

Armour  
Fire Resistant  
MCP Panels

**FIRE**  
RESISTANT  
—A2 Grade—



**ARMOUR**

Series

**ALSTRONG™**  
*always looks new*





## ABOUT US

Established in the year 2001, Alstrong was the first company to manufacture Aluminum Composite Panels (ACP) in India. The company is ISO 9001: 2015 certified and the product is accredited as a green product by State Pollution Control Board of Jammu & Kashmir. Over 16 years, it has made its mark as a forerunner in the industry and has retained its position as a leading player in the market with impeccable ACP product, quality and immense customer satisfaction.

Alstrong has a state-of-the-art manufacturing plant located in Jammu, equipped with latest technology, 5 manufacturing lines, a coil coating plant and an advance instrumental laboratory for continuous quality monitoring of raw materials and the finished ACP. The control processes of the plant are highly visible and integrated through SAP. As a result, the ACP that is produced fulfills the international quality standards, is highly durable and is naturally a preferred choice of leading architects, corporates, PMCs, interior designers, builders, contractors, fabricators and others. Alstrong team is also engaged in pro-active research and development initiatives to ensure that each product is continuously evolved to meet the emergent needs of its customers.

Alstrong has established its new plant with two new manufacturing lines for Class A ACP and Class A MCP (Metal Composite Panel) in Dubai, UAE to cater Middle eastern, AFRICAN and EUROPEAN market. The total installed capacity of Dubai plant is 3 Million square meter per annum.

Alstrong has created new benchmarks by introducing mineral core FR-ACP (Fire Resistant ACP), and unlimited shade options through its modern coil coating facility. Alstrong now has the largest ACP production capacity of over 8 million square meter per year. Alstrong is a part of the prestigious Worlds Window Group, an assemblage of progressive companies engaged in diverse businesses. The portfolio of business activities includes manufacturing, infrastructure, logistics, trading and freight forwarding. The operations of various companies of WWG are spread across the globe through its offices in India and 22 other countries. The group employs 2500 employees across the world and has a turnover of approximately USD 1 Billion.







Sound fundamentals, outstanding quality, anticipating the curve of demand and staying one step ahead of expectations is what drives us on a daily basis at Alstrong.

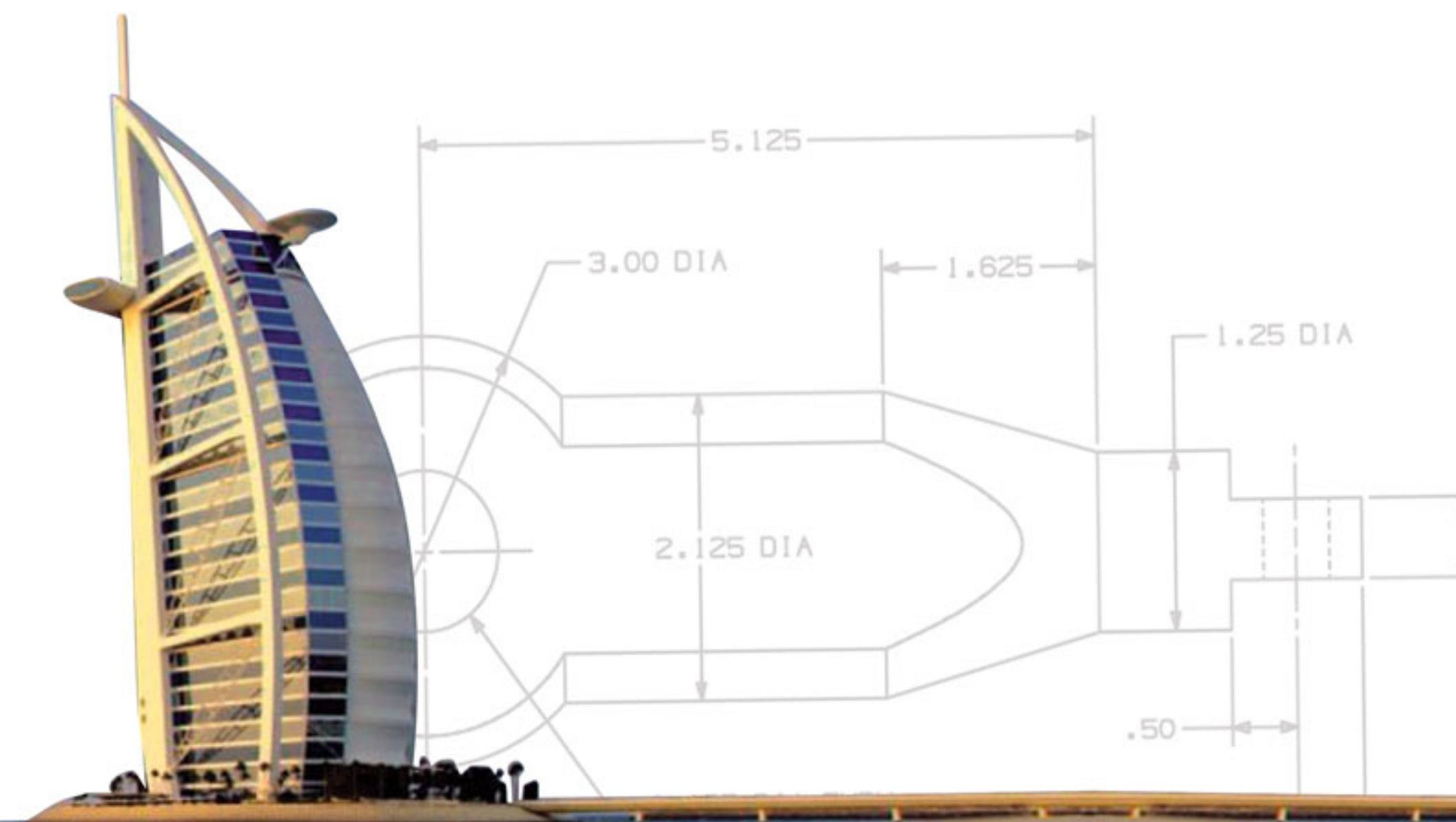
We use **leading-edge manufacturing technologies** to create products that are at par with the best in the world. Our specially designed, state-of-the-art FR grade ACPs/MCPs are built to resist fire. Another example of our commitment to innovative products that address specific requirements.

Our strong emphasis on R & D and intrinsic quality control at every step ensure innovative products that are engineered to uphold our motto of **always looks new.**

Underscoring this perpetually strong saga of product quality, choice and performance are our state-of-the-art manufacturing plants and a laboratory equipped with modern analytical machines like DSC, AAS, FTIR that keep an eagle eye on uncompromising quality standards. Best practices are a norm at our ISO 9001: 2015 & Indian Green Building Council certified plant. Seamless production efficiency and delivery timelines are ensured through our integrated SAP system.

Alstrong can turnaround any order with **custom created panel** within 10 days of brief, radically shortening a process that takes others anywhere from 3-4 months. Once approved, we can start production immediately for the quantity that's required for the project. The design remains available for any future projects, in the specification and quantity that may be needed.

**Coil Coating Integration. To respond faster** having our own coil coating unit helps us control every aspect of the production process; and to respond to the needs of architects, builders & designers much faster.





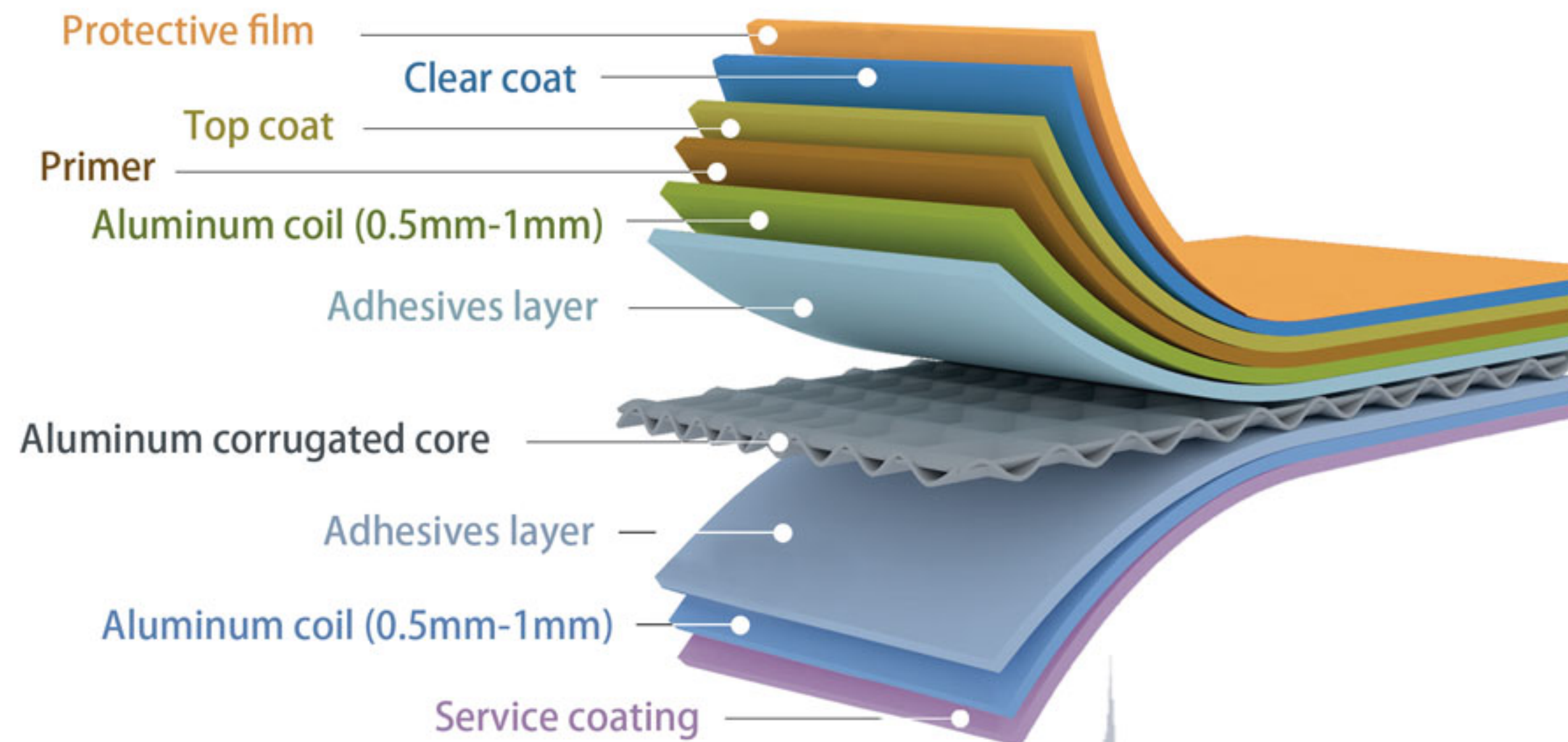
# ARMOUR CONSTRUCTION

## Alstrong FR - Alstrong Armour is not only strong but also beautiful

Alstrong FR is not only an easily machinable and flexible product but it also gives an ultra modern look to the buildings. Available in a wide range of colours, textures and patterns, Alstrong FR adds a touch of beauty to every surface it is pasted on. **Alstrong FR sheets can be customized to design and budgetary requirements.** What's more, new shade development and old shade matching facility is also available.

## Befriending a Greener Planet

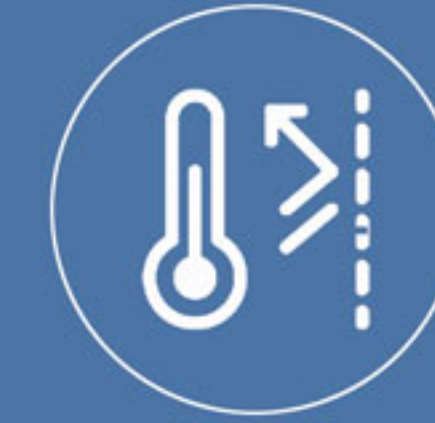
**FR is composed of corrugated metal core sandwiched between aluminum sheets.** This helps in conserving valuable resources of the nature and makes Alstrong FR an absolutely environment friendly product. The testimony to the nature friendly Alstrong FR lies in its acceptability for all green building projects. The Alstrong Armour is eco friendly and fully recyclable



## SPECIFICATIONS



Easy  
Installation



Low thermal  
Expansion coefficient



Good flatness  
& smoothness



Excellent  
Sound proofing



Fireproof  
A2 grade



Lightweight  
40% lighter than traditional  
mineral core panel

## APPLICATIONS

- Curtain walls
- Interior wall, ceiling, partition
- Bulkheads of carriage, shipping, railways and aerobats
- Interior application
- Billboard, sign panels



# ARMOUR FEATURES



## AESTHETIC

- Excellent flatness
- Scratch resistant
- Uniform color
- Stain resistant
- Water proof



## COMFORT

- Lightweight & rigid
- Highly adaptable
- Washable
- Customized color
- Sound & thermal resistant



## SAFETY

- Fire resistant
- High impact
- BFT guard
- Environment friendly



## ECONOMICAL

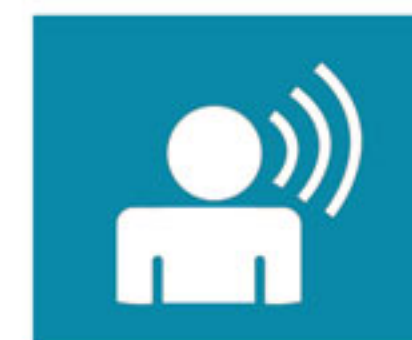
- Reduce labour cost
- Low maintenance
- Long durability
- Easy installation

# ADDITIONAL FEATURES



## TOUGH COHESIVE BOND

- 180° peeling resistance
- 2-3 times more than aluminum honeycomb panel's



## SOUND INSULATION

- Sound transmission loss is 40dB
- It is 25-28dB more than solid aluminum sheet



## HEAT INSULATION & ENERGY SAVING



## CONVENIENT INSTALLATION

- Safe installation method



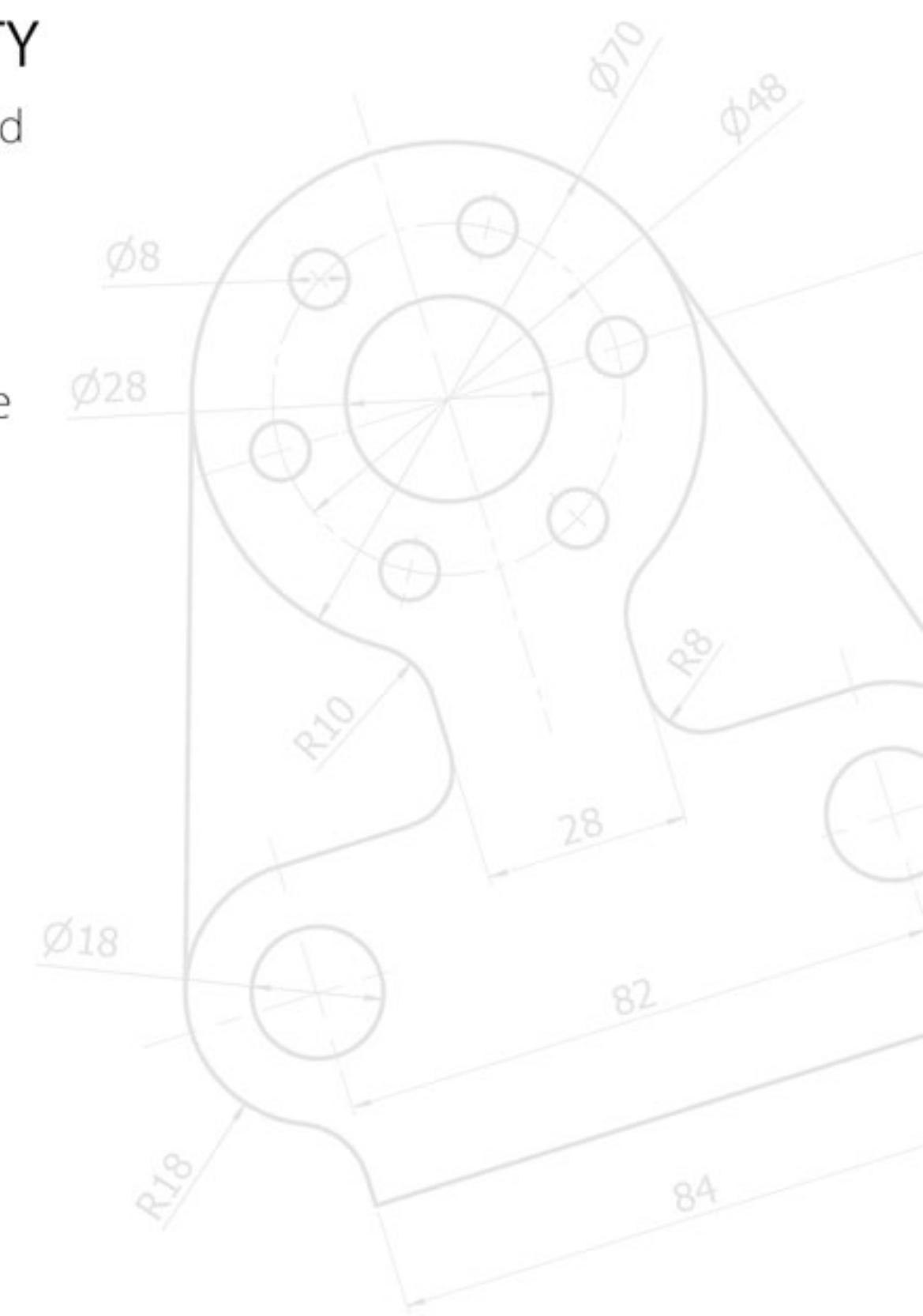
## FIREPROOF PROPERTY

- Fireproof property is classified "A2 grade"



## EASY HANDLING

- 40% lighter than comparable fire rated panels.
- Easy to transport & Install.







# FIRE RESISTANT

## Fire Behaviour - A2

### FIRE TEST TO BUILDING MATERIAL - CLASSIFICATION

Building materials fire behaviour has been classified into the following categories in accordance with the global standard.

#### BUILDING CLASS MATERIAL

#### DESIGNATION

CLASS A

A1

**A2**

**NON-COMBUSTIBLE MATERIAL**

CLASS B

B1

NOT EASILY FLAMMABLE

B2

FLAMMABLE

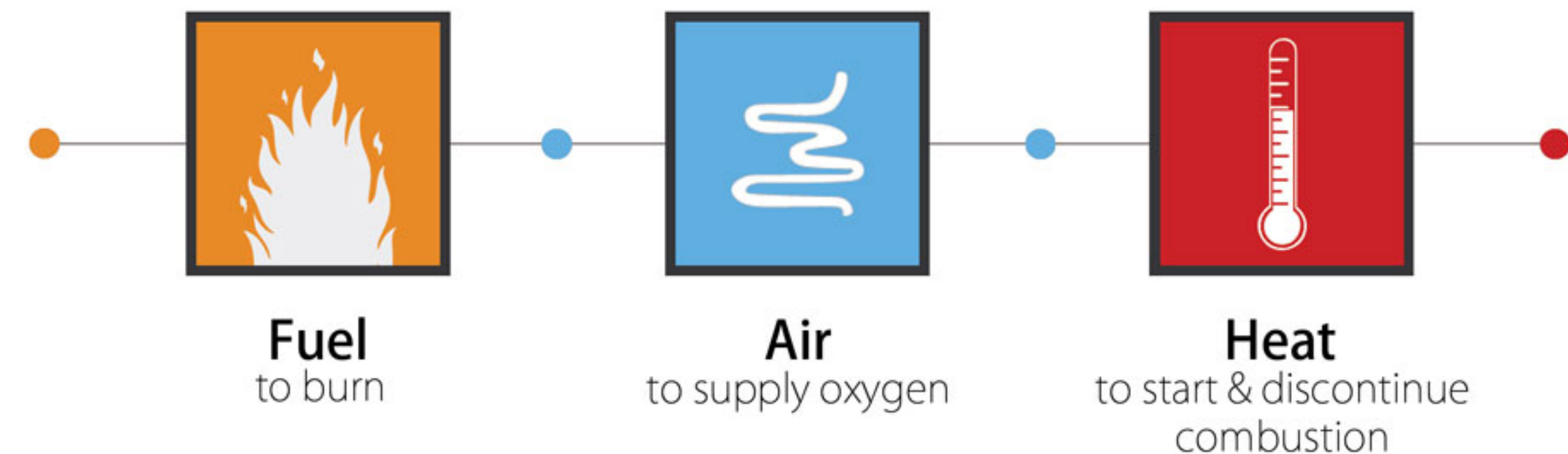
B3

EASILY FLAMMABLE

Alstrong Armour - Rated A2

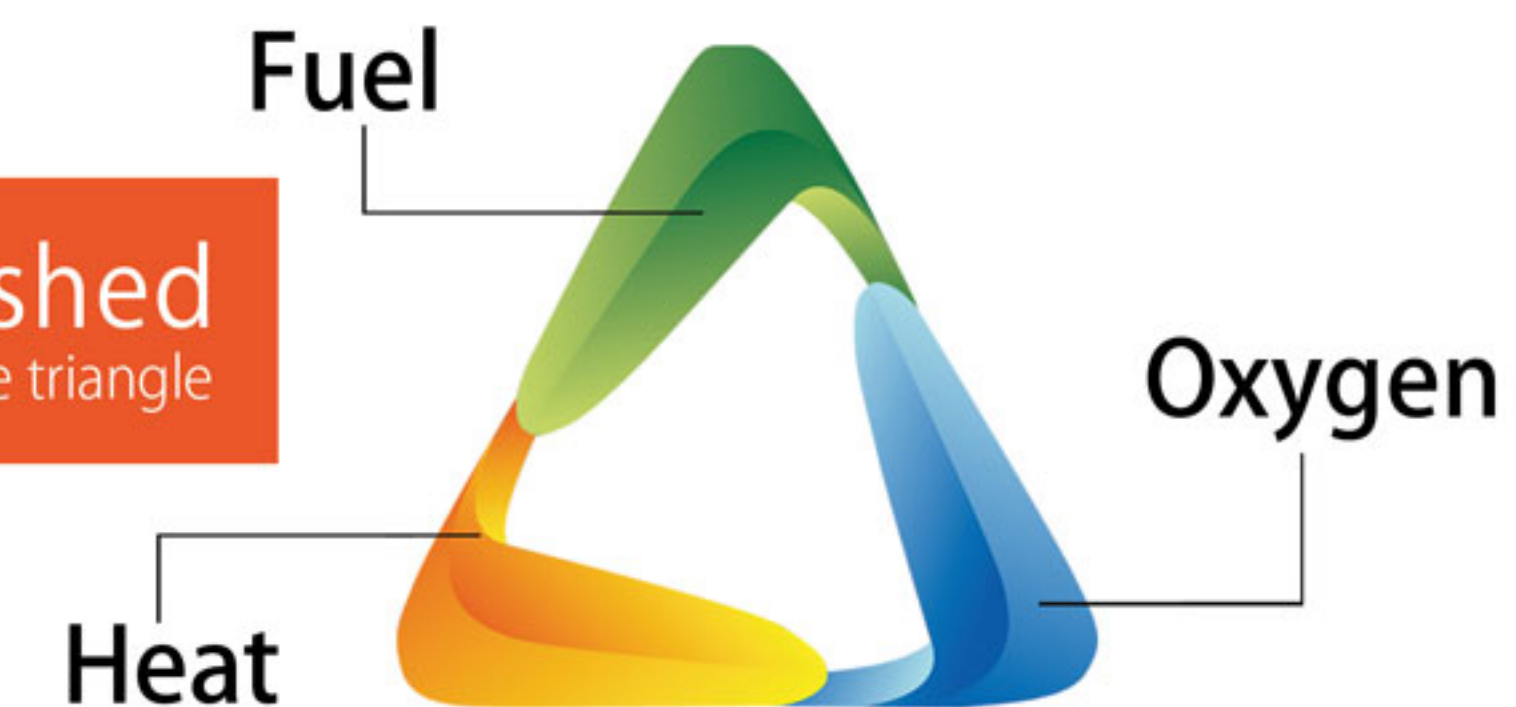
## 3 Elements are required

in proper combination before Ignition & combustion can take place:



During a fire, precious lives are lost by **breathing in poisonous smoke** rather than from fire.

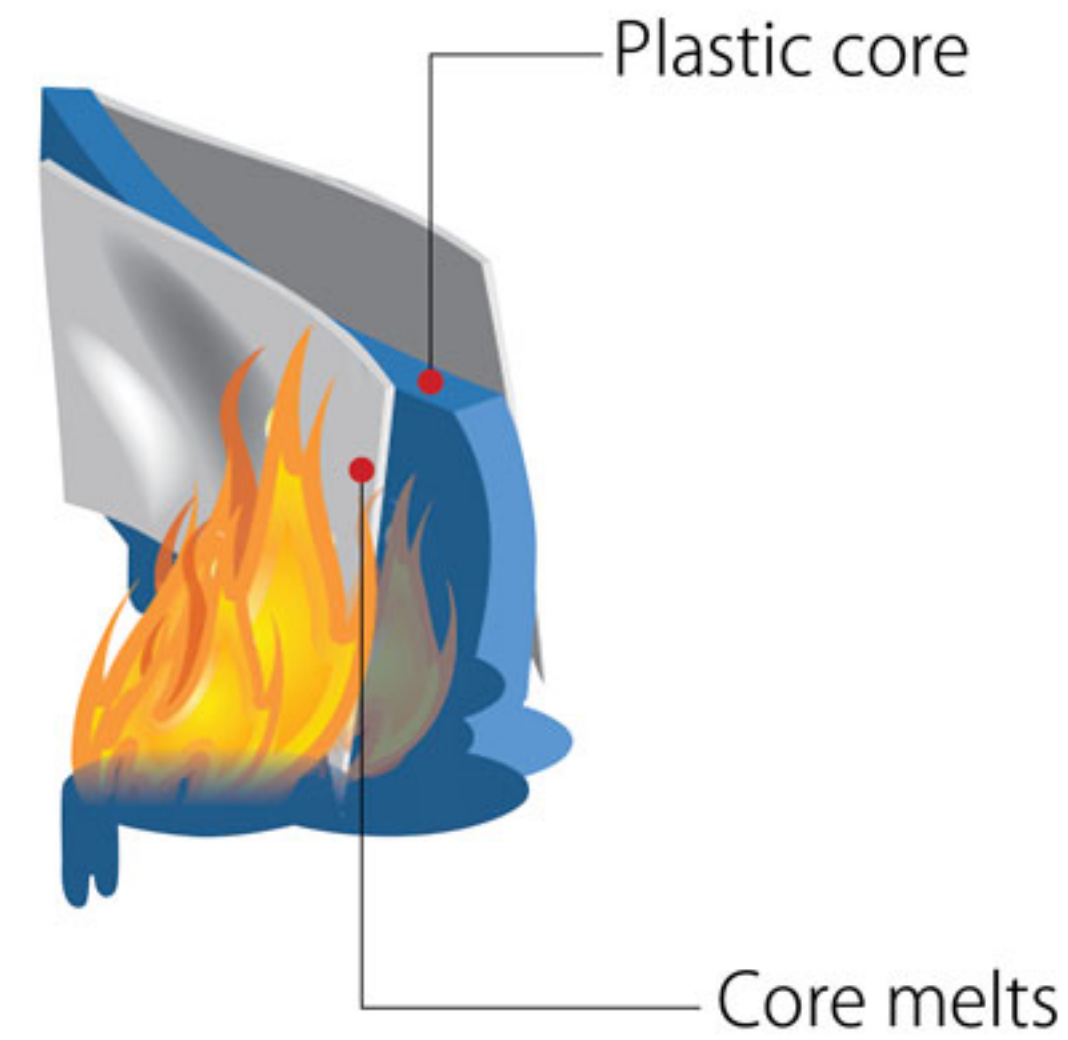
**Fire** can be extinguished  
by removing any one element of the fire triangle



We are removing the fuel by having only metal core and no burnable mineral core. **Thus, breaking the fire triangle.**



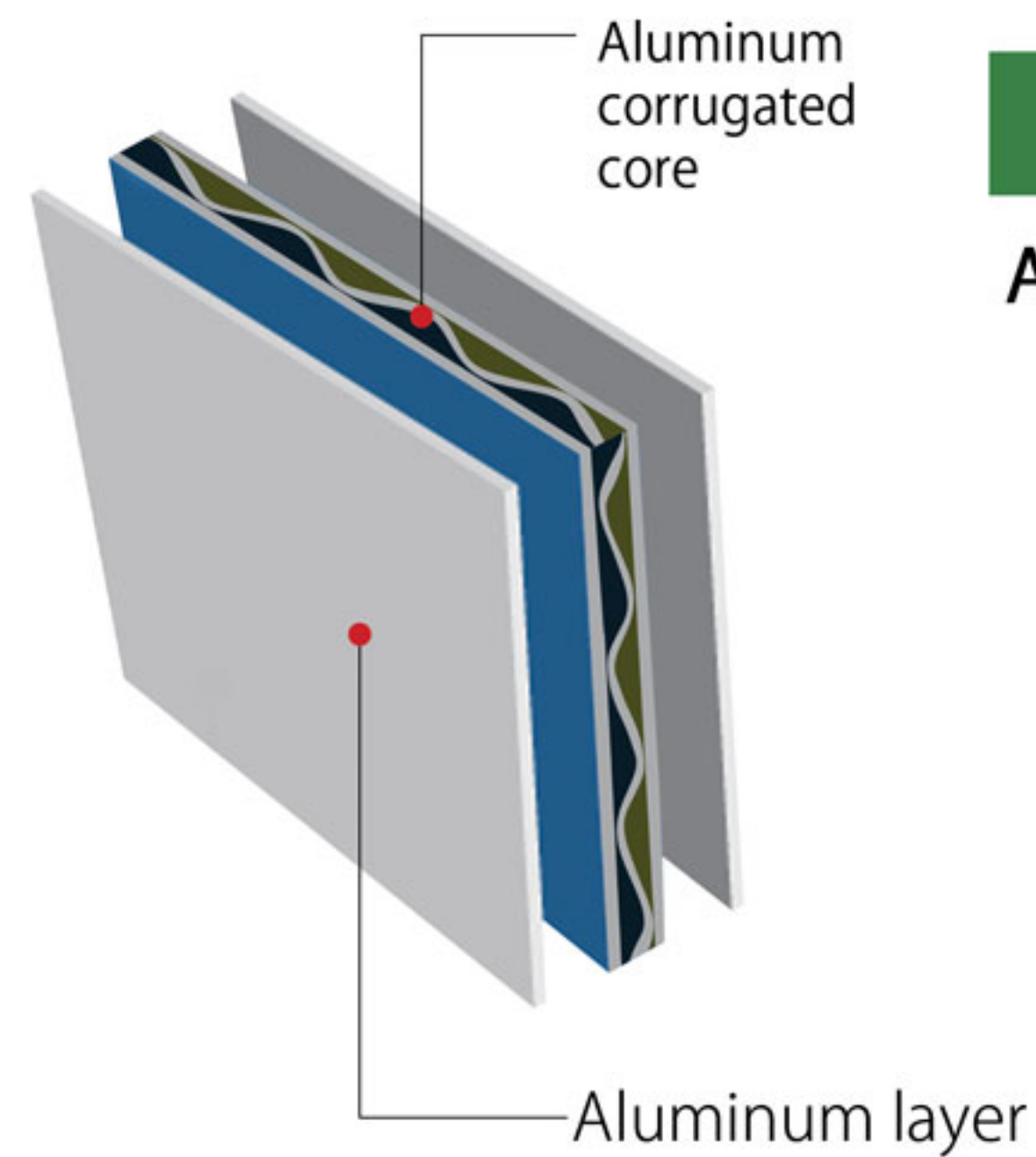
# ARMOUR DOESN'T CATCH FIRE



## ORDINARY CLADDING MATERIAL

### WOOD, HPL, WPC PANELS CATCH FIRE

Wood, HPL, WPC panels are made with aluminum outer layers and inner core layer with plastic, which burns easily.



## ARMOUR MCP PANELS

### ALUMINUM ARMOUR MCP PANELS DOESN'T CATCH FIRE

Alstrong ARMOUR MCP panels are made with aluminum outer layer & corrugated aluminum internal layers which doesn't burn due to no presence of fuels.





# ASPECTS OF ARMOUR

## PANEL DIMENSIONS

### Standard Sizes

1250 mm x 2400 mm  
1250 mm x 3200 mm  
1250 mm x 4000 mm

### Panel Thickness

4 mm, 5 mm & 6 mm

### Skin Thickness

0.25 mm to 0.5 mm

## PRODUCT TOLERANCE

Width

± 0.2 mm

Length

± 0.2 mm

Thickness

± 0.2 mm

Skin

± 0.02 mm

## PANEL OPTIONS

### Length

Up to 6000 mm  
(On order)

### Width

Up to 1550 mm  
(On order)

Custom colors & grades can be produced  
on demand.

## FABRICATION

## METHODS



Cutting



Drilling



Folding



Slitting



Routing



\*Rolling



Guillotining

\*Rolling radius 1000 mm



**(A)** Physical properties of  
**ALSTRONG ARMOUR MCP** panel:

SR. NO.	TEST PARAMETERS	TEST METHODS	UNITS	RESULTS
1	Panel coating thickness	ASTM D 7091	$\mu\text{m}$	25 - 27 (Two Coat)
2	Panel thickness	Visual	mm	4.00
3	Panel weight	Visual	Kg/m <sup>2</sup>	4.1
4	Panel density	ASTM D-1505	g/cm <sup>3</sup>	1.0
5	Tensile strength	ASTM E 8	MPa	50.6
6	0.2% proof stress.	ASTM E 8	MPa	45.0
7	% elongation	ASTM E 8	%	9.2
8	Peel strength top side	ASTM D 903	N/mm	8.5
9	Peel strength back side	ASTM D 903	N/mm	6.8
10	Flexure strength	ASTM D 790	MPa	65.5
11	Flexural modulus	ASTM D 790	Mpa	14115
12	Punch shear test	ASTM D 732	N/mm <sup>2</sup>	20.5

**(B)** Physical properties of  
**ALUMINUM SKIN:**

SR. NO.	TEST PARAMETERS	TEST METHODS	UNITS	RESULTS
1	Skin thickness Top coil thickness Bottom coil thickness	Visual	mm	0.60 0.60
2	Tensile strength Top coil thickness Bottom coil thickness	ASTM E 8	MPa	176.5 175.0
3	Elongation Top coil thickness Bottom coil thickness	ASTM E 8	%	7.65 6.98
4	0.2% proof stress Top coil thickness Bottom coil thickness	ASTM E 8	MPa	170.0 165.5

\*Bending of Armour minimum radius require 1000 mm

\*All test result are for 0.5 mm coil thickness

**(C)** Paint finish and test properties:

SR. NO.	TEST PARAMETERS	TEST METHODS	UNITS	RESULTS
1	Lacquering (PVDF)	Chemicals	--	KYNAR 500 PVDF, passes
2	Taber abrasion test CS-17 wheels, 1 kg load, 1000 cycles	ASTM D 4060	mg	23.0
3	Adhesion (cross hatch) dry wet (50° C, 20 min)	ASTM D 3359	B	5B
4	Adhesion (cross hatch)	ASTM D 3359	B	5B
5	Hardness - pencil	ASTM D 3363	B/H	H
6	Water absorption test	ASTM D 570	%	0.6
7	Glass at 60	ASTM D 523		35
8	Impact test (front & reverse)	ASTM D 2794	Joules	22J, Passes
9	Bending strength	ASTM D 522		Passes

**(D)** Acoustical properties

SR. NO.	TEST PARAMETERS	TEST METHODS	UNITS	RESULTS
1	Sound absorption factor	ISO 354		0.05
2	Sound transmission loss	ASTM E90	dB	25

**(E)** Thermal properties

SR. NO.	TEST PARAMETERS	TEST METHODS	UNITS	RESULTS
1	Thermal resistance	ASTM C 1363	m <sup>2</sup> K/W	0.24
2	Linear thermal expansion	ASTM d 696	mm/M/ 100° C	2.4
3	Temperature resistance		°C	(-) 50° C to 80° C

**(F)** Fire properties

SR. NO.	TEST PARAMETERS	TEST METHODS	UNITS	RESULTS
1	Reaction to fire	EN 13501 -1		A2- s1, d0

\*All test result are for 0.5 mm coil thickness





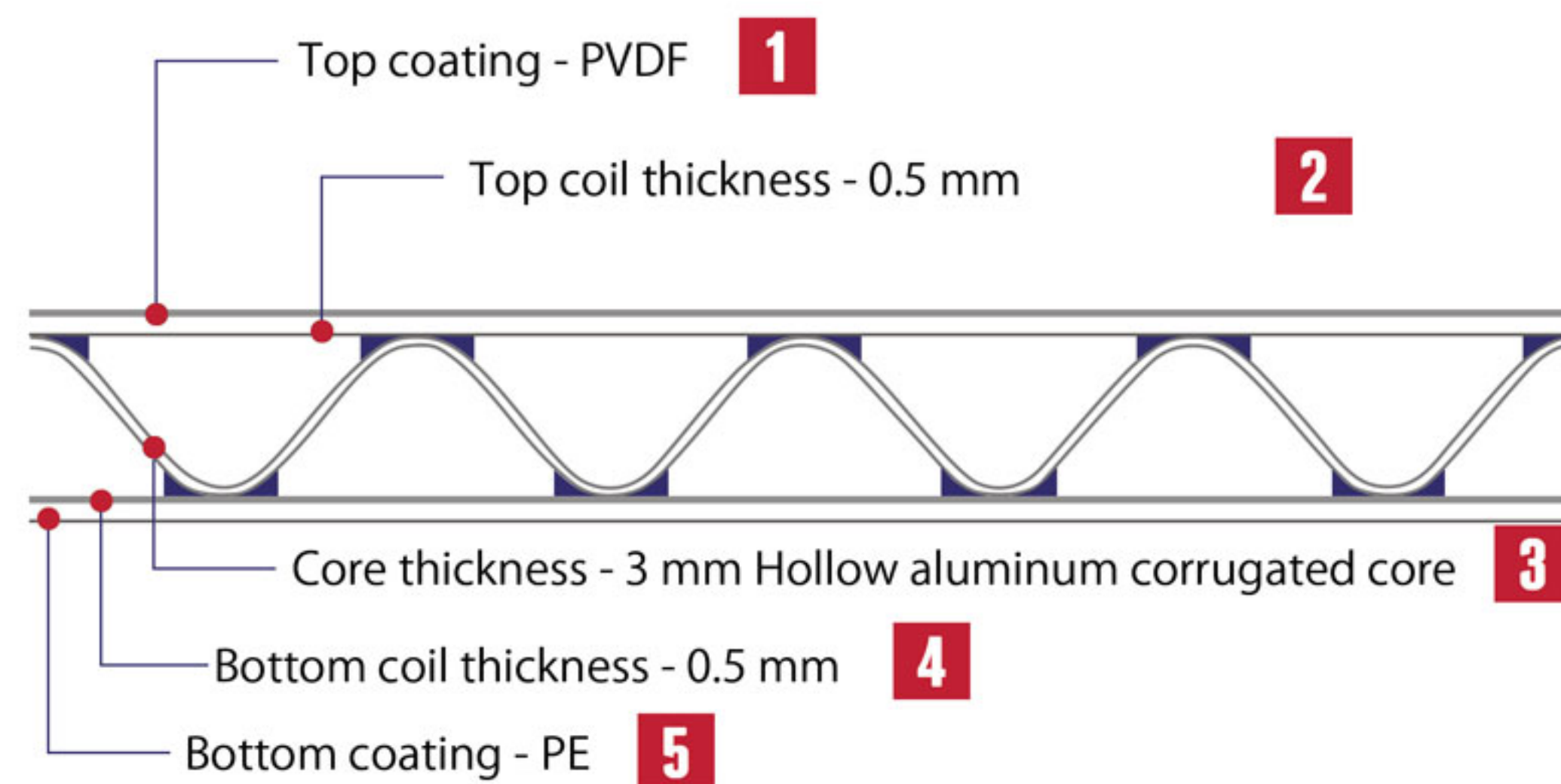
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**ARMOUR MCP PANELS**



## MCP PANELS | COMPOSITION





# ARMOUR FIRE TESTING REPORT

(A)

# SGS

## REMARK

PCS-gross heat of combustion [MJ/kg or MJ/m<sup>2</sup>]

FIGRA-Fire growth rate index used for classification purposes[W/s]

for Class A2 and Class B FIGRA=FIGRA<sub>02MJ</sub>

for Class C and Class D FIGRA=FIGRA<sub>02MJ</sub>

LFS - Lateral flame spread[m]

THR<sub>500s</sub> - Total heat released within 600 s[mJ]

SMOGRA-Smoke growth rate [m<sup>2</sup>/s<sup>2</sup>]

THR<sub>500s</sub> - Total smoke production within 600 s[m<sup>2</sup>]

## CLASSIFICATION

According to the test result, the classification for the panel is GB 8624 A (A2-s1,d0)

## TEST CRITERIA

Flame retardant board and high flame retardant board shall comply with the below requirement.

**Table B Flammability Performance**

ITEM		REQUIREMENT	
		Flame retardant	High flame retardant
Core gross heat of combustion /(MJ/kg)		≤15	≤15
Board combustion performance level		B <sub>1</sub> (B)	
Board combustion performance additional information /classification	SMOGRA	≤1	
	Burning droplets/ particles grades	d0	

## CONCLUSION

According to the test result, the submitted sample comply with the flammability requirement of GB/T 22412-2016 clause 5.6 and table 6

## STATEMENT

The test result release to the behaviour of the test specimens of a product under the particular conditions of the test are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

## WARNING

This classification report does not represent type approval or certification of the product.



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**Aesthetic Metal Insulation Panel Manufacturing LLC DUBAI**

## PRESENCE WORLDWIDE

- |               |            |                |             |           |
|---------------|------------|----------------|-------------|-----------|
| • JORDAN      | • OMAN     | • NIGERIA      | • CHAD      | • MOROCCO |
| • KUWAIT      | • UAE      | • SEYCHELLES   | • INDIA     | • ALGERIA |
| • AFGHANISTAN | • KSA      | • SUDAN        | • RABAT     | • TUNISIA |
| • BAHRAIN     | • TRIPOLI  | • LIBYA        | • CAIRO     | • EGYPT   |
| • DAMASCUS    | • BAGHDAD  | • SYRIA        | • IRAQ      | • YEMEN   |
| • KHARTOUM    | • SANA'A   | • SAUDI ARABIA | • ABU DHABI | • RIYADH  |
| • KABUL       | • PAKISTAN |                |             |           |

## MENA REGION

Middle East is One of the fastest growing ACP markets in the world.



• Dealers

## INDIA



-  HEAD OFFICE
-  FACTORY
-  OVERSEAS OFFICES
-  BRANCH OFFICES
-  WAREHOUSES
-  DEALERS



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AESTHETIC METAL INSULATION  
PANEL MANUFACTURING LLC DUBAI



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