TSER (%)	62.27	56.8

* Measuring condition(TSER%) : AM=1.5(300 nm ~ 2 500 nm), Film side(attached 3 mm Clear Glass): Inside

* This laboratory is not accredited for the test results marked *.

Test Item	Symbol (Unit)	Spectrum average	Factor Application			
			ISO 9050 :2003	KS L 2016 :2014	JIS A 5759 :2016	KS L 2514 :2011
** Transmittance (780 nm ~ 2 500 nm)	TIR (%)	7.8	9.33	9.4	9.3	9.2

** Measuring condition(TIR%) : AM=1.5, Film side(attached 3 mm Clear Glass): Inside

** This laboratory is not accredited for the test results marked **.

6. Specification of Sample :

Sample Type	Film attached Glass	Adhesive Strength	Exist
Film Side (Outside -> Inside)	Side 2	Substrate	3 mm Clear Glass

7. Picture of Sample :



* The result is regarding the sample which is the 3 mm clear glass attaching the film

' End '