

# **AKCE** PANEL

# Strength and Design Beyond Limits

We add confidence, high engineering and aesthetic value to your projects at global standards.

Founded in 2022, Akce Panel has become a strong solution partner in global markets in a short time with its modern production technologies, engineering experience and quality-oriented approach.

Our wide product range consisting of roof panels, facade panels, cold room panels and complementary accessory groups; It offers longlasting, high insulation performance and aesthetic solutions in many projects from industrial facilities to logistics centers, commercial buildings to living spaces.

As Akce Panel; we fully adapt to the needs of our customers in different geographies with flexible capacity in production, fast delivery, projectbased engineering support and international certifications. By prioritizing quality in every detail, sustainability and trust in every project; we build global business partnerships, not just panels.

# Roof Facade Cold Thermal Trapezoidal Panels **Panels** Insulation Room Sheets Panels **Boards** Our 3 and 5-layer roof We give your Our cold room Designed to promote Available in various

Our 3 and 5-layer root panels, compatible with polycarbonate and solar, provide durability and energy efficiency. Resistant to harsh weather conditions, our panels deliver maximum performance. We give your buildings a modern look with aesthetic and durable options such as siding facade panels and hidden screw systems. Our highly insulated panels combine functionality.

Our cold room panels, which provide high insulation, offer ideal solutions for industries where temperature control is critical. They provide excellent insulation for sensitive products. Designed to promote energy efficiency, our thermal insulation boards minimize heat transfer and offer ideal solutions for sustainable buildings.

Available in various sizes, our trapezoidal sheets are an excellent choice for industrial roofing and facade cladding, offering durability and performance. Sizes can be adjusted as needed.





# Production Powered by Technology

Akce Panel offers innovative, environmentally friendly and economical solutions to the industrial building sector with its high-tech production infrastructure.

With our speed, trust and quality-oriented approach in every project, we continue to be among the strong brands of the sector in sandwich panel and facade systems.

Representing "Made in Turkey" quality in global markets, we operate in a structure open to continuous development with our dynamic production power, expert sales team and strong business partnerships. We go beyond meeting customer expectations and transform quality into a sustainable standard.

We strive for high efficiency and operational excellence with our corporate structure, effective use of resources and continuous improvement approach.



Our Understanding of Quality

Full compliance with national and international standards and continuous audit,

Quality management system focused on continuous development and process improvement,

Superior quality bearing the signature of Akce Panel at every stage from supply chain to delivery,

Strong teamwork through training programs that develop our human resources,

Determination to contribute to the national economy with a sustainable and responsible production approach that respects the environment and society.

# 

Akce Panel sandwich panels are composite building elements produced with polyurethane or rock wool filling material placed between two metal surfaces. Akce Panel systems, which have a wide range of applications in roofs, facades, interior partitions and cold storages, are one of the indispensable choices of modern buildings with their high carrying capacity, superior heat and sound insulation, ease of fast assembly and aesthetic design.

The carrying capacity of the panels is determined by the density of the filling material used, the form of the metal surfaces, the panel thickness and the wall thickness of the metal sheets. For each project; the most suitable panel thickness and form are meticulously calculated in line with the intended use of the building, the loads it will be exposed to and the climatic conditions.

Akce Panel sandwich panels offer an aesthetic and functional solution to the outer shell of buildings without the need for plaster and paint. At the same time, it exhibits long-lasting performance by providing water, heat and sound insulation. While natural aluminum, painted aluminum, painted galvanized sheet and stainless steel sheet options are offered on metal surfaces, the wide color scale can be customized according to the demand of the customers through the RAL Catalog.

Akce Panel continues to provide reliable and innovative solutions to the construction sector by producing with high quality standards and engineering precision in every project. **AKCE** PANEL

# **Coating Types**

The metal surfaces used in Akce Panel sandwich panels consist of a combination of core sheet, galvanized coating and organic coating layers. This layer structure gives our products long life and high corrosion resistance. Especially organic coatings provide high protection against external factors and significantly extend the panel life.

Depending on the corrosion type and ambient conditions, the outer surface coating thicknesses are generally 25µm organic coating and 20µm galvanized, totaling approximately 45µm. However, in special projects and harsh environmental conditions, this thickness can be increased up to 200µm. Organic coatings also show high resistance to UV rays, chemicals, temperature changes, humidity and physical effects. Wide color options provide aesthetic and design flexibility in architectural projects. Akce Panel offers different coating systems according to customer needs and project conditions. Coating types are basically categorized in three groups: liquid coating, film coating and powder coating. The metal surface material used is galvanized sheet metal or aluminum and appeals to various usage areas with different quality and color options.

#### **Coating Types and Properties**

#### Polyester:

Offers balanced protection against outdoor conditions, flexibility and temperature resistance. Economical and versatile, it is widely preferred both indoors and outdoors.

#### PVdF (Polyvinylidene Fluoride):

Provides high UV and chemical resistance, corrosion resistance is at a high level. Thanks to

its color stability and gloss resistance, it is the ideal solution for roof and facade applications of prestige projects.

#### **Plastisol:**

It shows high resistance to moisture and abrasion with superior formability. Suitable for areas in contact with food and cold-humid climatic conditions.

#### PVC Film (Lamination):

With its flexible forming feature and easy-to-clean structure, it can be safely used in food and health projects where hygiene is at the forefront.

Akce Panel continues to produce solutions that provide added value to the building sector by keeping the balance of quality, aesthetics and longevity at the highest level in every project.

Coating Type	Scratch Resistance (gms)	Corrosion Resistance - Salt Spray (hours)	Corrosion Resistance- Humidity (hours)	Average Thickness (µm)	Temperature Resistance (°C)
Polyester	2800	500	1000	25	120
PVdF	3000	500	1000	27	120
Plastisol	3500	1000	1000	100-200	60
PVC Film	3500	1000	1000	200	60



AKGE PANEL

# **Prepainted Galvanised Steel Sheet**

In Akce Panel production processes, pre-painted and galvanised sheet metal rolls supplied from manufacturers operating on a global scale and leading the sector in terms of quality standardisation are used. All metal sheets supplied are produced in full compliance with ECCA (European Coil Coating Association) norms and exhibit high level performance in terms of coating homogeneity, surface quality and corrosion resistance.

These sheets, whose high coating thickness tolerances, surface smoothness and chemical resistance are guaranteed, provide long service life, high structural strength and aesthetic integrity in Akce Panel sandwich panel systems. With galvanised, aluminium and organic coated metal sheet options selected in accordance with different project requirements, high performance solutions are offered under various climatic and load conditions.



Property	Value	Standard
Steel Grade	DX51D+Z	EN 10327
Thickness Tolerance	± 0.05 mm (0.4 mm < Thickness ≤ 0.6 mm)	EN 10143
Tensile Strength	500 MPa (max)	EN 10327
Elongation at Break	22% (min)	EN 10327
Coating Weight	100–275 g/m²	EN 10327
Coating Type	Polyester, PVdF, Plastisol, PVC, Polyurethane, etc.	-

# **Painted Aluminium**



Property	Value	Standard
Alloy	EN AW 3000 Series	EN 573-3
Temper	H 16 - H 26	EN 485-2
Thickness Tolerance	$\pm$ 0.05 mm (for sheet thickness $\leq$ 0.6 mm)	EN 485-4
Yield Strength	150 MPa	EN 485-2
Tensile Strength	175 MPa	EN 485-2
Elongation at Break (%)	≥ 3	EN 485-2
Surface Appearance	Embossed or Painted	EN 485-2

9

## Membrane

PVC and TPO membranes used in Akce Panel roof systems are flexible waterproofing layers combined with hot air welding, showing high resistance against sun rays, UV effects and harsh atmospheric conditions. Thanks to its polyester reinforced structure, its dimensional stability and tear resistance are extremely high. The geotextile felt lamination layer on the bottom surface provides a strong adhesion with the polyurethane insulation core and increases the integrity of the system by preventing direct contact between the membrane and the insulation material. This structure offers long-lasting insulation and superior waterproofing performance.





# **Polyurethane Rigid Foam**

Polyurethane (B2 class) and polyisocyanurate (B1 class) fillings that offer high thermal insulation performance are used in Akce Demir Çelik branded sandwich panels. These materials, which are preferred as insulation cores, are supplied from the world's leading chemical manufacturers and offer long-lasting and reliable solutions thanks to their water-repellent structure and pest-free properties. Akce Demir Çelik makes a difference in the sector with panel systems that have strong structural integrity, high energy efficiency and comply with fire safety standards.

# **Thermal Insulation**

 $\lambda$  (W/m-K) - Coefficient of Thermal Conductivity

The thermal conductivity value ( $\lambda$ ) is a constant parameter that determines the ability of a material to conduct heat and depends only on the physical and chemical structure of that material. It is defined as the expression in Watts (W) of the amount of energy required to maintain a 1 Kelvin temperature difference between the inner and outer surfaces in a wall consisting of a material with a surface area of 1 m<sup>2</sup> and a thickness of 1 metre. Polyurethane (PUR) and polyisocyanurate (PIR) fillers used in Akce Panel products offer high thermal insulation performance thanks to their low  $\lambda$  value. The closer the thermal conductivity coefficient is to zero, the higher the insulation capability of the material. Therefore, PUR/PIR filled panels provide much superior results in terms of energy efficiency compared to other insulation materials.

Akce Panel solutions are the ideal choice for high energy saving, low heat transfer and sustainable buildings.

# U (W/m<sup>2</sup>K) Thermal Transmission Value

U (W/m<sup>2</sup>-K) value; It expresses the amount of energy required per unit time to maintain the 1 Kelvin temperature difference between two parallel surfaces of a building element with a known thickness and a surface area of 1 m<sup>2</sup>. The lower this value is, the higher the thermal insulation performance of the relevant material is considered.

When determining the thickness of the filling materials used in Akce Panel sandwich panel systems, the optimum structure that will provide low thermal transmittance (U) and high insulation performance is targeted. This approach allows us to offer sustainable and comfortable building solutions with high energy efficiency.

nal transmittance (U) and high insula
ance is targeted. This approach allow
er sustainable and comfortable build
with high energy efficiency.

Standard	Material	λ (W/m·K)	U (W/m²·K) - 50 mm
EN 13162	Reinforced Concrete	2,2	44
EN 13162	Aerated Concrete Wall	0,16	3,2
EN 13162	Glass Wool	0,045	0,9
EN 13162	Rock Wool	0,04	0,8
EN 13162	EPS	0,038	0,76
EN 13162	PUR	0,022	0,44
EN 13162	PIR	0,022	0,44

Description	100 mm	120 mm	150 mm	200 mm	40 mm	50 mm	60 mm	80 mm
U (W/m²·K)	0,22	0,183	0,147	0,11	0,55	0,44	0,367	0,275

## **Fire Perfomance**

The flammability of a building material and its resistance to fire is generally defined as fire performance. Especially the joint details of building systems such as facade and roof panels are the most risky points during fire. For this reason, the fire resistance of sandwich panels is determined by testing according to the relevant national and international standards. TS EN 14509 standard defines the classification and test methods for the fire performance of sandwich panel systems in detail.

Materials are divided into six different classes according to their reaction to fire starting from A1 to F. In addition, the amount of smoke released during the fire (s1, s2, s3) and flammable dripping behaviour (d0, d1, d2) are also included in the evaluation.

#### **Fire Test Methods**

Ignition Test - SFI (TS EN ISO 11925-2) Ignition tendency is determined by applying a lighter sized flame to the corner or surface of the test specimen for 15 or 30 seconds.

Fire Reaction Test - SBI (TS EN 13823) With this test method, the fire reactions of building materials in classes A2, B, C and D are measured. - According to the smoke density in the first 10 minutes: s1 (low), s2 (medium), s3 (intense) - According to dripping behaviour: d0 (no dripping), d1 (non-flammable dripping), d2 (flammable dripping)

#### Fire Performance According to Filling Materials

#### PUR / PIR

Polyurethane (PUR) and polyisocyanurate (PIR) fillers are the most advantageous materials among plastic foams in terms of fire resistance. Thanks to the correct formulation and flame retardant additives, they can offer fire performance in high classes such as B-s1,d0.

#### **EPS/XPS**

Expanded (EPS) and extruded (XPS) polystyrene foams have low fire resistance. It starts to melt at about 100  $^{\circ}$ C and can form droplets during fire. They are generally in class E or F.

#### **Rock Wool**

Rock wool, which is a naturally non-combustible material, is in class A1. Stone wool filled panels provide high fire safety in facade, roof and interior partition applications. Depending on the thickness and panel joint details, it can provide fire resistance between 30 and 120 minutes.

#### Conclusion

Akce Panel offers different panel alternatives filled with PUR, PIR, EPS and Rock Wool according to project-specific fire safety needs. Both structural safety and fire resistance are provided with a range of CE certified products that comply with international standards.

Property	PUR	PIR	EPS/XPS	Rock Wool
Dimensional Stability Loss Temperature (°C)	-200	-200	-90 to -100	-
Ignition Temperature (°C)	285–310	415	245-345	-
Fire Performance	Good	Good	Weak	Very Good
EN 13162	PIR	0,022	0,44	

# roofpanels

Roof panels provide both durability and energy efficiency as an essential part of modern buildings. These panels offer long-lasting protection by showing resistance to various climatic conditions. Thanks to their insulation properties, they help maintain the temperature balance of interior spaces, thus providing energy savings. Additionally, some panels reduce lighting needs by directing natural light into interior spaces and provide an aesthetic appearance. While their waterproofing properties provide secure protection especially in rainy weather, environmentally friendly designs contribute to sustainable projects by working compatibly with solar energy systems.

akcedemircelik.com

**AKCE** PANEL

# 3 Ribs Roof Panel









#### **TECHNICAL SPECIFICATIONS**

Application Area	Roof
Effective Width	1000 mm
Minimum Length	2.4 meters
Maximum Length	Depends on Transportation Conditions
Polyurethane Density (EN 1602)	40 (±2) kg/m²
Polyurethane Thickness (d)	20-30-40-50-60-80-100 mm
Fire Rating (EN 13501)	B, s2, d0
Metal Type	Pre-painted Galvanized Steel or Aluminum
Standard Top Metal Thickness	0.50 mm
Standard Bottom Metal Thickness	0.40 mm

Top Metal Thickness (mm)	Bottom Metal Thickness (mm)	PUR Core Thickness (mm)	Purlin Distance 150 cm	Purlin Distance 175 cm	Purlin Distance 200 cm	Purlin Distance 225 cm	Purlin Distance 250 cm	Purlin Distance 275 cm	Purlin Distance 300 cm
0,5	0,4	20	161	121	89	66	48	36	26
0,5	0,4	30	336	238	194	177	172	97	36
0,5	0,4	40	488	355	282	231	213	173	98
0,5	0,4	50	586	426	351	290	266	209	152
0,5	0,4	60	658	466	406	345	306	246	204
0,5	0,4	80	1128	893	689	553	447	342	296
0,5	0,4	100	1233	891	794	645	546	446	376





#### LOAD BEARING TABLES (PGS) – PRE-PAINTED GALVANIZED SHEET

Top Sheet Thickness (mm)	Bottom Sheet Thickness (mm)	PUR Core Thickness (mm)	Purlin Spacing 150 cm	175 cm	200 cm	225 cm	250 cm	275 cm	300 cm
0,5	0,4	20	161	121	90	66	58	44	36
0,5	0,4	30	336	238	194	177	137	98	72
0,5	0,4	40	486	386	314	252	212	173	147
0,5	0,4	50	672	535	451	393	293	203	163
0,5	0,4	60	858	681	550	442	375	305	256
0,5	0,4	100	1233	981	794	645	540	446	376
0,5	0,4	100	1233	891	794	645	546	446	376

# 5 Ribs Roof Panel





#### **TECHNICAL SPECIFICATIONS**

Application Area	Roof
Effective Width	1000 mm
Minimum Length	2.4 meters
Maximum Length	Depends on transport conditions
Polyurethane Density (EN 1602)	40 (±2) kg/m³
Polyurethane Core Thickness (d)	20-30-40-50-60-80-100 mm
Fire Reaction Class (EN 13501)	B, s2, d0
Metal Type	Prepainted Galvanized Steel or Aluminium
Standard Top Sheet Thickness	0.50 mm
Standard Bottom Sheet Thickness	0.40 mm

# 3 Ribs Solar Roof Panel









#### TECHNICAL SPECIFICATIONS

Application Area	Roof
Effective Width	1000 mm
Minimum Length	2.4 meters
Maximum Length	Depends on Transportation Conditions
Polyurethane Density (EN 1602)	40 (±2) kg/m²
Polyurethane Thickness (d)	20-30-40-50-60-80-100 mm
Fire Rating (EN 13501)	B, s2, d0
Metal Type	Pre-painted Galvanized Steel or Aluminum
Standard Top Metal Thickness	0.50 mm
Standard Bottom Metal Thickness	0.40 mm

	Top Steel Sheet (mm)	Bottom Steel Sheet (mm)	Panel Thickness (mm)	1000 mm	1500 mm	2000 mm	2500 mm	3000 mm
	0,5	0,4	40	296	126	93	76	65
	0,5	0,4	50	360	222	172	125	102
	0,5	0,4	60	422	240	210	157	130
	0,5	0,4	80	500	285	240	185	147
	0,5	0,4	100	622	405	302	243	189
	0,5	0,4	80	1128	893	689	553	447
	0,5	0,4	100	1233	891	794	645	546





# 5 Rolled Roof Panel



1000

#### **TECHNICAL SPECIFICATIONS**

Application Area	Roof
Effective Width	1000 mm
Minimum Length	2.4 meters
Maximum Length	Depends on transport conditions
Polyurethane Density (EN 1602)	40 (±2) kg/m <sup>3</sup>
Polyurethane Core Thickness (d)	20-30-40-50-60-80-100 mm
Fire Reaction Class (EN 13501)	B, s2, d0
Metal Type	Prepainted Galvanized Steel or Aluminium
Standard Top Sheet Thickness	0.50 mm
Standard Bottom Sheet Thickness	0.40 mm

Top BGS (mm)	Bottom BGS (mm)	Panel Thickness (mm)	Purlin Gap 1000 (mm)	Purlin Gap 1500 (mm)	Purlin Gap 2000 (mm)	Purlin Gap 2500 (mm)	Purlin Gap 3000 (mm)
0,5	0,4	40	423	240	174	132	95
0,5	0,4	50	519	304	216	159	112
0,5	0,4	60	592	336	243	177	129
0,5	0,4	80	712	421	309	230	169
0,5	0,4	100	800	478	365	259	184
0,5	0,4	120	872	505	283	212	

(d)

# 4 Ribs Solar Roof Panel





## TECHNICAL SPECIFICATIONS

Area of Use	Roof
Useful Width	1000 mm
Minimum Length	2.4 meters
Maximum Length	Depends on Transportation Conditions.
Polyurethane Density (EN 1602)	40 (±2) kg/m²
Polyurethane Thickness (d)	40-50 mm
Fire Resistance Class (EN 13501)	B, s2,d0
Metal Type	Painted Galvanized Sheet or Aluminum
Standard Upper Metal Thickness	0.50 mm
Standard Lower Metal Thickness	0.40 mm

Upper Metal Thickness (mm)	Lower Metal Thickness (mm)	PUR (mm)	150 cm	175 cm	200 cm	225 cm	250 cm
0.50	0.40	40	395	317	258	208	176
0.50	0.40	50	547	437	354	290	243
0,5	0,4	100	1233	891	794	645	546

# facade panels

Facade panels are important elements that offer both aesthetics and functionality in modern architecture. These panels provide long-lasting protection to building exteriors thanks to their resistance to various weather conditions. Their high insulation values maintain indoor temperature balance, reducing energy consumption and providing savings. Additionally, many facade panels minimize lighting needs by directing natural light into interior spaces and give a modern appearance.

akcedemircelik.com

# Siding Facade Panel







#### TECHNICAL SPECIFICATIONS

Place of Use	Facade
Useful Width	1000 mm
Minimum Length	2.4 meters
Maximum Length	Depends on Transportation Conditions
Polyurethane Density (EN 1602)	40 (±2) kg/m²
Polyurethane Thickness	40-50-60-80-100 mm
Fire Class (EN13501)	B, s2, d0
Metal Type	Painted Galvanized or Aluminum
Standard External Metal Thickness	0.50 mm
Standard Internal Metal Thickness	0.40 mm

Upper Metal Thickness (mm)	Lower Metal Thickness (mm)	Polyurethane Thickness (mm)	Purlin Spacing	126	93	76	65
100 cm	150 cm	200 cm	250 cm	222	172	125	102
0.50	0.40	50	302	215	149	121	130
0.50	0.40	60	337	263	179	134	147
0,5	0,4	100	622	405	302	243	189
0,5	0,4	80	1128	893	689	553	447
0,5	0,4	100	1233	891	794	645	546





# Hidden Screw V Facade Panel



#### LOAD BEARING TABLES (PGS) – PRE-PAINTED GALVANIZED SHEET

Top Metal Thickness (mm)	Bottom Metal Thickness (mm)	PUR (mm)	100 cm	150 cm	200 cm	250 cm	300 cm
0,50	0,40	30	446	255	167	116	83
0,50	0,40	40	546	355	267	216	183
0,50	0,40	50	664	431	321	259	219
0,50	0,40	60	901	582	431	344	289
0,50	0,40	80	1135	730	536	424	353
0,50	0,40	100	1374	884	647	510	422

#### **TECHNICAL SPECIFICATIONS**

Application Area	Facade
Effective Width	1000 mm
Minimum Length	2.4 meters
Maximum Length	Depends on transportation conditions
Polyurethane Density (EN 1602)	40 (±2) kg/m²
Polyurethane Thickness (d)	30 - 40 - 50 - 60 - 80 - 100 mm
Fire Resistance Class (EN 13501)	B, s2, d0
Metal Type	Pre-painted galvanized sheet
Standard Upper Metal Thickness	0.50 mm
Standard Lower Metal Thickness	0.40 mm

facade panels

## Hidden Screw Facade Panel







#### TECHNICAL SPECIFICATIONS

Area of Use	Facade
Useful Width	1000 mm
Minimum Length	2.4 meters
Maximum Length	Depends on Transportation Conditions.
Polyurethane Density (EN 1602)	40 (±2) kg/m³
Polyurethane Thickness (d)	30 - 40 - 50 - 60 - 80 - 100 mm
Fire Resistance Class (EN 13501)	B, s2,d0
Metal Type	Painted Galvanized Sheet
Standard Upper Metal Thickness	0.50 mm
Standard Lower Metal Thickness	0.40 mm

Top Metal Thickness (mm)	Bottom Metal Thickness (mm)	PUR (mm)	100 cm	150 cm	200 cm	250 cm	300 cm
0.50	0.40	30	446	255	167	116	83
0.50	0.40	40	546	355	267	216	183
0.50	0.40	50	664	431	321	259	219
0.50	0.40	60	901	582	431	344	289
0.50	0.40	80	1135	730	536	424	353
0.50	0.40	100	1374	884	647	510	422



#### LOAD BEARING TABLES (PGS) – PRE-PAINTED GALVANIZED SHEET

Top Metal Thick- ness (mm)	Bottom Metal Thickness (mm)	PUR (mm)	100 cm	150 cm	200 cm	250 cm
0.50	0.40	50	302	215	149	121
0.50	0.40	60	337	263	179	134

#### **TECHNICAL SPECIFICATIONS**

Area of Use	Facade and Roof
Useful Width	1000 mm
Minimum Length	2.4 meters
Maximum Length	Depends on Transportation Conditions.
Polyurethane Density (EN 1602)	40 (±2) kg/m²
Polyurethane Thickness (d)	50-60 mm
Fire Resistance Class (EN 13501)	B, s2,d0
Metal Type	Painted Galvanized Sheet
Standard Upper Metal Thickness	0.50 mm
Standard Lower Metal Thickness	0.40 mm





Hamidiye Mahallesi 40859. Sokak No:36 E Beyşehir/KONYA/TURKIYE +90 531 022 54 01 info@akcedemircelik.com | www.akcedemircelik.com