

Specification of Thermal Break / Insulating Profile for Windows, Doors and/or Curtain Wall systems

1. Material

All aluminum framing members (transom and mullions) of the windows, doors, and/or curtain wall systems shall incorporate Thermal Break / Insulating Profile.

- **The Thermal Break / Insulating Profile must be from TECHNOFORM or approved equal.**
- The Thermal Break / Insulating Profile shall be manufactured with Polyamide 66 and 25% virgin Glass Fiber content (PA66 GF25), and the contractor shall obtain a material data sheet from the supplier.

2. Submission of thermal simulation report of window/door/curtain wall system meeting project requirements is required.

A thermal simulation report demonstrating compliance with project thermal performance requirements shall be submitted. Simulations shall be conducted based on local environmental/boundary conditions and in accordance with relevant codes, including but not limited to:

- NFRC100/200
- Code for Environmental Sustainability of Buildings

3. Submission of Certificate of Quality (COQ) for Thermal Break / Insulating Profile is required.

Product conformity tests shall be conducted for each batch production. Test results shall be included in a COQ and attached to the goods delivered.

4. Submission of green product certification is required.

Thermal Break / Insulating Profile used in the windows, doors and/or curtain wall systems shall have an Environmental Product Declaration (EPD) and/or recognised green building product certifications, including but not limited to:

- Singapore Green Building Product (SGBP)
- LOTUS Certification for Building Materials

5. Submission of shear strength report for thermally broken assembled profile is required.

The structural performance of assembled aluminum profile with Thermal Break / Insulating Profile shall be in accordance with EN14024.

6. Submission of relevant Quality Management System (QMS) certifications is required.

Thermal Break / Insulating Profile suppliers must have a third-party accredited QMS. Relevant certifications, including but not limited to ISO 9001, ISO 14001 and ISO 45001, shall be submitted.

7. Global Warranty

The contractor shall obtain from the Thermal Break / Insulating Profile supplier a product warranty which shall be valid for a period of ten (10) years against material defects in the Thermal Break / Insulating Profile which are caused by non-compliance with the terms specified in this specification sheet.

Annex

Material Data Sheet

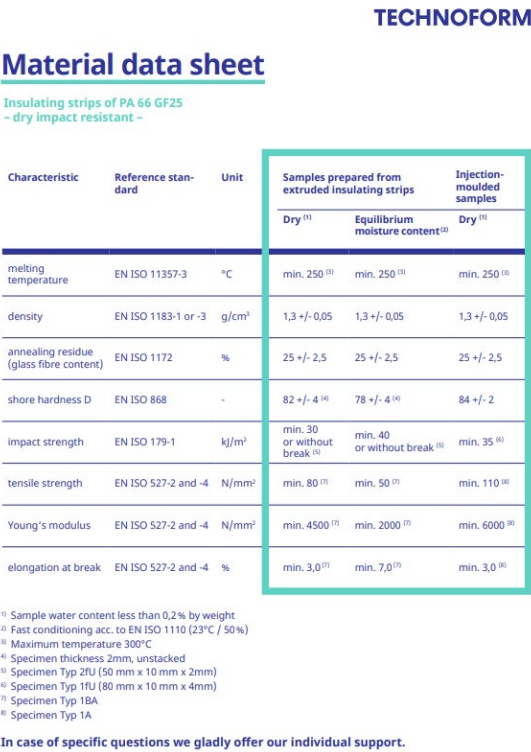


Figure 1: Sample of Material Data Sheet from Technoform

Thermal Simulation Report

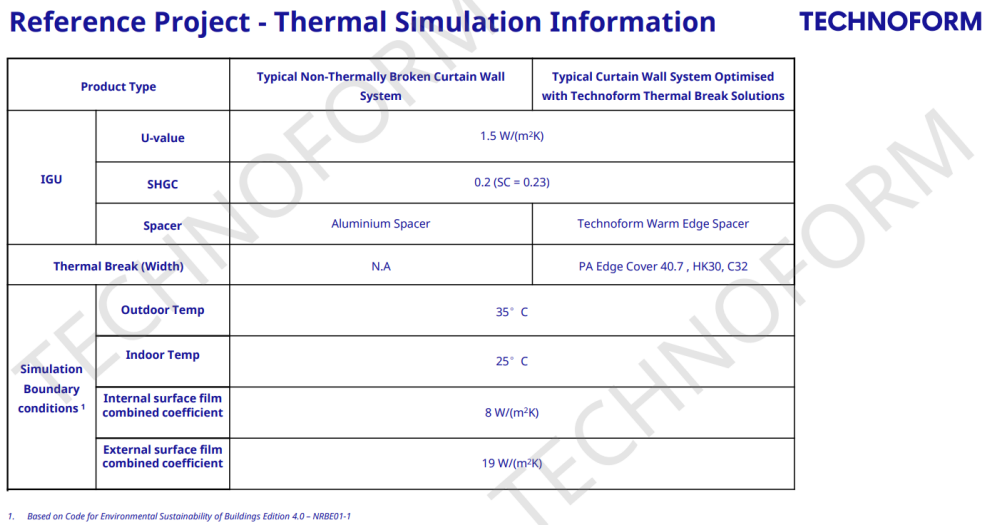


Figure 2: Sample of Thermal Simulation Report from Technoform

Certificate of Quality (COQ)

CERTIFICATE OF QUALITY

A. PRODUCT INFORMATION

Report/Batch No.	110224030410301	Product Name	C14.8
Test Date	2024/03/06	Article No.	953241
Test Time	10:55:00 AM	Material	PA66GF25

B. SUMMARY OF TEST RESULTS

DESCRIPTION	UNITS	REQUIREMENT	TEST VALUE	RESULTS
Glass Fibre Content	%	25 ± 2.5	25.33	Passed
Density	g/cm ³	1.30 ± 0.05	1.25-1.35	Passed
Shore D Hardness	--	80 ± 5	81.04	Passed
Transverse Tensile (Room Temperature)	MPa	≥25	36.40	Passed
Transverse Tensile (High Temperature)	MPa	≥20	29.06	Passed
Width	mm	14.8 ± 0.05	14.812	Passed
Head Height	mm	4.2 ± 0.05	4.210	Passed
Wall Thickness	mm	1.8 ± 0.05	1.807	Passed
Bend X	mm/m	X ≤ ± 15	±15	Passed
Bend Y	mm/m	Y ≤ ± 50	±50	Passed
Twist	°/m	±15	±15	Passed
Glass Fibre Visual Appearance	--	White	OK	Passed

Note:
 1. Test requirements are in accordance with Technoform Standards.
 2. Sample water content less than 0.2% by weight.



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Figure 3: Sample of Certificate of Quality (COQ) from Technoform

Green Product Certifications

SINGAPORE GREEN BUILDING COUNCIL

SINGAPORE GREEN BUILDING PRODUCT CERTIFICATE

AWARDED TO
Technoform Bautech Asia Pacific Pte Ltd
 6 Temasek Boulevard
 Suntec Tower Four
 #28-06
 Singapore 038986

FOR THE PRODUCT
Thermal Break

PRODUCT BRAND
Technoform

PRODUCT MODEL
PA 66 GF 25 Thermal Break/Insulating Profile

THE PRODUCT HAS BEEN ASSESSED ACCORDING TO THE ASSESSMENT CRITERIA OF SINGAPORE GREEN BUILDING PRODUCT CERTIFICATION SCHEME. IT HAS BEEN AWARDED THE RATING:

Director
 SGBPC Pte Ltd

SINGAPORE GREEN BUILDING PRODUCT
 SGBPC
 EXCELLENT

Certificate Number: **SGBP 3844** Original Issue Date: **13 February 2023** Revised Date: **-** Valid Till: **12 February 2025**

✓Good ✓✓Very Good ✓✓✓Excellent ✓✓✓✓Leader
 The use and reliance on this certificate is subject to the terms and conditions of the Singapore Green Building Product Certification Scheme. Revised certificates may also be issued at the discretion of the Council. The certification status may be verified at the Singapore Green Building Council website (www.sgbc.sg).

Figure 4: Sample of Singapore Green Building Product (SGBP) – 3 ticks certification from Technoform

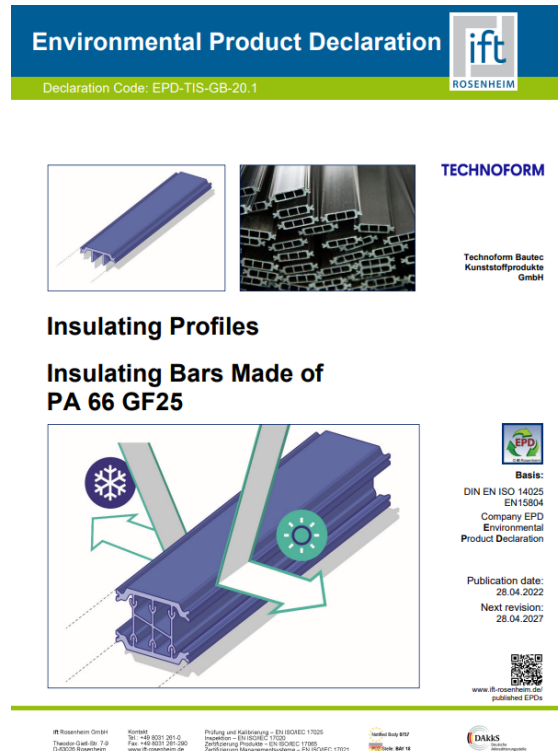


Figure 5: Sample of Environmental Product Declaration (EPD) from Technoform

Shear Strength Report

Test Details			
Test Conditions			
Test Type	Shear Strength Test (Room Temp)		
Temperature	RT = +20± 2° C		
Test speed	-		
Test Equipment	-		
Test Method	EN 14024:2004: E Metal profiles with thermal barrier - Mechanical performance - Requirements, proof and tests for assessment		
Test Date	[Input Here]		
Done by	[input here]		
Test Specimen	Shear Strength T in N/mm	Elasticity Constant c in N/mm2	Bar no.
Sample 1	104.7	43.1	A24
Sample 2	73.15	42.3	A30
Sample 3	98.77	41.7	A21
Sample 4	102.5	42.2	A18
Sample 5	105.2	43.9	A11
Sample 6	100.71	41.8	A15
Sample 7	101.8	41.9	A6
Sample 8	100.48	41.8	A10
Sample 9	104.8	43.5	A4
Sample 10	97.21	41.8	A1
Average, T _{mean}	98.9	42.4	
Standard Deviation, s	9.4		
Characteristic Shear Strength, T _c	79.9	42.4	

Calculation of the Characteristic Shear Strength According to EN 14024

$$T_c = T_{mean} - 2.02 \times s$$

Calculation of the Characteristic Elasticity Constant According to EN14024

$$c = \frac{\Delta F}{\Delta \delta \cdot x \cdot l} \quad c_{c,RT} = c_{mean,RT};$$

Figure 6: Sample of shear strength report for thermally broken assembled profile from Technoform

Quality Management System (QMS)



Figure 7: Sample of ISO 14001:2015 certification from Technoform