

M/s VIVA COMPOSITE PANEL (P) LTD.

June 24, 2018

Head office – Unit No. 7, New Tejpal Industrial Estate,
Andheri Kurla Road, Sakinaka Andheri East,
Mumbai – 400072.

Factory – Survey No. 85/8, 85/9, 85/10, 68/1, 70/14
At post – Khattalwada, Manekpur Road, Opp. Poultry Farm,
Near Apar Industries Ltd, Tel – Umbergaon, Dist. – Valsad,
Station – Sanjan, Gujarat – 396120.

Ref. No. – VIVA/05, your request dated 06/06/ 2018.

Our Job No. - IN/ASK-05/18-19.

Subject - Testing of VIVA 7 Star, Fire Rated A1, Aluminium Corrugated Core Panel (3D),
4 mm thickness, Sample Batch No. –VA102/Silver

Product Details: - 4 mm Thickness, Aluminium Corrugated Core Panel with PVDF Coating.

Please find hereby the test results of Aluminium core panel samples submitted to us.

Sr. No.	Test Parameters	Test Method	Specifications	Results
A	Physical properties of VIVA 4 mm, Aluminium Corrugated Core Panel			
1	Panel Thickness	Measured	4 mm (± 2 mm)	4 mm
2	Panel Density	ASTM D 1505	1 g/cm ³	1 g/cm ³
3	Panel weight	Measured	4 kg/m ² ($\pm 5\%$)	4 kg/m ²
4	Tensile strength	ASTM D 638	40 MPa	51.1 MPa
5	Yield strength	ASTM D 638	35 MPa	45.3 MPa
6	Elongation	ASTM D 638	> 6.0%	10 %
7	Peel test	ASTM D 903	Min 7.0 N/mm	12.5 N/mm
8	Flexure Strength	ASTM D790	95 MPa	110 MPa
9	Flexural Modulus	ASTM D790	>14000 MPa	16000 MPa
10	Punch Shear Test	ASTM D732	18 MPa	22 MPa
11	Water Absorption Test	ASTM D 570	1%	0.4%
B	Properties of Aluminium Coil :			
1	Coil thickness	Measured	0.5 mm (± 0.03 mm)	0.52 mm
2	Tensile strength	ASTM E8	150 MPa	176 MPa
3	Yield strength	ASTM E8	130 MPa	165 MPa
4	Elongation	ASTM E8	>2 %	6.0%
5	Modulus of Elasticity	ASTM E8	>50000 N/mm ²	70000 N/mm ²
6	Punch shear test	ASTM D 732	18.0 N/mm ²	19.0 N/mm ²
C	Coating Properties			
1.	Coating Thickness	ASTM D 7091	24 μ m (± 2 μ m)	26 μ m
2.	Coating type	Chemical	PVDF	PVDF, KYNAR 500, Pass.

3.	Cross hatch adhesion test	ASTM D 3359	5B	5B
4.	Taber Abrasion Test CS-17 wheels, 1 kg load, 1000 cycle	ASTM D 4060	Less than 45 mg/1000 (weight loss)	25 mg weight loss
5.	Pencil Hardness Test	ASTM D 3363	B/H	H
6.	Gloss at 60 Degree	ASTM D 523	< 40	36
7.	Impact Test (Front & Reverse)	ASTM D2794	27 J, Pass	27 J, Pass
8.	T Bend	ASTM D 4145	T Pass	Pass
9.	Adhesion in boiling water (120 degree, 30 min.)	ASTM D 3359	Pass	Pass.
D	Thermal Properties Test			
1	Thermal Expansion Test.	ASTM D696	2.4 mm/M/100 degree	2.4 mm/M/100 degree
E	Chemical Test (Chemical & Drop test)			
1	1) 10 % HCl, 5 min 2) 20 % H ₂ SO ₄ , 10 hrs. 3) 5 % NaOH , 48 hrs. 4) 20% HNO ₃ 30 Min 5) Engine Oil Resistance 6) Solvent Resistance MEK	ASTM D 1308	Pass	Passes, No blister, creep & no rust observed
2	Oil Resistance 24 Hrs.	AAMA D 2605	Pass	Passes, No blister, creep & no rust observed.
3	Aluminium Alloy Chemical compositions % Mn % Mg % Si % Cu % Fe % Zn % Al	EN-AW-3003, H 24 By Spectro test	Alloy 3003, H24	Passes, EN- AW- 3003,H 24 1.33 0.6 0.55 0.088 0.68 0.10 96.652

Test results pertain to sample submitted to us.

A.S. Khanna

Prof. A. S. KHANNA

Corrosion Science & Engineering
Dept. of Met. Engg. & Material Science
I.I.T. BOMBAY
Powai, Mumbai - 400 076.