Viva®
Metal Composite Panel

The Future of Sustainable Construction

The Largest Manufacturer of ACP in India

Viva is a fire-rated ACM composed of aluminium skins and a fire-retardant core (Mineral filled core) for the construction industry in INDIA. It is a reasonable alternative to solid aluminium sheets and an individual material characterised by its unique features. Lightweight, high rigidity, excellent flatness and long-lasting coating qualities are just what the construction industry has been looking for.

Features of Viva

Viva and its affiliated products have the following common features that system from our coating and laminating technology.

Flatness:
Completely flat panel with high rigidity.

Fire performance:
Comprising of fire-resistant core and fire safe.

Perfect Finish:
Uniform colour and smooth coating.

Workability:
Easy to process with ordinary machines and tools for fabrication.

Weather-resistance:
Excellent in corrosion and weather-resistant.

Care for atmosphere:
Recyclable and accommodating to nature.

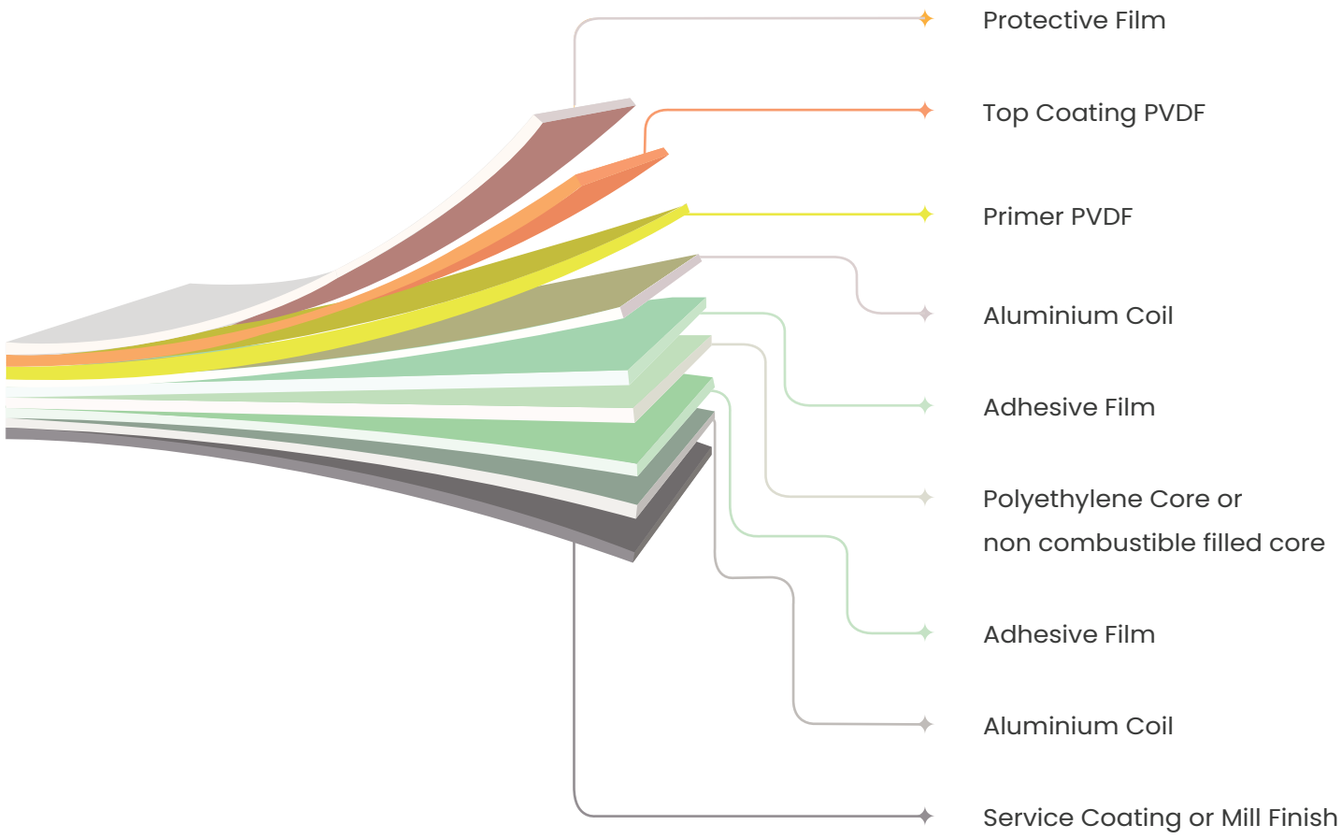
Lightweight:
Lighter than solid metals of equivalent rigidity.

Here are some reasons why Viva is an environmentally friendly building material.

1 High Panel Strength Using Less Aluminium

Viva is often used as an alternative to solid aluminium panels because it achieves equivalent rigidity using only one-third to one-fourth amount of aluminium. This principle holds true in Viva products composed of stainless steel and titanium.

Viva Products	Total Metal Thickness in Viva Products	Metal Thickness with Equivalent Rigidity	Metal Amount Required for Viva Products
VIVA /FR 3 mm	Aluminium 1.0 mm	Aluminium 2.7 mm	37%
VIVA /FR 4 mm	Aluminium 1.0 mm	Aluminium 3.3 mm	30%
VIVA /FR 6 mm	Aluminium 1.0 mm	Aluminium 4.5 mm	22%
Stainless Steel 4 mm	Stainless Steel 0.6 mm	Stainless Steel 2.9 mm	21%
Titanium 4 mm	Titanium 0.6 mm	Titanium 3.1 mm	19%



Rigidity of ACM

2 Durable and Innovative Finishes

Viva have a coating finish of Lumiflon-FEVE-based fluorocarbon paint / PVDF as standard. This paint is known for its high performance in outdoor applications.

Since long ago, polyester, acrylic, and polyurethane paints have been famous for building industries. These conventional paints are easy to apply and less costly. But if we use these paints for outdoor applications like external claddings, the coatings will show deterioration in appearance during outdoor exposure and will require re-coating every several years.

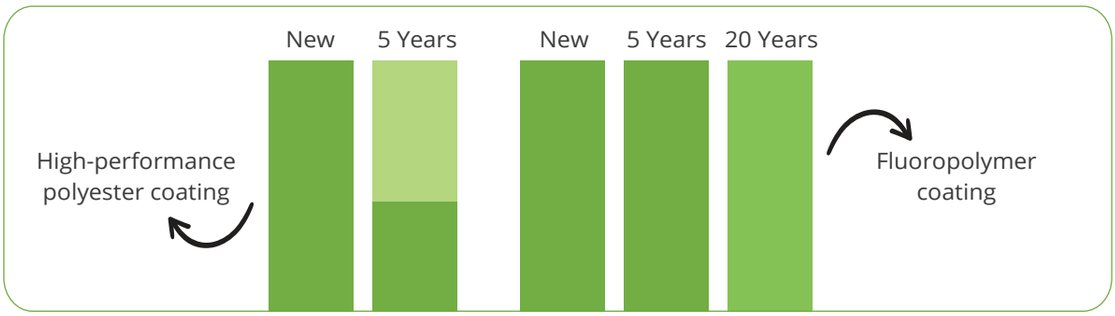
Fluorocarbon coatings are very durable and will last much longer in outdoor applications without deterioration. Two types of resins are commercially available in fluorocarbon paints: Lumiflon and PVDF. Among the two kinds of fluorocarbon paints, the Lumiflon type is more comprehensive in colour range, easier to repair, and adjustable in the broader gloss range. The following table compares conventional paints, PVDF paint, and Lumiflon paint.

General comparison between conventional paints and fluorocarbon paints

Paint type	Conventional paints (such as polyester paint)	Fluorocarbon paints	
		PVDF (Kynar 500)	Lumiflon
Weatherability	Not recommended for external use	10 - 20 years	20 years
Gloss	25 - 90%	25 - 35%	25 - 80%
Color Range	Wider	Limited	Wider
Pencil Hardness	2H	F	H
Bendability	2T	2T	2T

The long-lasting colour and gloss help reduce long-term maintenance costs and material consumption. In addition, the paint is applied using a continuous coil coating process, which gives Viva a consistent, durable finish. Compared with a competing polyester coating that has reportedly been recently improved, fluoropolymer coating still appears superior.

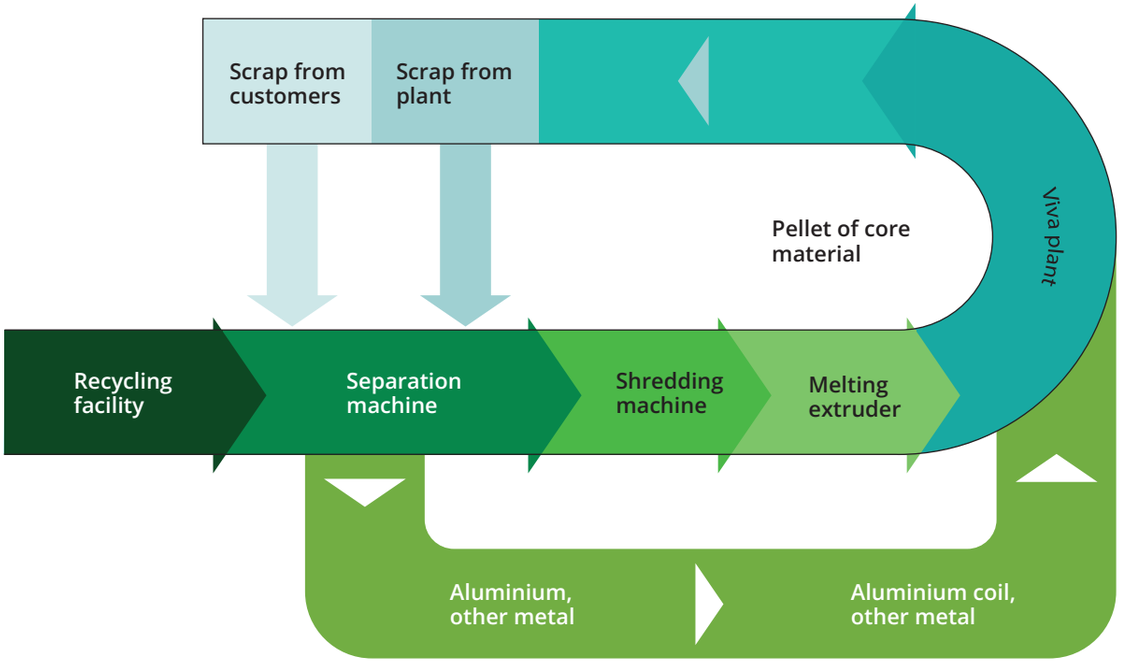
Comparison of durability between high-performance polyester and fluoropolymer coatings.



Fluorocarbon coating has four types of colours: Solid (Enamel) Colors, Metallic Colors, Sparkling Colors and Stone-Timber-Metal Series. All kinds of colours are produced in our continuous coil coating line with fluorocarbon paints. Stone-Timber-Metal Series was developed as an alternative to natural granite, timber and metals. The patterns are produced with a unique image transfer process. The paints are applied to the aluminium coil in our coil coating line with the fluorocarbon paint. While these finishes are highly decorative, they have the same coating performance as our plain colours products like Solid (Enamel), Metallic and Sparkling Colors.

3 Use of Recycled Content as Raw Material

Viva and its affiliated materials are 100% recyclable. In our production plants of Viva, we recover both aluminium (other metals) and the core material for recycling using our original system to keep an environment-friendly operation. Furthermore, our production plants of Viva are approved by ISO 14001 and designated as a comprehensive district industrial wastage disposal facility. Therefore, we can take back customer scraps for recycling in our facilities under the proper operating standard. Viva products are manufactured using recycled materials. Virgin aluminium requires a large amount of electricity for smelting. However, approximately 70% of virgin aluminium is recovered and reused. This recycled aluminium requires only 5% of the electricity of virgin aluminium. We use aluminium alloy 5005/3003/3105 for Viva. This alloy contains high levels of recycled content.



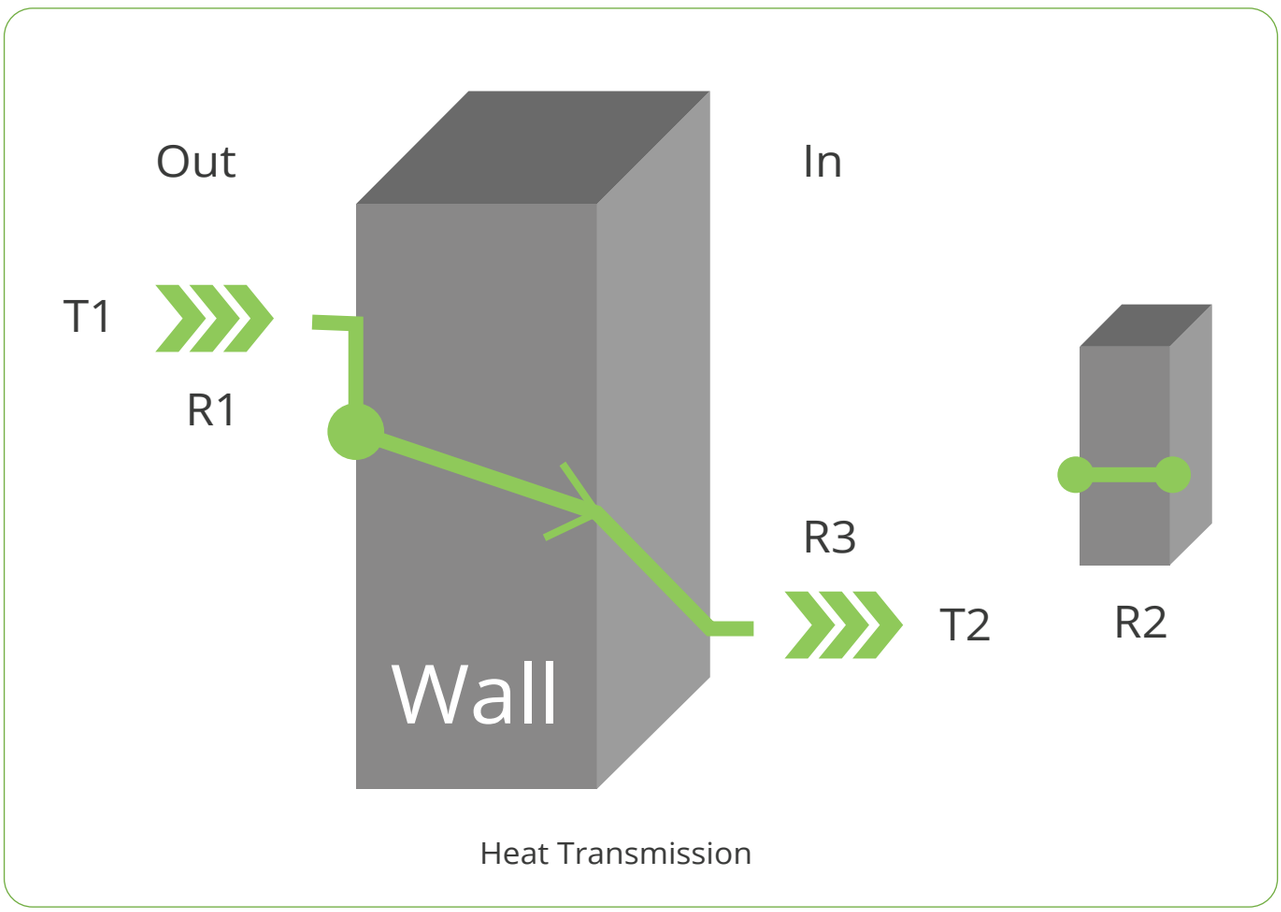
Recycling process diagram

4 Heat Transmission Effect

Viva helps to reduce the energy consumption of buildings. When we use Viva for external or internal claddings, the air space between Viva and the backing wall forms a thermal insulation layer and increases the wall system's energy conservation performance.

Generally, heat transmits through a building wall with three steps of R1 to R3, shown in the diagram.

R1: Heat transmission of an interface between the outer air and the wall.
R2: Heat flow inside the wall by thermal conductance.
R3: Heat transmission of an interface between the wall and the inner air.



Heat Transmission

The overall heat transmission is the sum of R1 to R3.

Similarly, we can calculate the heat transmission of actual wall systems.

Table 2-11 is a calculated example. The calculated value is called the heat transmission coefficient, U-value (W/m2·K) or K-value (kcal/m2h°C). A lower U-value means less heat flow or higher heat resistance.

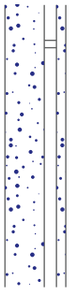
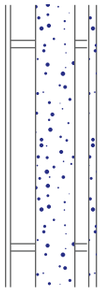
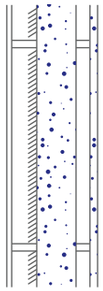
	Rc Wall Only		Viva Cladding		Viva Heat Transmission	
Wall system, wall component and its thickness	out in 	RC wall (100) Air space (50) Gypsum board (12)	out in 	Viva (4) Air space (100) RC wall (100) Air space (50) Gypsum board (12)	out in 	Viva (4) Air space (75) Glass wool (25) RC wall (100) Air space (50) Gypsum board (12)
Calculated U-value	2.5 W/M²-K		2.1 W/M²-K		0.92 W/M²-K	

Table 2-11 Heat Transmission through External Wall

Note: We can convert U-value into K-value with the following equation. K-value (kcal/m2h°C) = 0.86×U-value (W/m2·K).

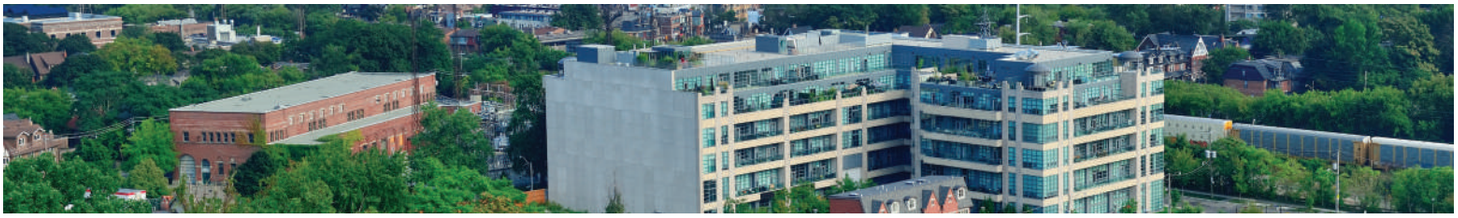
As we can see in the table, covering the wall with Viva cladding improves the thermal insulation effect by approx. 15%, and installing a heat insulation material behind Viva increase the insulation effect by more than two times.

5 Non-permeability

Viva is non-permeable. Under humid atmospheric conditions, Viva does not absorb moisture at all. The following is the test result of the freezing and thawing cycle test, which confirms the complete non-permeability of Viva.

1. Freezing and thawing test.
2. Exposure cycle: -20°C×1.0hrs for freezing and +10°C×1.5hrs for thawing.
3. Test result: After 300 cycles, the sample does not show any change in weight, thickness, or appearance

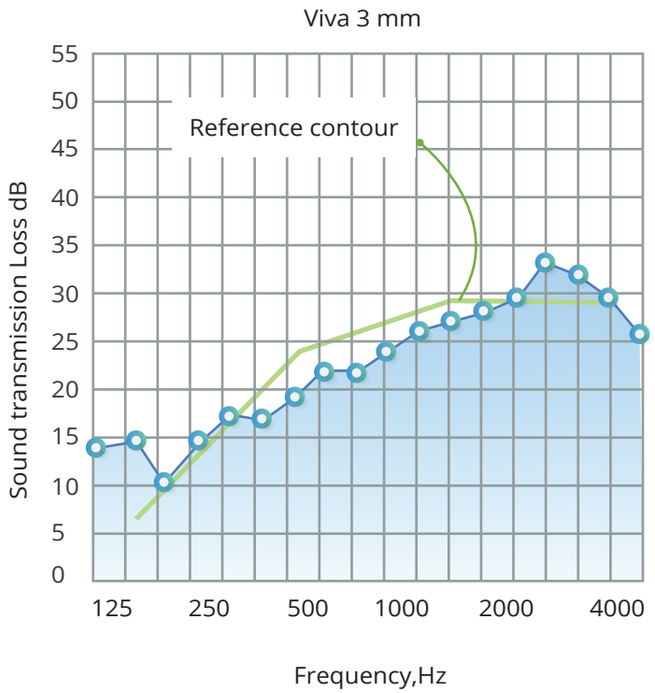
Note: If you use Viva in a humid condition, like in a bathroom where the edge of the panel may always be wet, it is crucial to design the fixing detail to drain the moisture and to keep the edge dry.

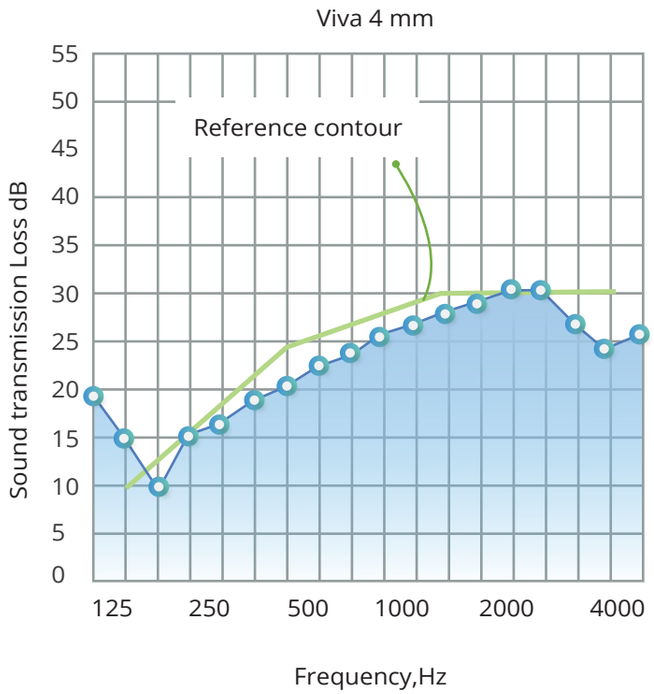


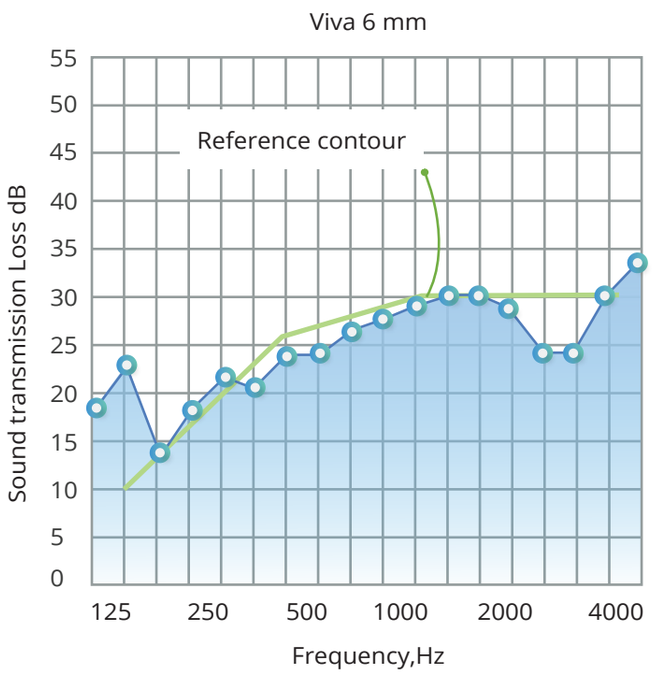
6 Sound transmission loss

Viva has a large sound insulation per unit weight, compared to steel sheet, aluminum sheet and plywood. The charts show airborne sound transmission loss measured on Viva. And can be tested upon project specification requirement according to the classification method specified in ASTM E413, STC (standard transmission class) is given as follows:

VIVA	3 mm	4 mm	6 mm
STC	25	26	26







Sound transmission loss

Viva FR is a fire-safe material that passes mandatory requirements for exterior and interior use in most countries. Although the core material does contain a minimal amount of combustible polyethylene, the main mineral ingredient does not permit the proliferation of flame. It restricts the development of smoke detrimental to evacuation activities.

Viva FR 4mm Thickness & 6mm Thickness - fire reaction Class B-s1,d0".
We had fire test of Viva in accordance with international Fire & Safety Codes requirements.
Viva has passed the following fire test.

Viva FR 4mm Thickness - Aluminium Composite Panel Fire tests for external cladding material.

Test Standards	Test Standard Specification	Viva / FR	Result & Classification
EN 13501-1, ASTM E 84, ASTM D 1929	4 mm & 6 mm ACP tested in accordance with this standard	4 mm and 6 mm Thickness ACP	"FR Class" B-s1,d0 & A2-s1,d0
NFPA 285	Non-load bearing Wall assemblies testing	4 mm & 6 mm Thickness	Passed Successfully

Technical Properties

Viva FR Aluminium Composite Panel Technical properties for external cladding material.

Test		Standards	Unit	Result
Total ACP Thicknness Layers		Measured	(mm)	4 & 6
Top Coil Thickness Layers		Measured	(mm)	0.5
Bottom Coil Thickness Layers		Measured	(mm)	0.5
Technical properties				
Section modulus	W	DIN 53293	(cm^3/m)	1.75
Rigidity	E-J	DIN 53293	(kNcm^2/m)	2400
Modulus of Elasticity		ASTM E8	(N/mm^2)	70,000
Bond Integrity		D1781	N mm/mm	115
Peel Strength		ASTM D 903	N/mm	Minimum 8
Tensile Strength of Aluminium Coil		ASTM E8	(N/mm^2)	Rm ≥ 140
0.2% Proof Stress of Aluminium Coil		ASTM E8	(N/mm^2)	Rp0,2 ≥ 105
Elongation of Aluminium Coil		ASTM E8	(%)	A50 ≥ 3
Linear Thermal Expansion		ASTM D696	mm/m/100° C	2.4 mm/m at 100° C temperature difference
Core Properties				
Core		ASTM E84	FR Class A	Halogen Free Fire Retardant compound like Al & Mg Hydroxides
Color				White
Surface				
Coating Type		AAMA 2605		PVDF
Coating Thickness		ASTM D 7091	µm	Min 25 µm for two coat, Min. 35-38 for Three coat
Gloss (initial value)		ASTM D 523	(%)	25-80
Pencil Hardness		ASTM D 3363		Min. F
Corrosion and Chemical resistance				
Detergent Resistance		ASTM D 2248	-	No Change

Corrosion and Chemical resistance				
Mortar Resistance		ASTM D 3260	-	No Change
Acid Resistance		ASTM D 1308	-	No Change
Alkali Resistance		ASTM D 1308	-	No Change
Humidity Resistance		ASTM D 2247	Hours	3000 hrs, No Change
Salt Spray Resistance		ASTM G85	Hours	3000 hrs, Passed
Accelerated Weathering (As per ASTM G 154)				
Color Retention on		ASTM D 2244	units	Max. 5 units
Gloss Retention on		ASTM D 523	%	80%
Chalking Resistance		ASTM D 4214	units	Max. 8 units
Acoustical Properties				
Sound Absorption Factor	a_s	ISO 354		0.05
Sound Transmission Loss	R_w	ISO 717-1 EN ISO 140-3	(dB)	26
Vibration Loss Factor	d	EN ISO 6721 Frequency range 100-3200 Hz		0.0087
Thermal Properties				
Thermal Resistance	R	DIN 52612	(M^2K/W)	0.0103
Heat Transition Coefficient	U	ASTM C 1363	(W/m^2k)	5.52
Temperature Resistance		Measured	(^0C)	(-) 50 to (+) 80

Note: *The ASTM (American Society for Testing and Materials) standard test method defines the way a test is performed and the precision of the result. The result of the test is then used to assess compliance with a standard specification.

Viva Composite Panels Ltd. is India's largest Aluminium Composite Material (ACM/MCM) manufacturer.

This is our only business. We have no other product involvements to distract us from our mission: to provide the highest quality Composite Material in the world. As the leader in aluminium Composite Materials, we enjoy the advantage of the industry's most sophisticated manufacturing facility, featuring:

- **Three** Coil Coating Line.
- Proprietary coating technology ISO certifications to ensure quality.
- Civil Defense Certifications Intl. Building Fire & Safety Codes.
- Tested International Testing Reports & Certifications.

We offer the **most extensive inventory** of finished products in the industry

We offer the **strongest panel** warranty in the industry

We offer a **15 years paint warranty**

Our research and development are responsible for unique products that expand the uses of ACM in new and innovative ways. Fabrication and installation of VIVA are as easy and trouble-free as possible.

Our in-house experts provide tech service backed by years of training and experience. Our mission is to provide the highest quality aluminium Composite Material in the world and to provide top value to our customers. Our utmost priority is to provide quality-tested solutions to our customers. We have demonstrated from day one that we will not follow the status quo. In that vein, we continue to push the envelope and develop new materials for the design and construction industry. We are committed to better and more innovative technology and will ensure that sets the standard for the industry.

VIVA and its affiliated materials are 100% recyclable

Head Office

Viva Composite Panel Pvt. Ltd., 601, 6th Floor, A-Wing, Times Square Building, Marol Naka, Andheri - Kurla Rd, Andheri East, Mumbai, Maharashtra - 400059

022 28500150/51/52

Factory Address

Survey No, 85/8, 85/9, 85/10, 68/1, 70/14, At Post : Khattalwada, Manekpur Road, Opp. Poultry Farm, Near Apar Industries Ltd., Tal-Umbergaon, Dist-Valsad, Station-Sanjan, Gujarat - 396120

1800 313 3770 (Toll Free)

Branch Offices

Delhi | Bengaluru | Ahmedabad | Hyderabad | Chennai | Bhubaneshwar | Jaipur | Raipur
Lucknow | Udaipur | Surat | Ranchi | Kochi | Hubli | Indore

Overseas Branches

Sri Lanka | Qatar | Kenya

Viva®
Metal Composite Panel

The Largest Manufacturer of ACP in India

vivaacps
vivaacps
vivaacps

viva composite panel
vivaacp.com
info@vivaacp.com