

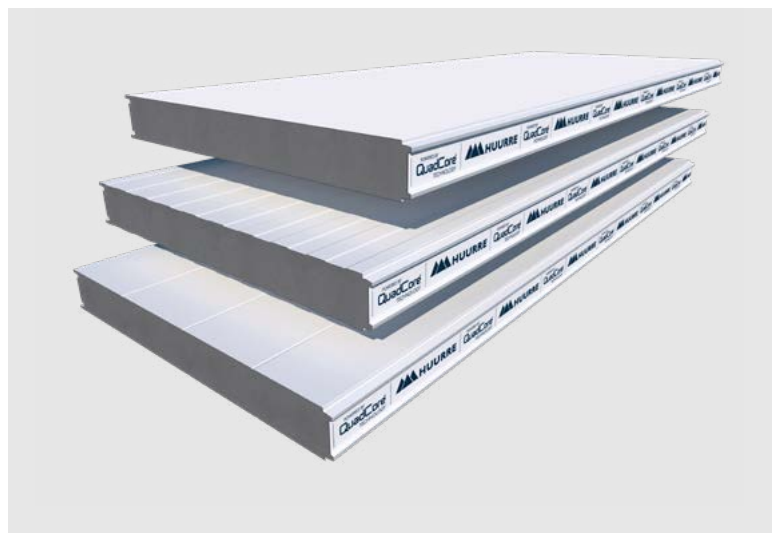
# HI-QuadCore<sup>®</sup> F



High performance cold storage panel, with new QuadCore<sup>®</sup> insulating core

POWERED BY  
**QuadCore**<sup>™</sup>  
TECHNOLOGY

- ▶ High thermal insulation, resulting in a thermal transmittance of just 0.08 W/m<sup>2</sup>K (230mm thick panel).
- ▶ High level of resistance to fire, ideal as a compartmentation element against fire in rooms with negative temperatures or high temperature gradients.
- ▶ High performance of mechanical resistance and suitable for outdoor use.
- ▶ Four finish options and a wide range of coating to offer great durability.
- ▶ No water absorption, maintains its performance throughout its useful life, and it is not affected by biological agents.
- ▶ High air and water tightness of its joint, accredited by tests.



CE

 **HUURRE**



### Description and applications

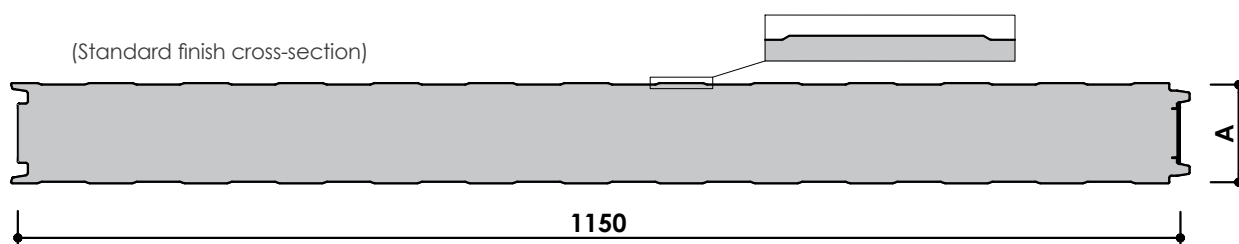
Cold storage panel with metal faces and rigid QuadCore® insulating core, which provides one of the best thermal insulation on the market, high level of fire protection and great durability.

Certified panel for use both indoors and outdoors, designed for applications that require a high degree of insulation: food industry, cold rooms, laboratories, clean rooms, etc.

Ideal as an element for fire compartmentation in freezing and refrigeration facilities, logistics and the agri-food sector, reaching a resistance of up to 60 minutes (EI 60 for the 230 mm thick panel) even for high-rise chambers.



### Dimensions, mass and thermal properties



<b>Useful width</b>	1,150 mm (1,120 mm, check availability)								
<b>Manufacturing length</b>	<b>Standard</b>	2.0 to 13.5 m							
	<b>Special</b>	13.5 to 18 m (special transport)							
<b>Type of joint</b>	FJ - FS								
<b>Fresh thermal conductivity</b>	0.018 W/mK								
<b>Declared thermal conductivity</b>	0.019 W/mK (considering an aged core)								
<b>Insulating core density</b>	40 ± 5 kg/m <sup>3</sup>								
<b>Total thickness (A)</b>	60	80	100	125	150	175	200	230	(mm)
<b>Mass<sup>2</sup></b>	10,89	11,69	12,49	13,49	14,49	15,49	16,49	17,69	(kg/m <sup>2</sup> )
<b>Thermal transmittance<sup>1,2</sup></b>	0.34	0.25	0.20	0.15	0.13	0.11	0.10	0.08	(W/m <sup>2</sup> K)
<b>Thermal resistance<sup>2</sup></b>	3.28	4.33	5.38	6.70	8.01	9.33	10.64	12.22	(m <sup>2</sup> K/W)

NOTES: (1) Declared values corresponding to the HI-QuadCore F panel manufactured in Huurre.  
 (2) For 0.5/0.5mm (int/ext) steel sheets, FJ joint and 1.150 mm width.

# HI-QuadCore® F

## High thermal performance panel for cold storage



### QuadCore® features



#### High thermal efficiency

The QuadCore® insulating core has a high thermal performance, with an aged thermal conductivity of just 0.019W/mK.



#### High level of protection to fire

The QuadCore® core has a higher fire performance, providing a better protection in case of fire.



#### High environmental sustainability

The use of Huurre's range of HI-QuadCore® panels can enable reduce operational energy loss and reduces associated transport emissions.



#### High durability

By not absorbing moisture, the functional performance of the QuadCore® core does not diminish over time, offering its high durability.

### Components

#### Panel facings

Cold profiled sheet from structural steel coil type S220GD, of certified quality, hot galvanized according to EN 10346 and EN 10169. Standard sheet thicknesses: 0.5/0.5 mm (interior/exterior).

It is essential to respect the orientation of the panel faces: outer face with transparent film, inner face with blue film.

#### Insulating core

Rigid QuadCore foam, injected continuously, through a process that does not release HCFC-type gases.

#### Finishes

Manufacture with four finishing options: standard in slightly corrugated finish, or smooth, semi-smooth or micro-profiled. Semi-smooth profiling on panels with a width of 1,120mm is not available.

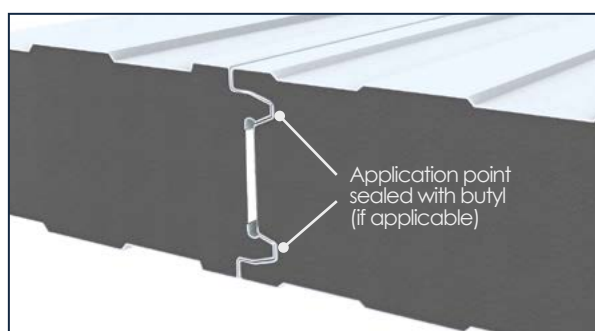
### Leak-tight of the joints

The air and water tightness of the joint between HI-Quadcore F panels is solved without the need for a polyethylene gasket in the longitudinal joints. This solution has been tested according to standards EN 14509:2014, EN 12114:2000 and EN 12865:2002. Report 21/24754-1195 results in:

- **Air permeability\***: 0.000 m<sup>3</sup>/h · m<sup>2</sup> at 50 Pa

- **Water permeability\***: CLASS A - 1,800 Pa

(\*) Valid values for thicknesses equal to or greater than 80mm



In the case of negative temperature chambers, it will be necessary to seal the interior joint between panels with butyl (or equivalent product) at least on the face with the highest temperature in order to avoid the permeability of water vapor through the joint.



### Usage tables (daN/m<sup>2</sup>)

The HI-QuadCore F panel is suitable for use on walls, ceilings and exterior cladding of facades, thanks to its high rigidity, resistance to impacts and high durability.

The following tables indicate the maximum allowable distances between supports (m) as a function of the panel thickness (mm) and the characteristic uniformly distributed pressure load (without factoring) (daN/m<sup>2</sup>). Tables calculated according to UNE-EN 14509:2014 Standard for both SLS and ULS. Consult us for the case of suction loads.

#### TWO SUPPORTS

		Pressure loads (daN/m <sup>2</sup> )							
		50	75	100	125	150	175	200	
L(m)	Thickness	60	5.40	4.51	3.59	2.87	2.40	2.06	1.80
		80	6.67	5.60	4.82	3.86	3.22	2.77	2.42
		100	7.83	6.59	5.71	4.84	4.04	3.46	3.04
		125	8.86	7.23	6.27	5.61	5.07	4.34	3.80
		150	9.48	7.75	6.71	6.00	5.48	5.07*	4.56*
		175	10.00	8.17	7.07	6.33	5.77*	5.34*	5.00*
		200	10.42	8.51	7.37	6.59	6.01*	5.56*	5.21*
		230	9.18	7.49	6.49*	5.80*	5.30*	4.89*	4.57*

#### MULTI SUPPORTED

		Pressure loads (daN/m <sup>2</sup> )							
		50	75	100	125	150	175	200	
L(m)	Thickness	60	6.13	4.79	3.60	2.88	2.40	2.06	1.80
		80	7.16	5.85	4.83	3.87	3.23	2.77	2.42
		100	8.07	6.59	5.65	4.83*	4.03*	3.45*	3.02*
		125	8.87	7.24	6.26*	5.59*	5.05*	4.33*	3.79*
		150	9.49	7.61	6.70*	5.99*	5.47*	5.06*	4.56*
		175	10.51	8.56*	7.41*	6.63*	6.06*	5.61*	5.24*
		200	10.97	8.95*	7.74*	6.93*	6.33*	5.81*	5.48*
		230	9.18	7.49	6.47*	5.78*	5.28*	4.88*	4.57*

1 daN/m<sup>2</sup> ≈ 1 kg/m<sup>2</sup>

NOTAS:  
 Support width = 50mm (\*) Support width > 50mm  
 Consult HUURRE for other support widths.  
 Tables for light coloured panels. Consult for dark panel.  
 Minimum external temperature considered -10°C.

### Reaction to fire

#### Fire reaction classification

##### EUROCLASS B-s1,d0

**B:** Very limited contribution to fire and will not lead to flashover<sup>1</sup>

**s1:** Little or no smoke production

**d0:** No flaming droplets / particles

(1) best classification possible for an organic type material.

Reaction to fire is determined according to UNE-EN 13501-1:2019 standard.

#### EI fire resistance

EI 60 (only HI-QuadCore F 230 panel)

The HI-QuadCore F 230 sandwich panel has been tested according to EN 13501-2:2016 standard, obtaining the EI 60 classification (resistance of 60 minutes), with spans up to 7.50 m, according to the EXAP EN 15254-5:2020. Consult the assembly conditions. Tested under the name "HI-QuadCore-F 230 (EI)".



### Energy loss through the enclosure

The following table gives the energy losses through the enclosure (W/m<sup>2</sup>), depending on the HI-QuadCore F panel thickness and the temperature gradient between its two faces.

Panel thickness (mm)	60	80	100	125	150	175	200	230	
U (W/m <sup>2</sup> °C)	0.34	0.25	0.20	0.15	0.13	0.11	0.10	0.08	
Temperature gradient between the two sides of the enclosure (°C)	10	3.41	2.45	1.95	1.54	1.27	1.10	0.97	0.84
	15	5.12	3.68	2.93	2.31	1.91	1.65	1.46	1.26
	20	6.82	4.90	3.90	3.08	2.54	2.20	1.94	1.68
	25	8.53	6.13	4.88	3.85	3.18	2.75	2.43	2.10
	30	10.23	7.35	5.85	4.62	3.81	3.30	2.91	2.52
	35	11.94	8.58	6.83	5.39	4.45	3.85	3.40	2.94
	40	13.64	9.80	7.80	6.16	5.08	4.40	3.88	3.36
	45	15.35	11.03	8.78	6.93	5.72	4.95	4.37	3.78
	50	17.05	12.25	9.75	7.70	6.35	5.50	4.85	4.20
	55	18.76	13.48	10.73	8.47	6.99	6.05	5.34	4.62
	60	20.46	14.70	11.70	9.24	7.62	6.60	5.82	5.04
	65	22.17	15.93	12.68	10.01	8.26	7.15	6.31	5.46
	70	23.87	17.15	13.65	10.78	8.89	7.70	6.79	5.88
75	25.58	18.38	14.63	11.55	9.53	8.25	7.28	6.30	
80	27.28	19.60	15.60	12.32	10.16	8.80	7.76	6.72	

NOTE: In blue, the recommended losses through the enclosure in negative cold storage (6 W/m<sup>2</sup>)  
In yellow, the recommended losses through the enclosure in positive cold storage (8 W/m<sup>2</sup>)

### Available coatings

Table of coatings choice to ensure the maximum durability of the panel. CPI1 and RC1 classifications considered suitable for healthy environments, and CPI5 and RC5 suitable for very aggressive environments.

	Outdoor environment						Indoor environment					
	Rural without pollution	Urban/Industrial		Marine		Resistance		Non-aggressive environments		Aggressive and/or very humid environments	Resistance Indoor corrosion category	
		Moderate	Severe	Between 3 and 20 km	< 3 km <sup>(1)</sup>	Mixed	Outdoor corrosion category	UV	Low humidity			Medium humidity
E5001	⊗	⊗	⊗	⊗	⊗	⊗	NA	NA	✓	⊗	⊗	⚠
Polyester 25 μ	✓	✓	⚠	⚠	⊗	⊗	⚠	⚠	✓	⊗	Ai3 <sup>2</sup>	CPI2
Polyester plus 25 μ	✓	✓	⚠	✓	⊗	⊗	RC3	RUV2	✓	✓	Ai3	CPI3
PVDF 35 μ	✓	✓	⚠	✓	⚠	⚠	RC4	RUV4	✓	✓	Ai3	CPI4
HDX 55 μ	✓	✓	✓	✓	✓	⚠	RC5	RUV4	✓	✓	Ai3	CPI4
PET 50 μ	⊗	⊗	⊗	⊗	⊗	⊗	NA	NA	✓	✓	Ai5	CPI5
INOX	⊗	⊗	⊗	⊗	⊗	⊗	NA	NA	✓	✓	Ai5	Exc <sup>2</sup>
INOX PVC + PET	⊗	⊗	⊗	⊗	⊗	⊗	NA	NA	✓	✓	Ai6	Exc <sup>2</sup>

✓ Suitable coating ⊗ Unsuitable coating ⚠ Consult HURRE IBÉRICA (1) Consult for distances <300m (2) Check conditions  
(NA) Not applicable (Exc.) Excelente. For other coatings, consult our Technical Department.


# HI-QuadCore® F

## High thermal performance panel for cold storage

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### Quality and manufacturing standards

#### HI-QuadCore® F panel certifications

 CE marking according to EN 14509:2013 standard.

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### Additional features

#### Resistance to biological agents

HUURRE's HI-QuadCore® F panels, thanks to the closed structure of the insulating core, are resistant to attack by fungi, moulds and other deteriorating biological agents.

They are, therefore, suitable for applications that require a high degree of hygiene and healthy conditions (agrofood sector, laboratories, etc.).

#### Water absorption

The hybrid QuadCore® insulating core of the panel does not absorb water and thus maintains its performance throughout its lifetime. For this reason, they can be installed in adverse weather conditions.

#### Sustainability

Both the steel and their metallic and organic coatings are free of SVHC (Substances of Very High Concern), in conformity with the requirements of the European REACH regulation.

#### Guaranteed and certified quality

HUURRE's Integrated Quality Management System, in accordance with ISO 9001, is certified by AENOR and IQNet (certificate ER-0947/1998).

HUURRE's Environmental Management System, in accordance with ISO 14001, and the Occupational Health and Safety System, in accordance with ISO 45001, are certified by AENOR and IQNet (certificates GA2003/0091 and ES-SST-0035/2010 respectively).

The Compliance Management System, in accordance with ISO 37301:2021, is certified by Advanced Certification Ltd.

# HI-QuadCore® F

High thermal performance panel for cold storage



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