

Cooling Tower Solutions



Arvind. We are one.
Yet, we are many.

Founded in 1931, Arvind is one of India's largest integrated textile-to-retail conglomerates with successful forays in advanced materials, environmental solutions and real estate. A pioneer of denim in India, Arvind is a \$1.5 bn company with an unmatched portfolio of owned, licensed brands and retail formats. Arvind is a supplier of fabrics to global brands such as Levi's, Gap, VF Corp, Tommy Hilfiger, Zara, H&M and others.

Known for its commitment to innovation and quality, Arvind manufactures high performance protective and industrial fabrics through its Advanced Materials Division, using world-class technology and research-led processes.

Arvind started its Composites Division in 2014 producing structural profiles and hand-laminated products. With a monthly production capacity exceeding 1,000 MT, Arvind has been able to serve global customers with high standards of quality and delivery. Arvind provides complete solutions for all structural needs, including gratings, poles and hand-laminated products. Arvind's FRP products are sold in more than 40 countries.

Welcome to Arvind.
Welcome to a world of
fashioning possibilities.





Advanced Materials Division makes high performance materials, fabrics for diverse applications

Known for its commitment to innovation and quality, Advanced Materials Division manufactures high performance protective and industrial fabrics, reinforced building material for infrastructure & industrial applications through its Advanced Materials Division, using world-class technology and research-led processes.

Composites – Building Materials and Solutions

FRP products



Structural Profiles



Moulded Products

Glass fabrics



Biaxial and Multiaxial Fabrics



Stitched and Woven Fabrics

Industrial Fabrics – Filtration and Belting

Industrial Filtration



Woven & Non-Woven Media

Industrial Belting



Belt Reinforcement Fabric

Others



Embossed and Laminated Fabrics



Protective Fabrics and Garments

FR - Inherent



Protex®
Nomex®

FR - Treated



Proban
Pyrovatex

Non-FR



Anti-Ballistic



Anti-Static



Arvind Composites Division

With a monthly production capacity exceeding 1,000 MT, Arvind has been able to serve global customers with high standards of quality and delivery. Arvind provides complete solutions for all structural needs, including gratings, poles and hand-laminated products for



Cooling Tower
Industry



Building &
Construction



Mass transport



Wind Energy



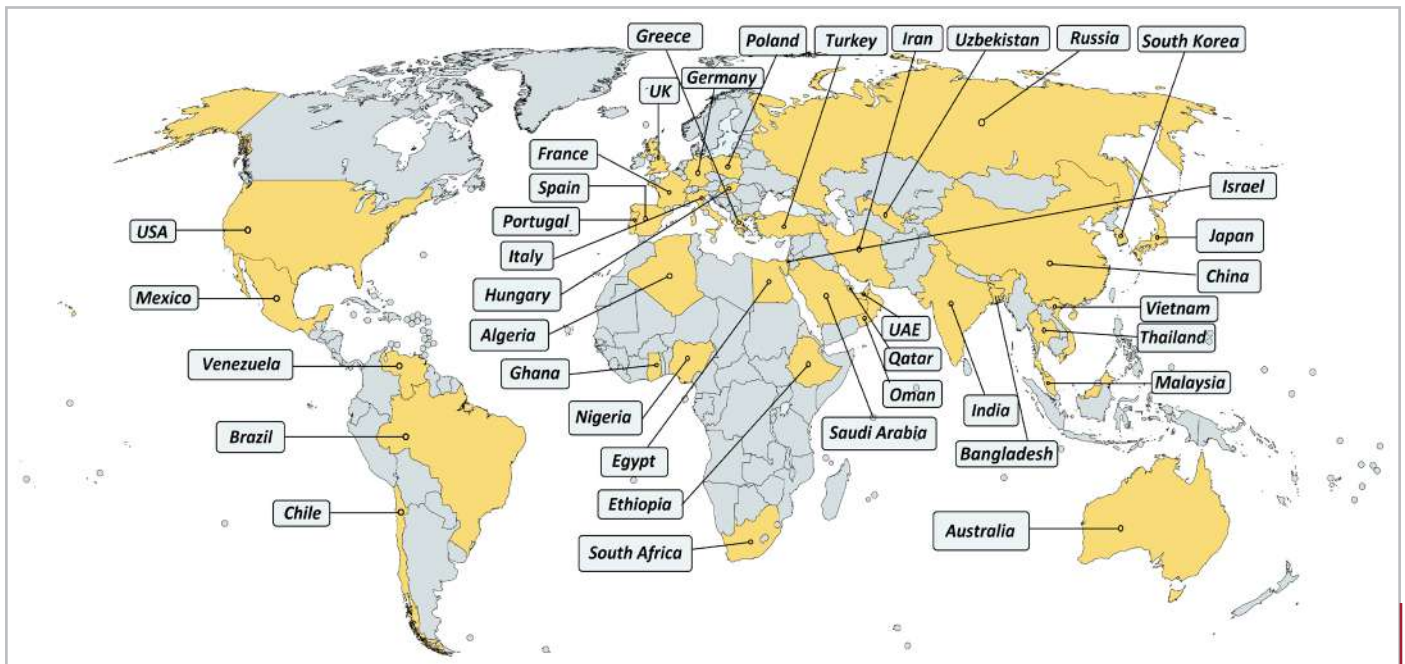
Industrial
Application



Telecommunication
Industry

Arvind Composites division has completed more than 350 projects

Worldwide reach – materials supplied to 40+ countries



Illustrative list of some large projects executed

Complete Project in USA	Complete Project in Oman	Project in Brazil
~400 MT Pultrusion ~105 MT (30 sets) Fanstacks ~13 MT (345 Pieces) Saddles	~650 MT of Pultrusion ~150 MT of Fanstacks	~480 MT Pultrusion ~46 MT (28 sets) Fanstacks
Projects in Egypt	Project in UK	Project in Japan
~120 MT (105 Sets) Fanstacks ~90 MT (56 Sets) Fanstacks for 4 x14 Cell Cooling Towers	~43 MT (40 Sets) Fanstacks	88 MT (72 Sets) Fanstacks
Project in Turkey	Project in Australia	Projects in Russia
~250 MT Pultrusion Project completed in one month	~67 MT of Pultrusion for 6 Cell Cooling Tower	~25 MT Vinyl Ester Project specifically made for -52 degree Celsius environment
Projects in Italy	Project in Chile	Projects in India
~213 MT Pultrusion	~54 MT of Pultrusion	~228 MT of Pultrusion ~131MT of Pultrusion



Key Capabilities

- 28 Pultrusion machines with Capacity of 600MT+ across 170+ profiles with new profiles being added frequently
- Own glass manufacturing facility in JV with German PD Group, with a monthly capacity of 1,000 MT
- 500+ skilled manpower for Pultrusion & Hand Lamination
- Fully-equipped mechanical and chemical laboratory for testing based on customer needs
- Strong design team and CNC based fabrication capabilities
- 40 member Export team capable executing FCA/FOB/CIF/DAP/DDP shipments



Design, Research & Development

- Testing and R&D are important aspects of the Composites division. The team consistently strives to improve manufacturing processes, discover new efficiencies, develop new capabilities and deliver a level of responsiveness that helps clients gain a competitive edge.
- The R&D team at Arvind follows a structured process of exploring all the possibilities and developing a shared knowledge base with end users. For every project this leads to creating and delivering long term manufacturing solutions.
- Arvind Composites Cooling tower profiles meet the most stringent
 - Fire retardant standard ASTM E 84-Class A, UL 94-V0
 - UV stabilization standard ASTM G 155 / ISO 2782
- Arvind Composites Cooling tower profiles have been tested at Intertek laboratory and meet CTI 137, EN17306 standards.



Certifications & Accreditations

Arvind Profiles have been tested & Certified

- Intertek, Shanghai – Mechanical Tests as per CTI 137
- CRTM, Malaysia – ASTM E 84 Class A(FR)
- IAPI, Italy – ASTM F 84 Class A(FR)
- ATIRA, India – ASTM G 154, ASTM G 155 (UV)

Task Report No.: C:\MSD\S08\2024\1-15

Qualification Testing Plan

Test Report

Prepared for

AVIROD LTD (Avrod Composite Division)

AVIROD


By

AVIROD International Testing Laboratory

Sample Code	C180-1802
Test Report No.	CMPT/NT/2024-13 Rev. 00
Customer Name and Address	AVIROD LTD (Avrod Composite Division) AVIROD International (Kuala Lumpur, Malaysia) Aveirod, Inc.
No. of Pages	26
P.O. Number	P.O. Number 000
P.O. Date	01/11/2024
Date of writing	21/11/2024 to 29/11/2024
Page of Sample	38

Revised By	Prepared By								
<table> <tr> <td>Name:</td><td>Dr. Zeynep Ozden</td></tr> <tr> <td>Description:</td><td>General Manager (Composites)</td></tr> </table>	Name:	Dr. Zeynep Ozden	Description:	General Manager (Composites)	<table> <tr> <td>Control by:</td><td>Technical Officer</td></tr> <tr> <td>Signature:</td><td>(Signature)</td></tr> </table>	Control by:	Technical Officer	Signature:	(Signature)
Name:	Dr. Zeynep Ozden								
Description:	General Manager (Composites)								
Control by:	Technical Officer								
Signature:	(Signature)								
Date	02/12/2024								
	01.12.2024								

Test Report No: COMPS/2014-15



Test Report
FRP Pultruded Section
Prepared for
ARVIND LTD (Arvind Composite Division)

ARVIND

Test Report No: COMPS/2014-15 Rev 0

By
Composites Testing Laboratories
Ahmedabad Textile Industry's Research Association (ATIRA)
Ahmedabad, INDIA

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[illegible]

COMPOSITE TESTING LABORATORY Centre of Excellence <i>Centre for Excellence in Composite Materials Research & Development of India</i>				
ISSUED BY NAME _____ DESIGNATION _____ DATE _____ FOR _____ TEST NO. _____ TEST DATE _____		RECEIVED TESTING HEADQUARTERS NAME _____ DESIGNATION _____ DATE _____ FOR _____ TEST NO. _____ TEST DATE _____	TEST REPORT Form No. CDM-14(1.1)	
Test Report No. (CMT/14/1/1/1/1/1) _____		Test Date _____		
Name and Address of Client _____ _____ _____		Project Name (Project Description) _____ _____		
Special Inventory, date and water test _____ _____		Test No. (CMT/14/1/1/1/1/1) _____		
Number of samples _____		Test Date _____		
Location of samples _____		Test Date _____		
Date of completion of test _____		Test Date _____		
Test Results:				
Size Length: 0.75 (Extruded test test); 0.50 (Sample Size); 0.50 (Extruded test)				
Plastic Specimen (40%)				
No.	Load Test Result	Load (kN)	Deflection (mm)	Displacement (mm)
1	700	Load test result 700 kN	10.0	1475
2	800	Load test result 800 kN	12.0	1600
3	900	Load test result 900 kN	14.0	1725
4	1000	Load test result 1000 kN	16.0	1850
5	1100	Load test result 1100 kN	18.0	1975
6	1200	Load test result 1200 kN	20.0	2100
7	1300	Load test result 1300 kN	22.0	2225
8	1400	Load test result 1400 kN	24.0	2350
9	1500	Load test result 1500 kN	26.0	2475
10	1600	Load test result 1600 kN	28.0	2600
11	1700	Load test result 1700 kN	30.0	2725
12	1800	Load test result 1800 kN	32.0	2850
13	1900	Load test result 1900 kN	34.0	2975
14	2000	Load test result 2000 kN	36.0	3100
15	2100	Load test result 2100 kN	38.0	3225
16	2200	Load test result 2200 kN	40.0	3350
17	2300	Load test result 2300 kN	42.0	3475
18	2400	Load test result 2400 kN	44.0	3600
19	2500	Load test result 2500 kN	46.0	3725
20	2600	Load test result 2600 kN	48.0	3850
21	2700	Load test result 2700 kN	50.0	3975
22	2800	Load test result 2800 kN	52.0	4100
23	2900	Load test result 2900 kN	54.0	4225
24	3000	Load test result 3000 kN	56.0	4350
25	3100	Load test result 3100 kN	58.0	4475
26	3200	Load test result 3200 kN	60.0	4600
27	3300	Load test result 3300 kN	62.0	4725
28	3400	Load test result 3400 kN	64.0	4850
29	3500	Load test result 3500 kN	66.0	4975
30	3600	Load test result 3600 kN	68.0	5100
31	3700	Load test result 3700 kN	70.0	5225
32	3800	Load test result 3800 kN	72.0	5350
33	3900	Load test result 3900 kN	74.0	5475
34	4000	Load test result 4000 kN	76.0	5600
35	4100	Load test result 4100 kN	78.0	5725
36	4200	Load test result 4200 kN	80.0	5850
37	4300	Load test result 4300 kN	82.0	5975
38	4400	Load test result 4400 kN	84.0	6100
39	4500	Load test result 4500 kN	86.0	6225
40	4600	Load test result 4600 kN	88.0	6350
41	4700	Load test result 4700 kN	90.0	6475
42	4800	Load test result 4800 kN	92.0	6600
43	4900	Load test result 4900 kN	94.0	6725
44	5000	Load test result 5000 kN	96.0	6850
45	5100	Load test result 5100 kN	98.0	6975
46	5200	Load test result 5200 kN	100.0	7100
47	5300	Load test result 5300 kN	102.0	7225
48	5400	Load test result 5400 kN	104.0	7350
49	5500	Load test result 5500 kN	106.0	7475
50	5600	Load test result 5600 kN	108.0	7600

Full range of pultruded profiles

more than 170 dies for common and speciality applications



I Beam and H Beam
11 sizes - 21 Dies



C - Channel
46 sizes - 66 Dies



L Angle
17 sizes - 23 Dies



Square and Rectangular pipes
31 sizes - 53 Dies



Round Tube
8 sizes - 11 Dies



Special Profiles
6 Types



Deck panels, gratings and corrugated sheets / claddings

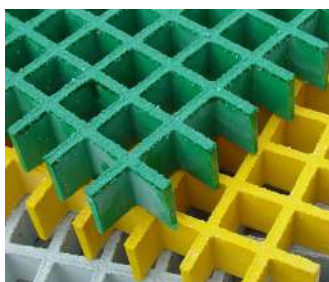
Deck Panels

5 different sizes of deck panels

Option to coat with anti-skid layer



Moulded Gratings



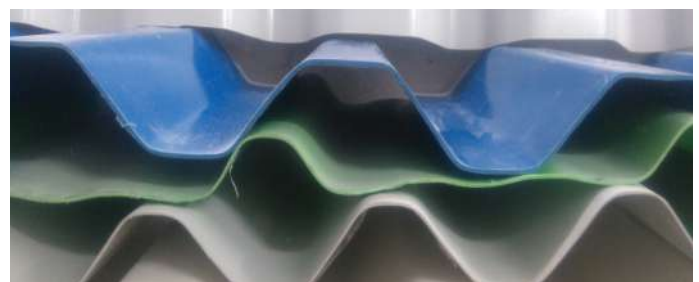
38x38x38 mm &
38x38x30 mm
- Miniscus Type
- With Antiskid
- With Chequered Plate

Pultruded Gratings



Grating Depth	Load Bar Spacing
25.4	30.48
25.4	38.1
38.1	30.48
38.1	38.1
50.8	50.8

Corrugated Sheet / Cladding Panels

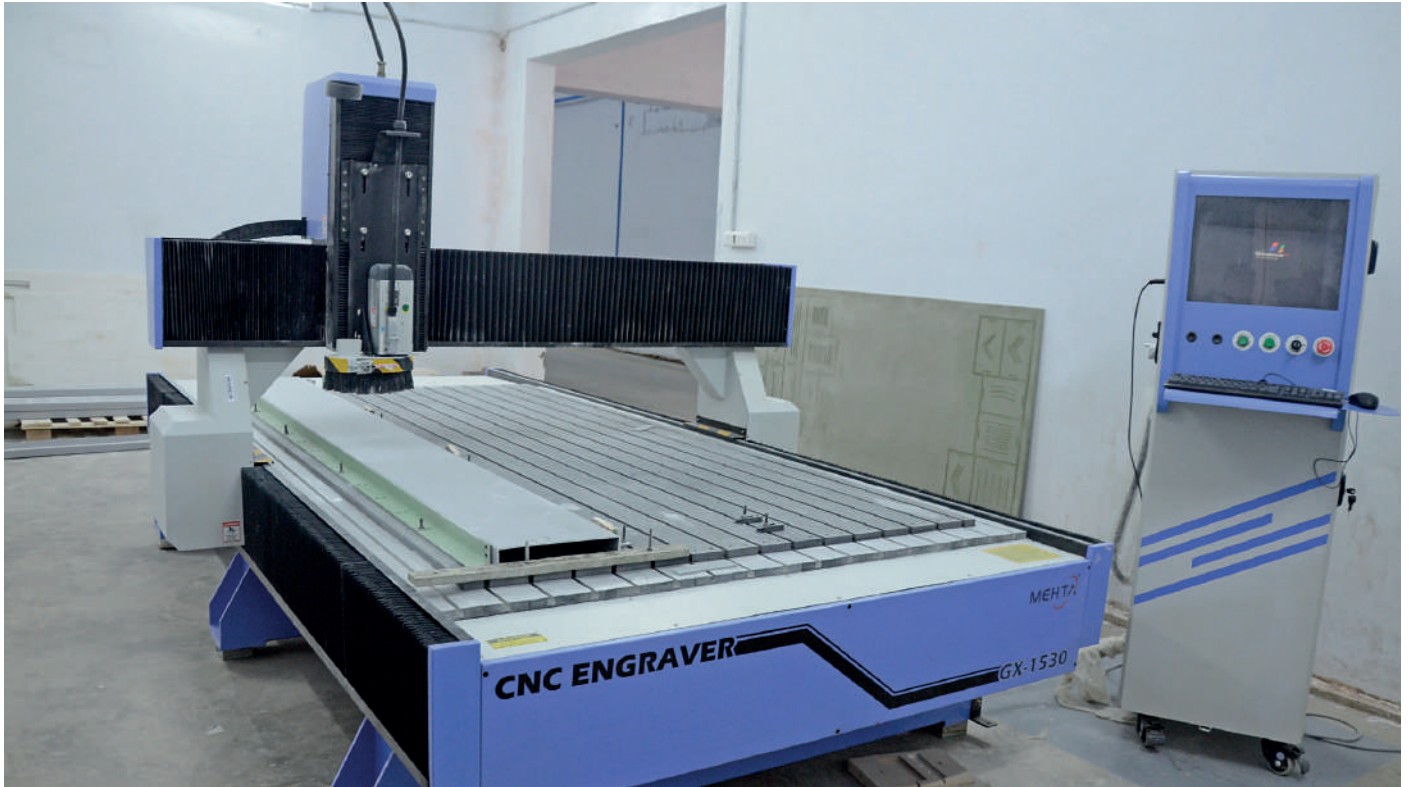


Can be customized as per required colour and design
Range from 1.5 mm thick to 6 mm thick

Strong capabilities in fabrication, marking and packing

Fabrication

- 2 x CNC machines capable of completing complex fabrication with high precision
- 8 x fabrication lines capable of drilling & cutting (angular, circular, 90 degrees) as per the requirement
- 50+ Trained Manpower



Marking & Packaging

- Each piece is marked & identified for tracking as per the drawings
- Sea and Air worthy packing is done with metal cages / wooden as required

Sea Shipment



Air Shipment



We can design and manufacture a full range of fanstacks

Design capabilities with finite element analysis



Fanstack designed by Arvind for noise suppression application

Execution of special projects



Two part fanstack manufactured and assembled at Arvind workshop

We can also make complex custom profiles and speciality products

FRP Pultruded Blades



FRP Saddle with both sided finish



CP Panels



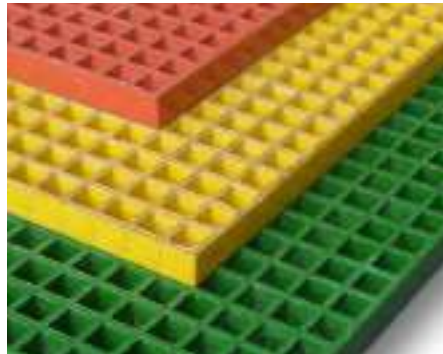
ARVIND COMPOSITES DIVISION - SELECT PULTRISION PROFILE LIST

Profile	Dimensions	Profile	Dimensions	Profile	Dimensions	Profile	Dimensions
C - CHANNEL		RECTANGULAR PIPE		H - BEAM		ANGLE	
1	100x50x3	1	100x50x4.5	1	101.6x101.6x6.35	1	101.6x101.6x6.35
2	100x50x4	2	100x60x6.50	2	152.4x152.4x6.35	2	101.6x101.6x9.525
3	101.6x28.6x3.175	3	101.6x25.4x3.175	3	152.4x152.4x9.525	3	150x100x50x4.5
4	101.6x28.6x6.35	4	40x30x3.175	I-BEAM		4	152.4x152.4x9.5
5	101.6x31.75x4	5	50.8x25.4x3.175	1	101.6x50.8x6.35	5	152.4x152.4x12
6	101.6x31.75x5	6	76.2x50.8x3.175	2	152.4x76.2x6.35	6	180x180x10(60°)
7	101.6x49.05x6.35	7	80x60x5	3	152.4x76.2x9.525	7	200x200x15(60°)
8	106.5x28x3	8	96x68x6/5.6	4	203.2x101.6x9.525	8	200x200x21(60°)
9	127x34.925x6.35	SQUARE PIPE		5	241x50x3.5	9	38.1x38.1x6.35
10	139.7x38.1x4.76	1	101.6x101.6x5.5	6	25.4x15.2x3.56	10	50.8x50.8x6.35
11	139.7x38.1x6.35	2	101.6x101.6x6.35	7	38.1x15.2x3.6	11	50x50x10
12	150x50x3.5	3	101.6x101.6x8	8	50.8x25.4/15.2x3.8	12	50x50x4.5
13	150x50x4	4	101.6x101.6x9.525	FLAT		13	50x50x5
14	150x75x4	5	25.4x25.4x2.5 (Round Mandrill)	1	100x12	14	76.2x76.2x6.35
15	152.4x41.3x3.175	6	25.4x25.4x3.175	2	100x3	15	76.2x76.2x9.5
16	152.4x41.3x6.35	7	32x32x6	3	101.6x4.76	16	85x85x6(134°)
17	152.4x41.3x9.525	8	38.1x38.1x3.175	4	101.6x6.35	17	85x85x6(150°)
18	155x50x5	9	38.1x38.1x6.35	5	101.6x9.525 (2Way)	RO. BAR	
19	160x28x2.5	10	44x44x3.175	6	1219.3x12.7	1	12.9x9.9
20	200x100x10	11	44x44x6.125	7	1219.3x3.175	2	Ø 8 (2way)
21	200x100x4	12	50.8x50.8x3.175	8	1219.3x6.35	3	Ø 18
22	200x50x3	13	50.8x50.8x5	9	1219.3x9.5	ROUND TUBE	
23	200x50x4	14	50.8x50.8x6.35	10	25x2.5	1	100x4
24	203.2x55.56x6.35	15	54x54x4.76	11	30x5 (2Way)	2	25.4x3.175
25	203.2x55.56x9.525	16	63.5x63.5x6.35	12	40x5	3	31.7x3.2/4.1 (Serrated)
26	207x28x3	17	68x68x5	13	50.8x4.76	4	31.7x5.42/6.35
27	250x100x12.5	18	76.2x76.2x3.175	14	50.8x6.35	5	33.4x2.5
28	250x50x4	19	76.2x76.2x6.35	15	557x2.5 (Serrated)	6	50.8x3.22/4.1 (Half Serrated)
29	254x69.85x12.7	20	76.2x76.2x9.525	16	588.5x3	7	50.8x6.35
30	300x50x4	21	88.9x88.9x3.175	17	588.5x8	8	60x8
31	300x75x12	22	88.9x88.9x5	18	60x12	9	80x7.5
32	300x75x5	23	88.9x88.9x6.35	19	60x15	10	43x2.5 (Half Round)
33	307x33x3	24	90x90x4	20	60x20	HALF ROUND BAR	
34	355.6x88.9x9.525	RECTANGULAR BAR		21	60x40	1	32x2.5
35	40x11x3/4	1	11x8 (Notch Bar)	22	60x8	RUNG	
36	50x25x3	2	47.5x42.5	23	70x35	1	41x20x4
37	50x25x4	DECK PANEL		24	76.2x12.7	TOP HAND RAIL	
38	50x50x4	1	304.85x54x3.175	25	76.2x3.175	1	66.97x55.12x3.5
39	55.5x28x2.5	2	500x40x4	26	76.2x6.35	ODD SECTION	
40	75x25x4	3	635x28.7x3.3/4.83	27	76.2x9.525	1	300x58.95x3.0 thk
41	88.9x38.1x4.76	4	638x38x3	KICK PLATE		SQUARE BAR	
42	88.9x38.1x6.35	5	600x50x4.5	1	100x12.9x3	1	40x40

Product offering for Industrial Applications



Cable trays



Gratings



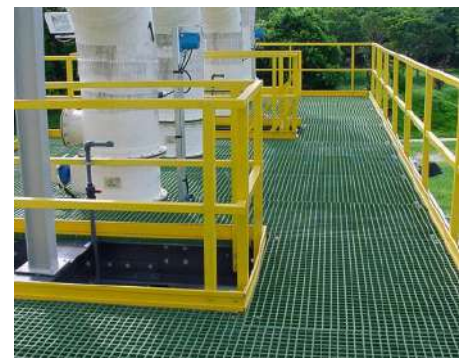
Poles



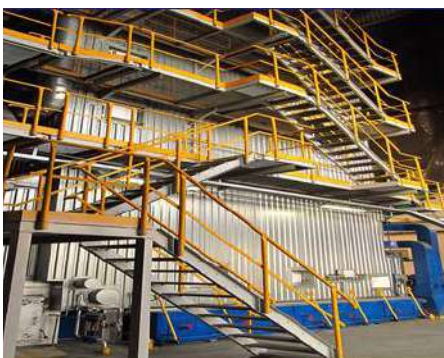
Ladder



Platforms



Handrails / Walkways



Staircases



Monkey Ladders



Toilets



Why Arvind

- Lineage: 90+ year-old financially strong and publicly listed corporate recognized for delivering high quality products to global customers
- Scale: 600MT+ pultrusion production capacity per month with sufficient resources to expand; capable of building ~300 fanstack panels/month
- Systems and processes: Strong in-house processes for production planning, export logistics support and quality control ensuring complete customer satisfaction
- Best cost structure: Backward integration of glass fabrics, scale for glass and resin purchase, export logistics advantage
- Team capabilities: An all-round and skilled team, supported by expertise across various areas by the larger Arvind Group



Arvind Composites Division

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