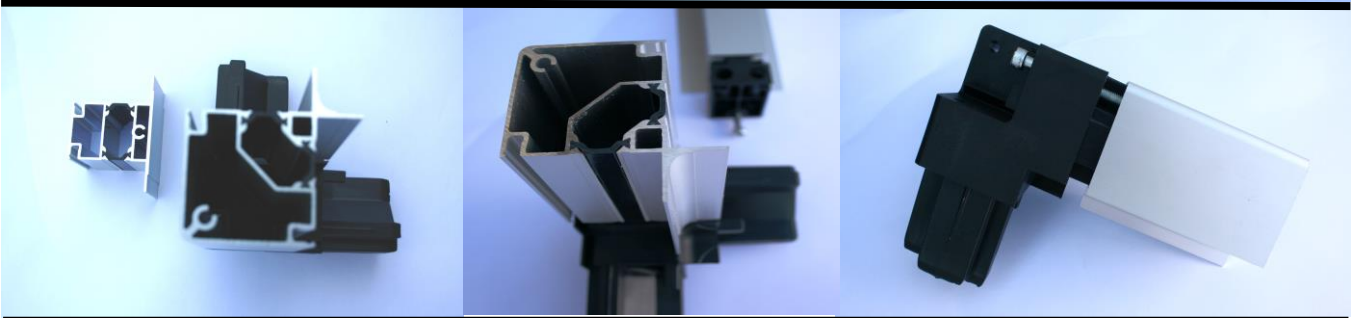
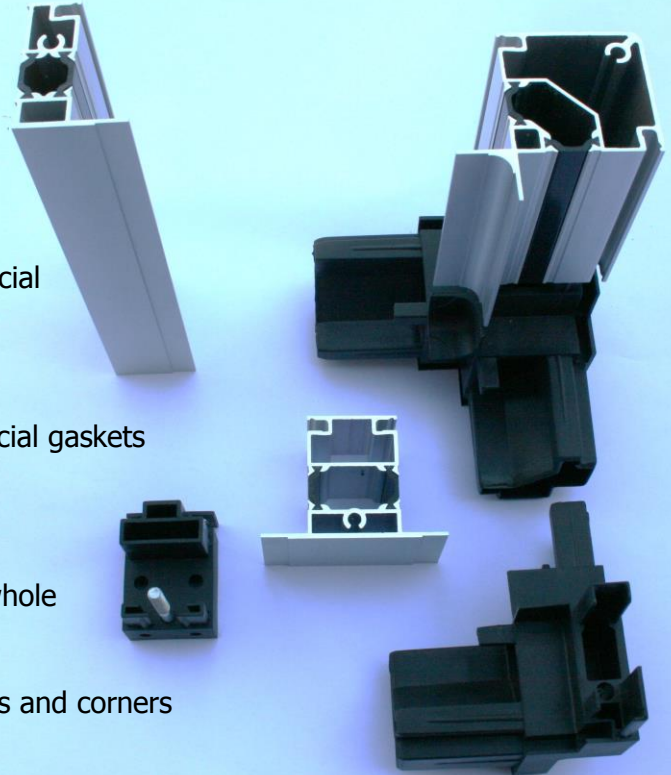


## **THERMAL BREAK SYSTEM 55 WITH PANEL STOP PROFILES**

- ✓ Thermal break system
- ✓ High thermal efficiency
- ✓ Air tightness guaranteed by "panel stop" profiles
- ✓ Use of sandwich panels (low cost)
- ✓ Nylon corners and omega joints with special grooves for screws
- ✓ Panel assembly without screws
- ✓ Internally smooth surfaces thanks to special gaskets and internal rounded for hygienic AHU
- ✓ Epdm gasket with high elastic properties
- ✓ Airtight system seal guaranteed on the whole edge surface between panel and frame
- ✓ Hermetic seal between aluminium profiles and corners
- ✓ Easy and quick assembly

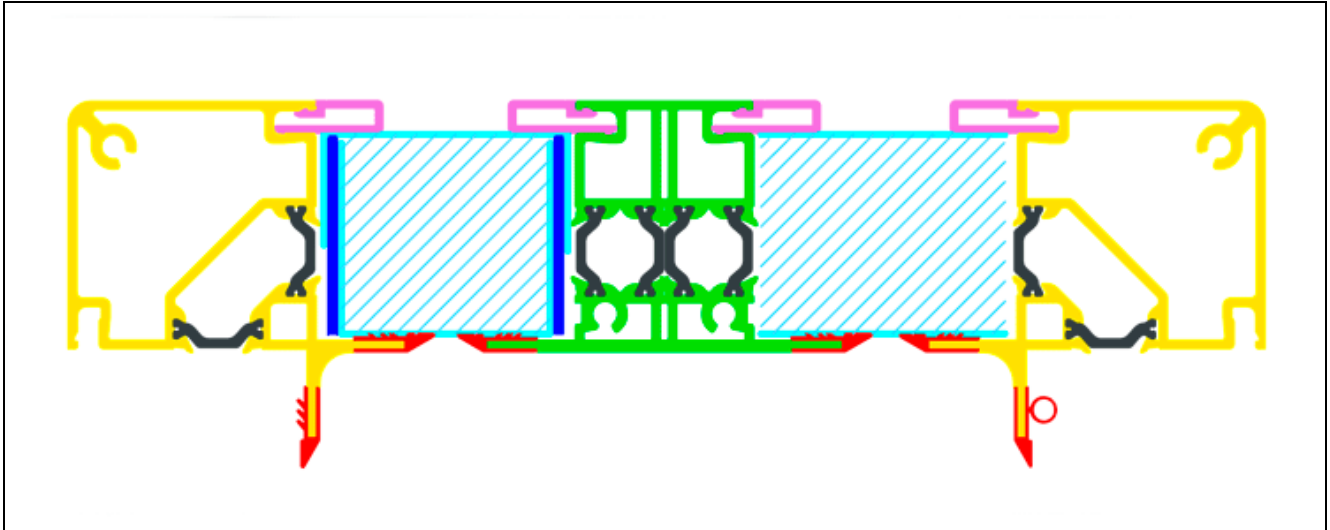


**PROFILE SECTION = 55 mm**

**STANDARD PANEL THICKNESS = 45 mm**

**SPECIAL PANEL THICKNESS = 50 mm**

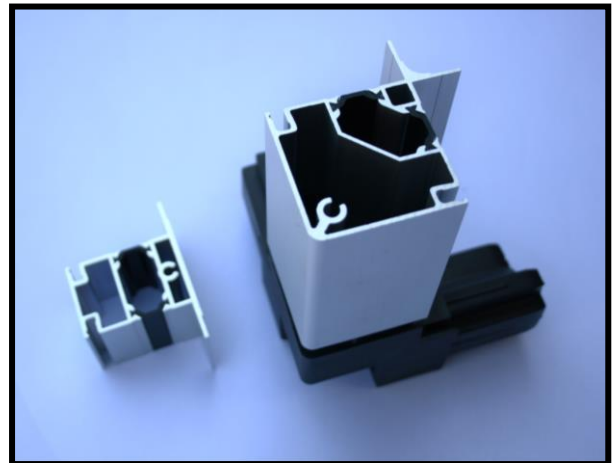
## THERMAL BREAK SYSTEM WITH “PANEL STOP” PROFILES



### DESCRIPTION:

The [new thermal break system](#) guarantees a **high thermal insulation** thanks to the use of special shaped polyamide bars of 20 mm length. One of the peculiarities of this system is the half omega profile that **allows the union of two or more units ensuring the thermal bridging between them**. The “panel stop” profiles hold the panels without the use of screws: the system requires sandwich panels instead of more expensive solutions.

The use of a patented gasket system ensures **smooth internal surfaces** - so the AHU can be sanitisable - and a **perfect airtightness** inside the unit. Moreover, the interior of the frame has been designed with a **radius shape** and nylon rounded corners in order to facilitate the **maintenance of cleanliness inside the unit**. To improve the **mechanical and air tightness properties of the frame**, the nylon and omega joint corner have special grooves for **screws** that **fasten together the aluminium profile with the plastic components**. Furthermore, the screws are hidden by nylon caps that prevent the formation of dust and dirt near the head of the screw.

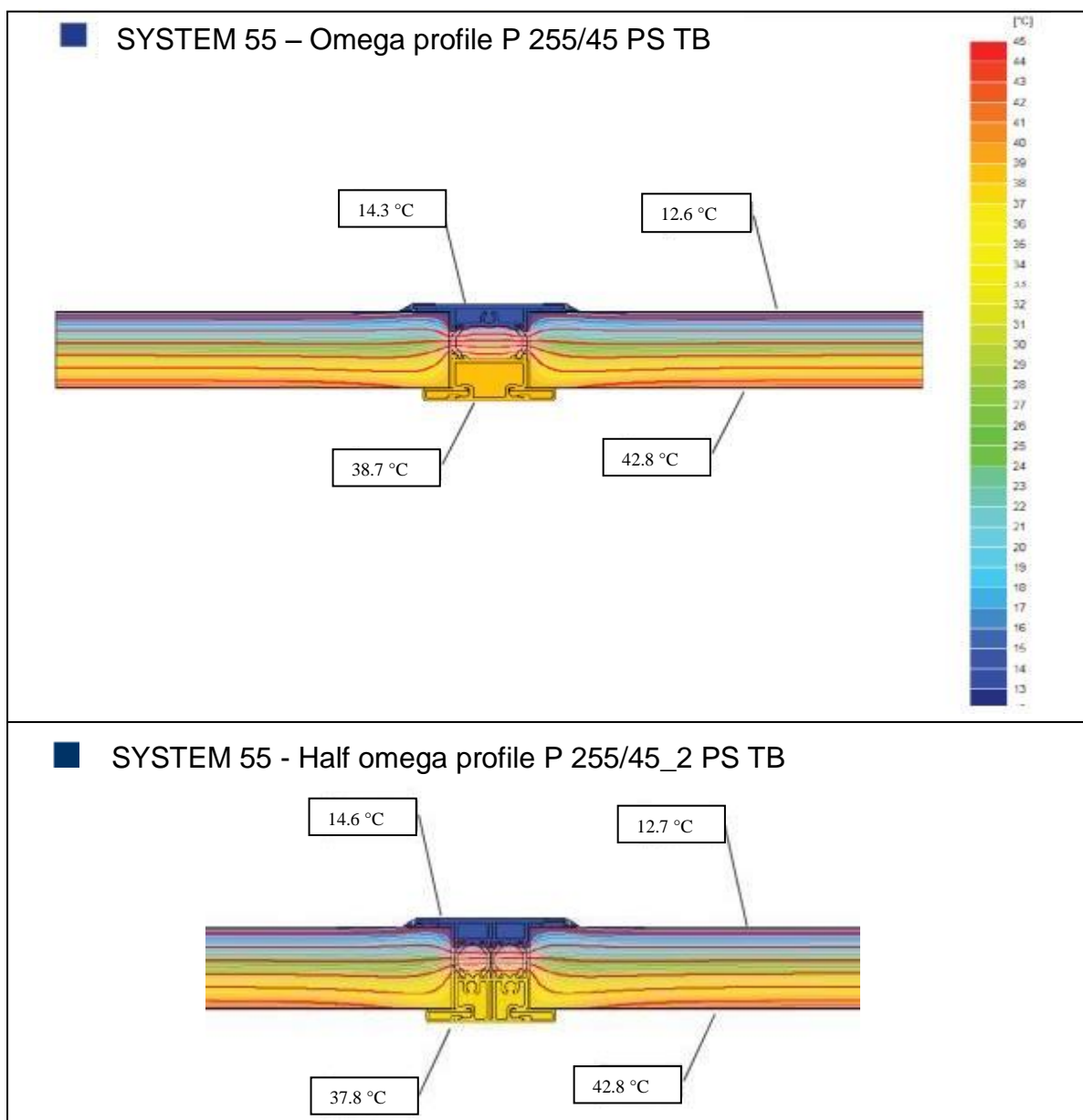


## 1. THERMAL INSULATION OF SYSTEM 55

### 1.1 TRIALS AND TEST WITH SIMULATION SOFTWARE

The peculiarity of the [new thermal break system](#) is the level of thermal insulation achieved, both in terms of thermal transmittance and thermal bridge, which classifies it as a **T1 - TB1 class** according to EN1886.

This result was obtained thanks to a project developed by the technical department, in close collaboration with **R & D** office, through the use of **specific software** to simulate real environmental conditions. The results are shown in the following graphs and table.



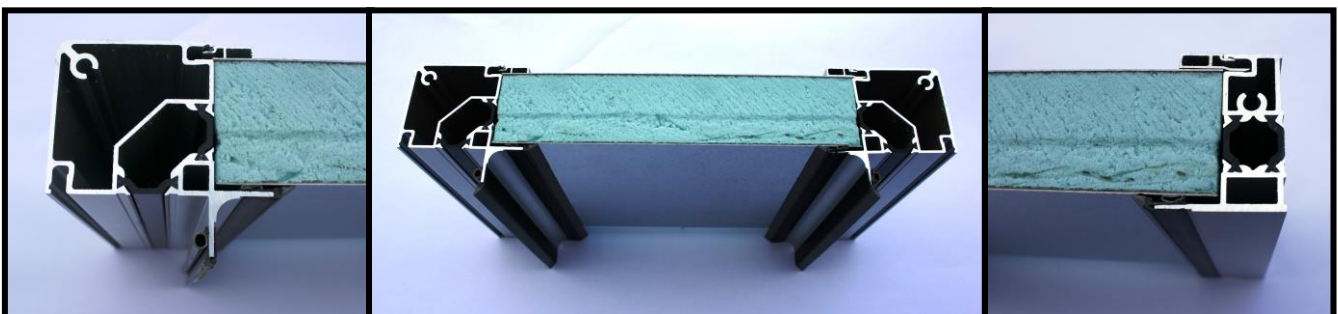
Summary table of the results obtained from specific software:

PROFILE TYPE	Ti	t s-max	ta	kb	Thermal Class
System 55- <a href="#">P255/45 PS TB</a>	12	38,7	45	0,81	TB1
System 55- <a href="#">P255/45-2 PS TB</a>	12	37,8	45	0,78	TB1
System 55 – <a href="#">P 155/45 PS TB IR</a>	12	38,2	45	0,80	TB1

## 1.2 TRIALS AND TESTS CARRIED OUT IN THE LABORATORY

The high thermal insulation class of the thermal break system has been confirmed by trials and tests performed in the laboratory on a AHU assembled with corner post and omega thermal break profiles, panel stop profiles and patented gasket system. The tables below show the test results that completely meet *thermal insulation specifications* in compliance with EN 1886.

THERMAL PERFORMANCE	EN 1886	REFERENCE VALUES	RESULT	THERMAL CLASS
THERMAL TRANSMITTANCE	Class T1 Class T2 Class T3 Class T4 Class T5	$U \leq 0,5$ $0,5 < U \leq 1,0$ $1,0 < U \leq 1,4$ $1,4 < U \leq 2,0$ No requirements	0,48	CLASS T 1
THERMAL BRIDGING	Class TB1 Class TB2 Class TB3 Class TB4 Class TB5	$0,75 < k_b < 1,00$ $0,60 < k_b \leq 0,75$ $0,45 < k_b \leq 0,60$ $0,30 < k_b \leq 0,45$ No requirements	0,79	CLASS TB 1



## 2. AIR TIGHTNESS SYSTEM OF THE WHOLE STRUCTURE

The tests carried out on a "model box" have highlighted the **excellent air tightness** of the AHU examined. The results obtained are shown in the table below.



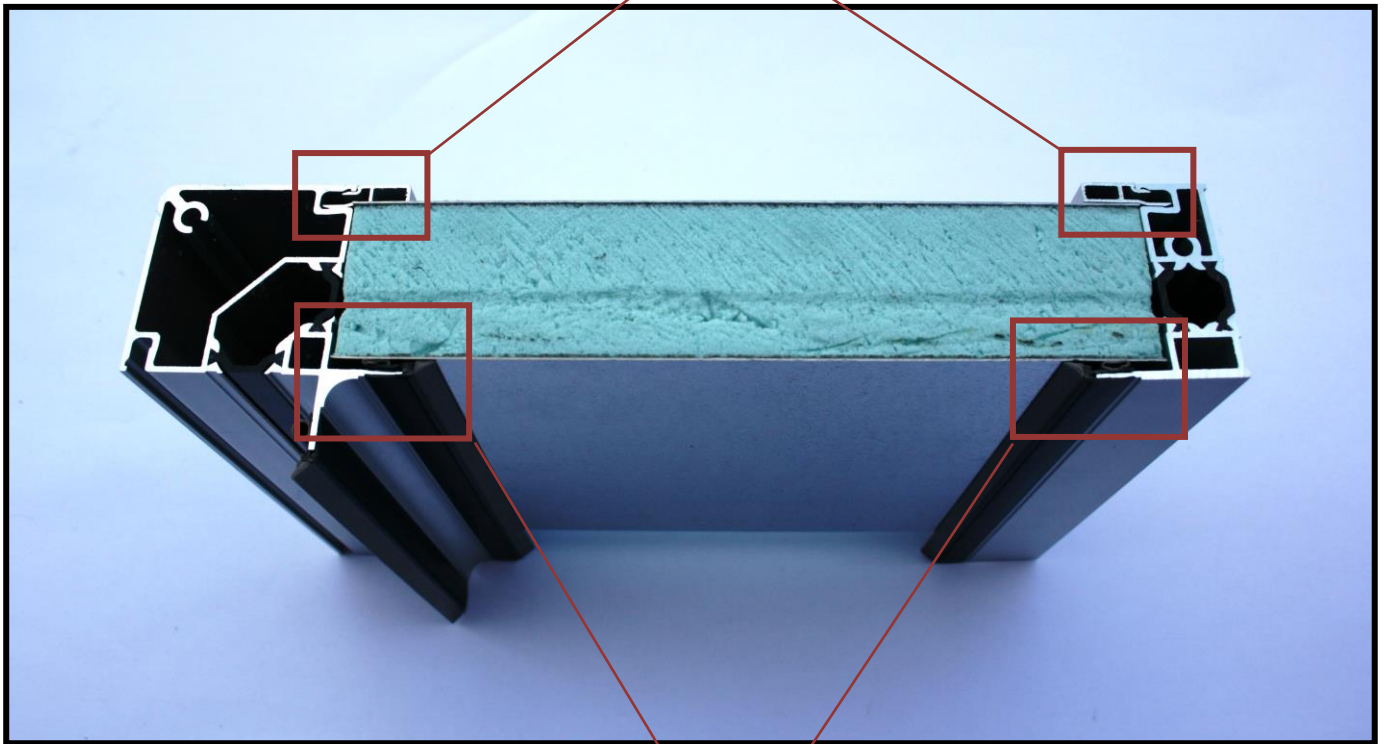
CASING AIR LEAKAGE	- 400 Pa	Class L1	$\leq 0,15 (l * s^{-1} * m^{-2})$	<b>0,14 = CLASS L1</b>
		Class L2	$\leq 0,44 (l * s^{-1} * m^{-2})$	
		Class L3	$\leq 1,32 (l * s^{-1} * m^{-2})$	
	+ 700 Pa	Class L1	$\leq 0,22 (l * s^{-1} * m^{-2})$	<b>0,21 = CLASS L1</b>
		Class L2	$\leq 0,63 (l * s^{-1} * m^{-2})$	
		Class L3	$\leq 1,9 (l * s^{-1} * m^{-2})$	

These brilliant results were obtained by using the **"panel stop" profiles**, **the patented gaskets G002 & GS-20** and **the connecting system** between **profiles** and **components** through **hidden screws**.

## 2.1 EXCELLENT AIR TIGHTNESS THANKS TO “PANEL STOP” PROFILES

The use of “panel stop” profiles assures the air tightness around the entire perimeter of the frame and allows to fix the panels without the use of screws: this makes the assembly easy and fast. The profiles have been specially designed in order to give the right compression between panel and gasket.

The **panel stop profiles** fix the panel without using screws and guarantee air tightness around the perimeter of the frame.



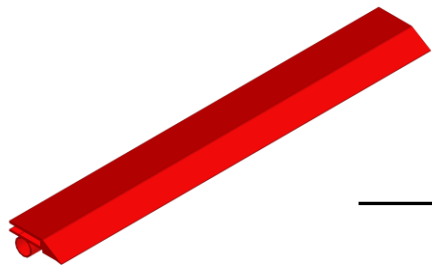
The **gasket** adheres perfectly to the panel and it creates a smooth inner surface between profiles and panels.

## 2.2 SPECIAL GASKETS GS20 and G002: HIGH PERFORMANCES

Another important feature is represented by the special EPDM and PVC [patented gaskets](#) which ensure **air tightness** and **smooth surfaces** between panels and profiles inside the unit for sanitized solutions in order to avoid the occurrence of bacteria and microbes. These gaskets **meet the requirements of VDI 6022** regarding hygiene condition in air handling and ventilation units.

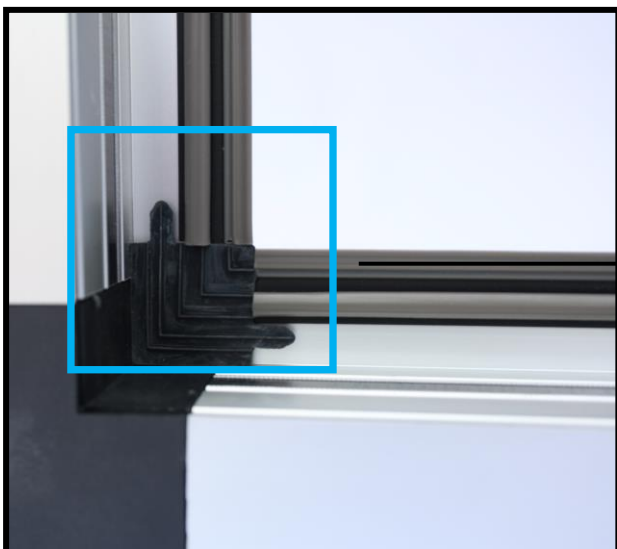


[GS-20](#)



[G002](#)

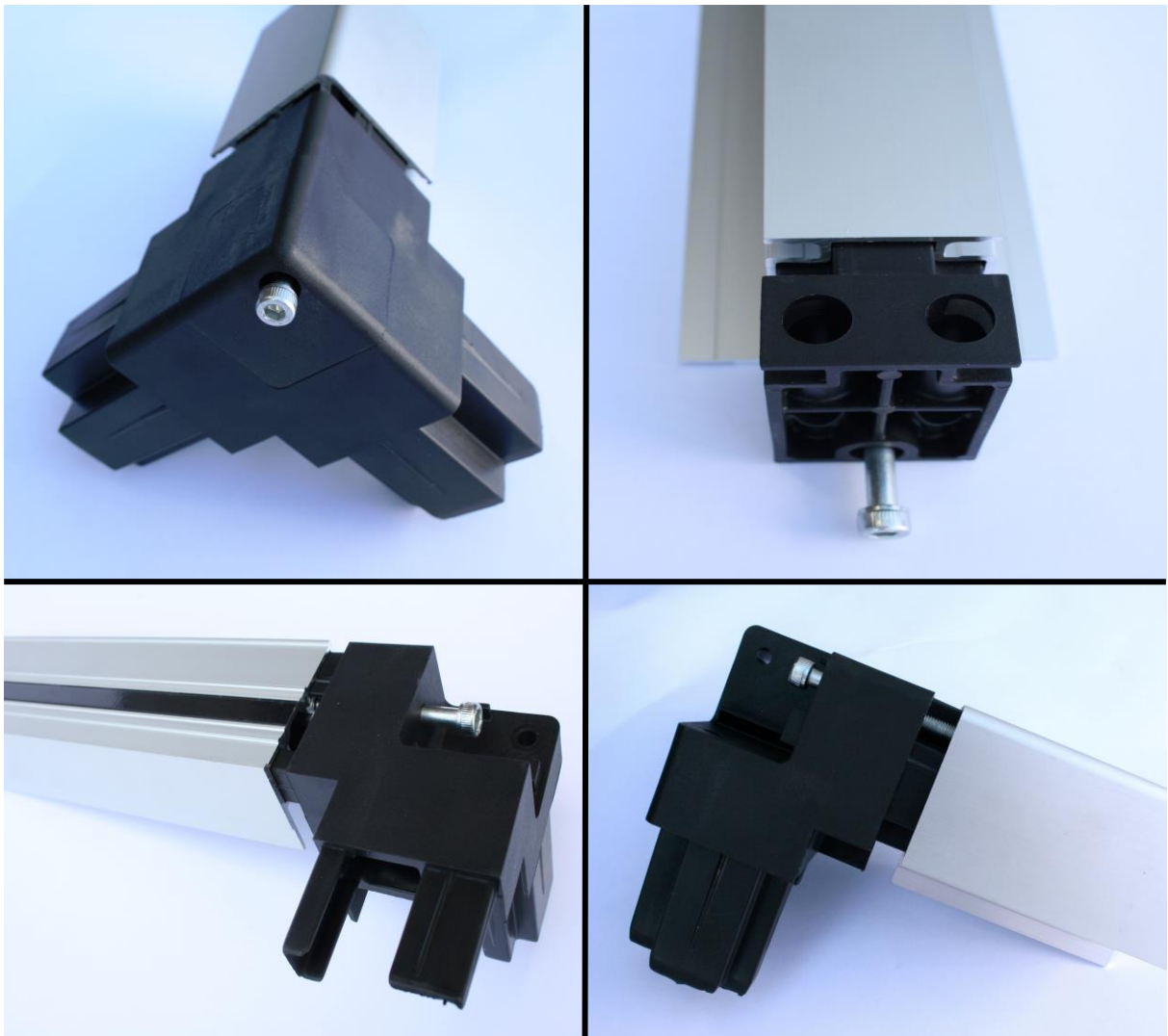
The linear gaskets G002 are mounted on the flanges of the profiles and they fit perfectly with the gasket GS-20: as a result you will have a single and continuous element of **air tightness** on the whole edge surface between the panel and the frame.



These two elements, practical and quick to assemble, create a **smooth and radius surface** between the frame and the panel, so the AHU meets the hygiene standard requirements.

### 2.3 CONNECTING SYSTEM WITH SCREWS: AIR-SEALING WARRANTY AND MECHANICAL STRENGTH

The thermal break frame results sturdy and stable, with excellent air tightness, thanks to the **connecting system with screws**. All accessories have grooves for **screws that fasten them to the profile**: this guarantees high mechanical resistance and airtight seal.





### 3. MECHANICAL STRENGTH OF THE WHOLE UNIT

Tests were carried out at -1000 Pa negative pressure on a "model box" to determine any structural deformation. The results confirm the **excellent mechanical strength** of the structure that classify it as a **class D1**.



MECHANICAL STRENGTH	TEST PRESSURE	EN 1886	REFERENCE VALUES	RESULT
DEFLECTION	-1000 Pa	Class D1 Class D2 Class D3	$\leq 4 \text{ mm} \cdot \text{m}^{-1}$ $10 \text{ mm} \cdot \text{m}^{-1}$ $>10 \text{ mm} \cdot \text{m}^{-1}$	<b>0,57 = CLASS D1</b>

#### 3.1 INERTIA MOMENTS OF PROFILES USED FOR THERMAL BREAK STRUCTURES

INERTIA MOMENTS AND STRENGTH OF THERMAL BREAK PROFILES				
Profile	Jxcm <sub>4</sub>	Jycm <sub>4</sub>	Wx <sub>3</sub>	Wy <sub>3</sub>
P 155/45 PS TB IR	18,27	18,29	5,57	5,58
P 255/45 PS TB	3,36	16,40	2,40	5,32
P 255/45_2 PS TB	2,20	2,75	1,68	1,52

#### 4. ACCESSORIES IN THERMOPLASTIC ANTI-BACTERIAL MATERIAL (ISO 846:1997) AND SELF-EXTINGUISHING CLASS V-0



The corners, omega joints and accessories made of plastic material can be produced with special additives in order to obtain characteristics that affect the flame retardancy and antibacterial finishings.

It can therefore obtain:

- **Fire resistant products** of different self-extinguishing classes;
- Products that **prevent the growth of colonies of bacteria and fungi** in accordance with ISO 846:1997.

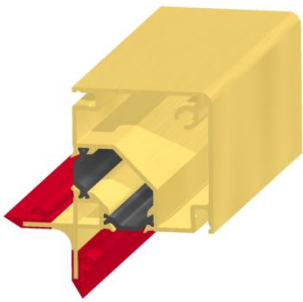
#### 5. ACCESSORIES IN THERMOPLASTIC MATERIAL IN ACCORDANCE WITH ATEX DIRECTIVE



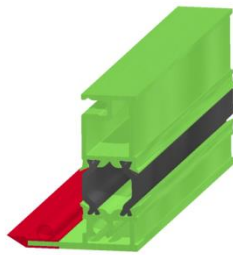
The accessories can be manufactured with **thermoplastic material** suitable for use in potentially explosive atmospheres **in accordance with ATEX directive 94/9/EC**.

By using specific additives a special compound is obtained: it **prevents the build-up of electrostatic charges and propagation of arcs** by high values of CTI (Comparative Tracking Index), allowing to ground static electricity.

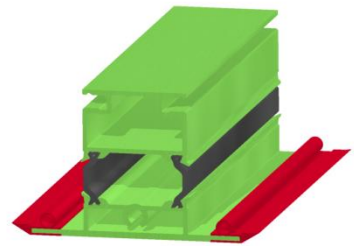
**PROFILES AND ACCESSORIES FOR THERMAL BREAK SYSTEM 55**



[P 155/45 PS TB IR](#)



[P 255/45\\_2 PS TB](#)



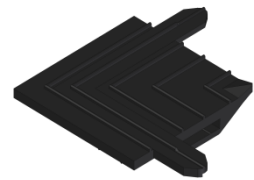
[P 255/45 PS TB](#)



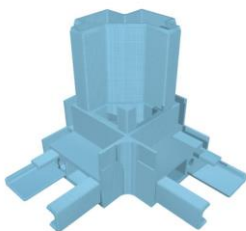
[PS 15X6](#)



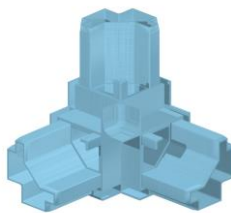
[G 002](#)



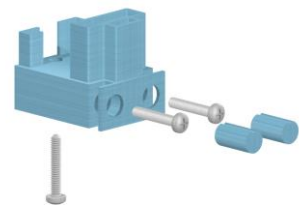
[GS-20](#)



[N 55/45 2 IR JP](#)



[N 55/45 IR](#)



[N 55/45 JP](#)