ZEALLGRATE

RESIN SELECTION GUIDE

Molded & Pultruded FRP Grating Resin Systems
ISO 9001:2015 | DNV / ABS | SGS / Intertek Inspection

Nantong ZeAll New Materials Co., Ltd.
No.888 Changtai Road, Nantong, Jiangsu, China 226000
Tel: +86-513-6681-9918 | Email: sales@izeall.com

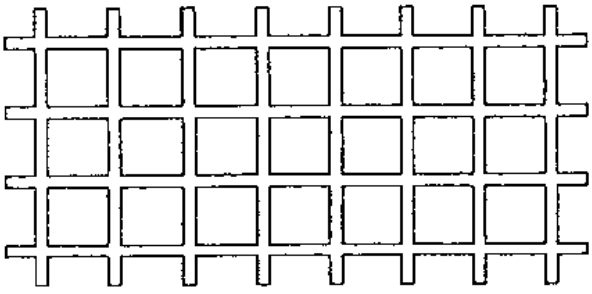
1. Resin Technology Overview

The resin matrix is the corrosion protection of FRP grating. The glass reinforcement provides strength; the thermosetting resin protects the glass, bonds the structure together and defines the chemical, temperature and fire performance envelope. Selecting the correct resin is therefore the single most important specification decision for a long-service FRP installation.

ZeAllgrate product resins

Resin System	Code	Typical Characteristics
Isophthalic Polyester	ISO	Good corrosion resistance, flame spread 25 or less, moderate cost
Vinyl Ester	VE	Superior resistance to acids, alkalies and oxidizing agents
Vinyl Ester FR	VEFR	Vinyl ester chemistry with flame-spread rating 25 or less
eXtra Fire Retardant	XFR	High fire-retardancy vinyl ester, for elevated fire hazard areas
Phenolic	PHEN	High temperature, low smoke / low flame spread, USCG-rated
Orthophthalic Polyester	ORTHO	Economy grade for general dry service

ZeAllgrate has the knowledge and experience to manufacture molded and pultruded grating across this complete range of resin systems, matching each project to its chemical, temperature, fire, color and food-contact requirements.





2. Molded Product Resin Grades

Molded grating is available in the following resin grades. Each is produced in-house under the ISO 9001:2015 quality system with documented batch traceability.

Resin Grade	Temp (F/C)	Key Properties	Typical Use
Polyester (ORTHO)	140 / 60	Economy, general purpose	Dry areas, mild exposure
Isophthalic (ISO)	150 / 65	Better corrosion resistance	Wet/dry industrial floors
Vinyl Ester (VE)	180 / 82	Superior chemical resistance	Chemical plants, bleach areas
Vinyl Ester FR (VEFR)	180 / 82	Chemical + fire retardant	Hazardous process areas
Phenolic	350 / 177	High temp, low smoke	Offshore, marine, tunnel
XFR / Flame Retardant	180 / 82	ASTM E-84 Class 1	Fire-rated plenums and areas

Flame spread ratings meet ASTM E-84 with a rating of 25 or less where fire performance is required. USCG general fire-rating options are available for marine and offshore service.

ZeAllgrate Resin Systems

The resin matrix is the corrosion protection of FRP grating. ZeAllgrate offers a full range of thermosetting resin systems so each project can be matched to its chemical, temperature, fire and color requirements. All resin grades are available across molded and pultruded product lines.

Resin	Code	Temp (F/C)	Key Characteristics
Polyester (Orthophthalic)	ORTHO	140 / 60	Economy grade, general dry service
Isophthalic Polyester	ISO	150 / 65	Improved corrosion, wet service
Vinyl Ester	VE	180 / 82	Superior chemical resistance
Vinyl Ester FR	VEFR	180 / 82	Chemical + fire retardant
Fire Retardant Polyester	FR	150 / 65	ASTM E-84 Class 1, <25 flame
Impact Modified	IMP	150 / 65	Enhanced impact resistance
UV Stabilized	UV	150 / 65	Outdoor color & gloss retention

All resins can be pigmented to standard safety colors. Fire-retardant grades meet ASTM E-84 Class 1 flame spread rating of 25 or less.

How to Select the Right Resin

Selecting the correct resin is a four-step process. Skipping a step is the most common cause of premature FRP failure in aggressive environments.

- Step 1 - List every chemical, its concentration and service temperature
- Step 2 - Compare against the resin chemical resistance tables (Chemical Resistance Guide)
- Step 3 - Select the most aggressive chemical as the governing case
- Step 4 - Check fire code, color and UV requirements, then confirm with ZeAllgrate engineering

Decision guidance

If your environment has...	Choose
Only mild moisture / general industrial	ISO (Isophthalic)
Acids, solvents, chlorides, or process chemicals	VE (Vinyl Ester)
Fire code requirements in chemical service	VEFR (Vinyl Ester FR)
Seawater or salt splash	ISO or VE
Concentrated acids above 150F	VE, confirm limits with engineering
Outdoor UV exposure	Specify UV-stabilized topcoat

Resin System Comparison

Property	ORTHO	ISO	VE	VEFR
Relative cost	Low	Medium	High	High
Corrosion resistance	Basic	Good	Excellent	Excellent
Temperature rating (F)	140	150	180	180
Fire retardant	No	Optional	Optional	Yes (Class 1)
Color range	Full	Full	Full	Full
Typical sectors	Dry indoor	Water/waste	Chemical	High-risk chemical
Impact resistance	Std	Good	Good	Good

Note: VEFR combines vinyl ester chemical resistance with a fire-retardant formulation, making it the recommended grade for chemical p

Phenolic (limited availability)

For tunnel, transit and plenum applications requiring low smoke and low flame spread, ZeAllgrate can supply phenolic-resin grating on a project basis. Contact engineering for availability and lead time.

Recommended Resin by Application

Application	Recommended Resin	Why
Chemical plant platforms	VE	Resists mixed process chemicals
Bleach plant walkways	VE	Chlorine & oxidizing agents
Wastewater tank covers	ISO	H2S & chloride resistance
Food processing floors	ISO/VE	Sanitizer & washdown resistance
Pharma cleanroom platforms	VE	Solvents & cleanroom agents
Offshore deck grating	VE	Seawater & UV
Battery room floors	VE	Sulfuric acid mist
Dry warehouse mezzanine	ORTHO/ISO	Economy, mild exposure

For any application not listed, provide the full chemical list with concentrations and temperatures - ZeAllgrate engineering will confirm the

Frequently Asked Questions

- Q: Can I use ORTHO for outdoor service? A: Yes, with UV-stabilized formulation; ISO or VE preferred.
- Q: What is the difference between VE and VEFR? A: VEFR adds fire-retardant performance to vinyl ester chemistry.
- Q: Does resin grade affect load capacity? A: No - load capacity is set by grating profile and depth; resin sets chemical limits.
- Q: Can custom colors be matched? A: Yes, to RAL or Pantone references with minimum order quantities.
- Q: Are material certificates provided? A: Yes, with every shipment; load test reports on request.

ZeAllgrate - Nantong ZeAll New Materials Co., Ltd.

- No.888 Changtai Road, Nantong, Jiangsu, China 226000
- Tel: +86-513-6681-9918
- Email: sales@izeall.com
- Web: www.izeall.com