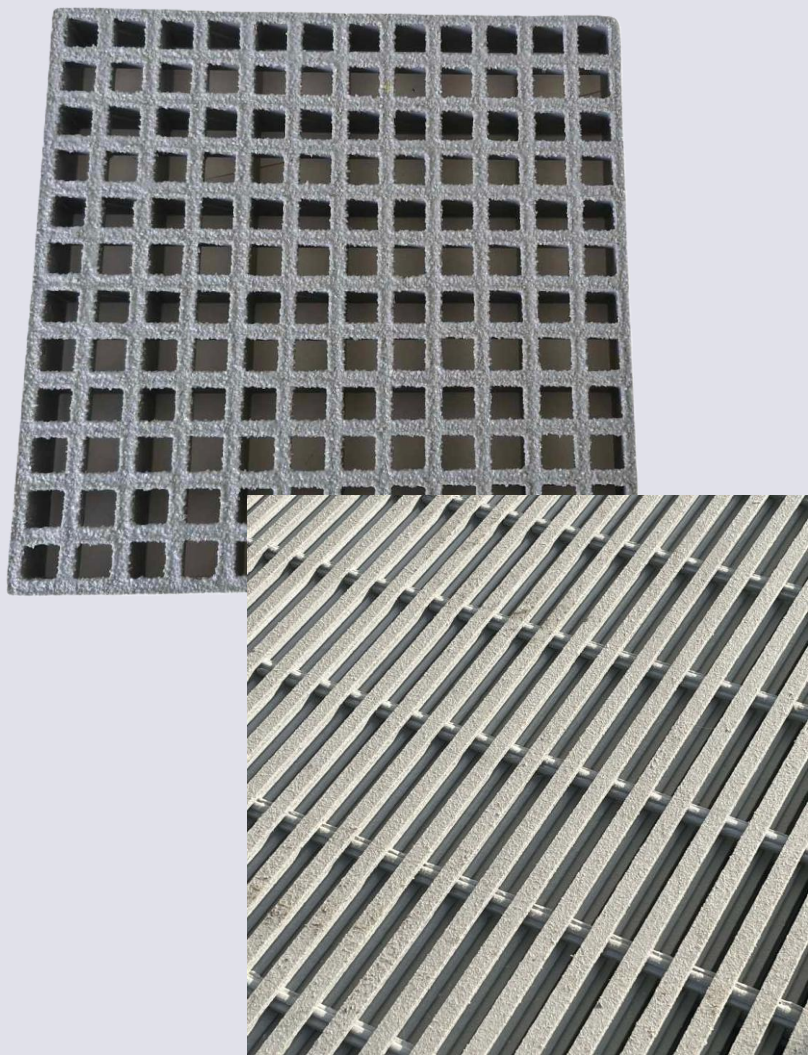




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Moulded vs Pultruded GRP Grating: Which Should You Specify?

A practical guide for engineers, designers and specifiers

Introduction

What is GRP Grating?

Glass reinforced polymer (GRP) grating is widely used for walkways, access platforms, flooring, stair treads, trench covers and industrial access applications where corrosion resistance, low maintenance and ease of installation are important.

Why the Choice Matters

The two principal types are **moulded GRP grating** and **pultruded GRP grating**. While both provide a lightweight, corrosion-resistant alternative to conventional metallic grating, their construction gives them different structural characteristics.

Choosing between moulded and pultruded GRP grating should therefore be based on the requirements of the application rather than simply selecting the lowest-cost product.

This guide explains the key differences and provides a practical framework for selecting the most appropriate type of GRP grating for your project.

Manufacturing Methods: Moulded vs Pultruded

Moulded GRP Grating

Manufactured by combining continuous glass fibres with resin in a mould. The glass reinforcement runs in **multiple directions** through the grating, creating an integrated panel structure.

The result is a grating panel with a relatively **uniform load distribution in both principal directions**.

Commonly available with open mesh configurations and can be manufactured in a range of panel depths, mesh sizes, resin systems and surface finishes.

Pultruded GRP Grating

Manufactured using a pultrusion process in which continuous glass-fibre reinforcements are **pulled through a resin bath** and then through a heated die.

This creates structural load-bearing elements with a **high proportion of continuous longitudinal glass reinforcement**.

Particularly useful where increased load capacity or longer spans are required. Can also provide a high strength-to-weight ratio while retaining inherent corrosion resistance.

❏ The fundamental difference is how the glass reinforcement is arranged – multi-directional in moulded, predominantly longitudinal in pultruded. This drives all downstream performance differences.

Typical Applications by Type

Moulded GRP Grating

- Industrial walkways
- Access platforms
- Water and wastewater treatment plants
- Chemical processing environments
- Marine applications
- Plant rooms
- Stair treads
- Trench covers
- Areas requiring good slip resistance
- Applications where panels may require local cutting or modification

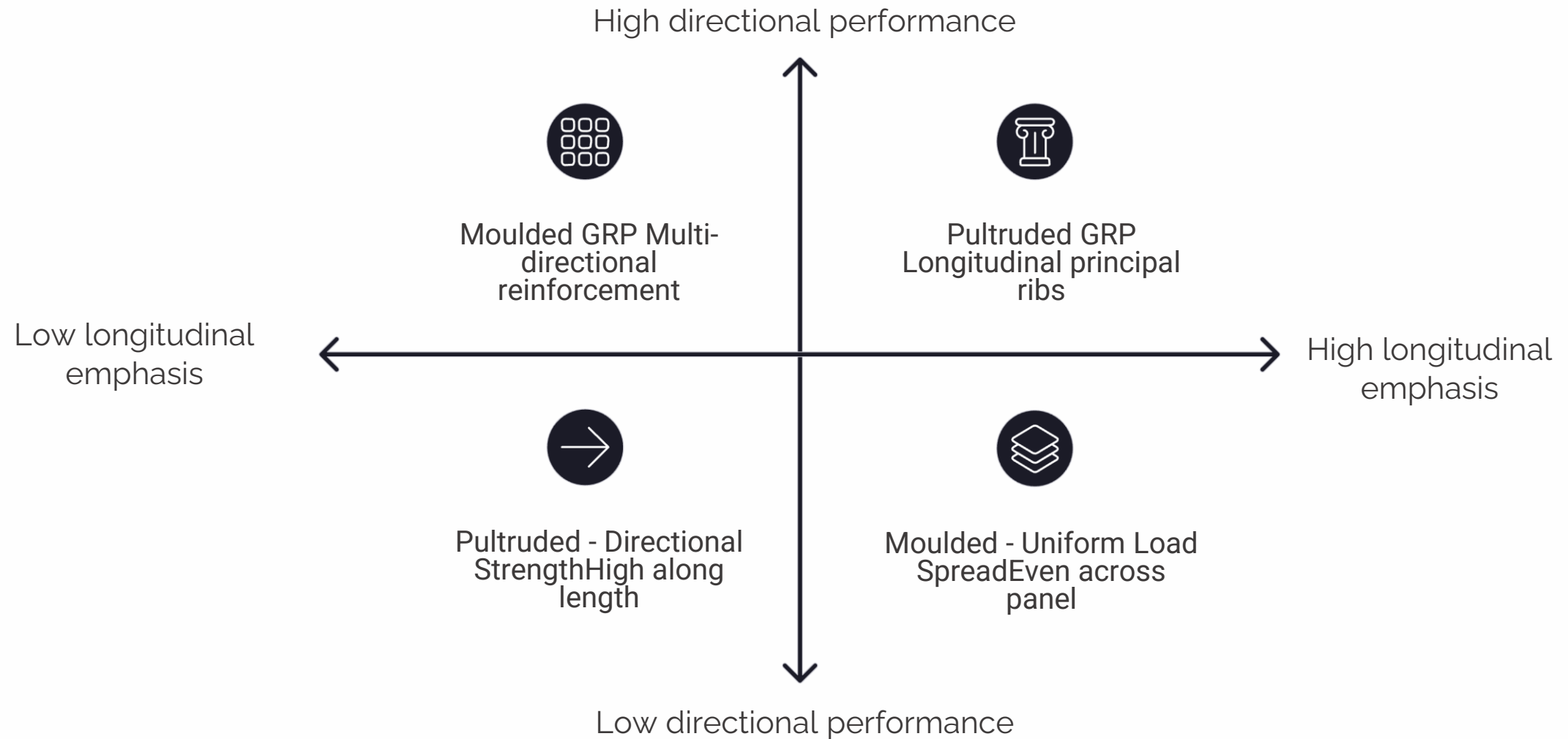


Pultruded GRP Grating

- Longer-span walkways
- Industrial platforms
- Heavy-duty access areas
- Areas subject to higher loading
- Structural flooring
- Maintenance platforms
- Areas where minimising support steelwork is important



The Key Difference: Reinforcement Arrangement



The correct choice depends on factors including span, applied loading, point loading, support arrangement, required deflection, panel dimensions, direction of loading, environment, mesh requirements, fabrication requirements, and installation method.

Decision Matrix: Moulded vs Pultruded GRP Grating

The following matrix provides a general guide rather than a substitute for project-specific structural assessment.

Criterion	Moulded	Pultruded
Multi-directional load distribution	Preferred	Suitable, depending on product/design
Longer spans	Suitable	Often preferred
Higher loading requirements	Suitable	Often preferred
Heavy-duty applications	Suitable	Often preferred
Applications with predominantly one-way loading	Suitable	Preferred
High strength-to-weight ratio	✓	✓
Complex panel cutting	✓	✓
Corrosive environments	✓	✓
Water & wastewater applications	✓	✓
Open mesh grating	✓	✓
Typical access platforms & industrial walkways	✓	✓
Applications requiring different mesh configurations	✓	✓
Lightweight installation	✓	✓

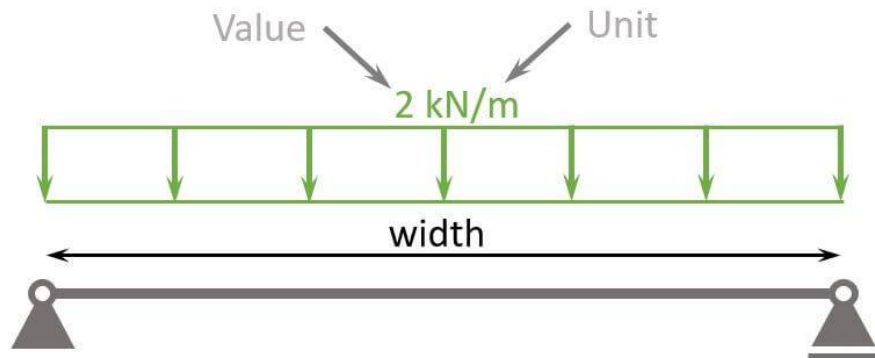
Important: Product performance varies between manufacturers and product ranges. Always check the manufacturer's technical information and load/span data for the specific grating being considered.

Selection Factor 1: Loading Direction

The Core Question

One of the most important considerations is how the grating will be loaded.

Ask: Is the loading predominantly in one direction, or could loads be applied across the panel in multiple directions?



Moulded: Multi-Directional Advantage

Moulded GRP grating has reinforcement distributed through the panel in multiple directions. This can make it advantageous where loading is not confined to a single direction or where the loading arrangement is more complex.

Pultruded: One-Way Efficiency

Pultruded grating has a more directional structural arrangement. Its longitudinal load-bearing bars can provide excellent performance where the principal loading direction is known.

For straightforward one-way loading and longer spans, pultruded grating may provide an efficient solution. For applications involving multi-directional loading, moulded grating may offer advantages.

Selection Factor 2: Span

Span is one of the most important factors when selecting GRP grating. As the distance between supports increases, the grating is required to resist greater bending and deflection.

Span & Product Type

For longer spans, pultruded GRP grating is often considered because of the structural characteristics of its continuous longitudinal reinforcement. However, the correct product cannot be selected from span alone.

Additional Factors to Consider

- Imposed load
- Point load
- Panel depth
- Support arrangement
- Bar geometry
- Deflection limits
- Safety factors
- Required service conditions



Don't select grating by span alone. Always use the manufacturer's load/span information for the specific product.

3. Heavy Loads

Where GRP grating is subject to significant imposed or point loading, pultruded products can offer an efficient structural solution. The continuous reinforcement used in pultruded profiles allows manufacturers to develop grating products with high longitudinal strength.

 **Important:** "Heavy duty" should not be treated as a generic product description. A designer must establish the actual design loading before selecting the grating.

Loading Parameters to Establish

- Uniformly distributed load
- Point load
- Point-load position
- Span
- Support width
- Deflection requirement

Additional Load Considerations

- Dynamic loading
- Equipment loads
- Maintenance loads

For unusual or particularly demanding loading conditions, the grating supplier should be consulted before specification.

4. Multi-Directional Loading

The direction in which loads are applied is a key factor in grating selection — and one that is frequently overlooked at the specification stage.

Moulded GRP Grating

Moulded grating can be advantageous where loads may be applied in different directions because its reinforcement is distributed through the panel. This can be particularly relevant for platforms and areas where loading does not always occur directly over the primary support direction.

Pultruded GRP Grating

That does not mean pultruded grating cannot be used in multi-directional loading applications. The specific product construction and manufacturer's engineering data should always be considered before ruling out pultruded options.

Key Principle

Reinforcement distribution determines multi-directional performance. Always review the manufacturer's structural data for the specific product — do not assume capability based on product type alone.

5. Cutting and Fabrication

GRP grating is often required to be cut around pipes, columns, pumps, valves, machinery, structural steelwork, cable trays, and access equipment. Both moulded and pultruded GRP grating can be cut and fabricated – however, cutting a structural grating panel can affect its load-bearing characteristics.

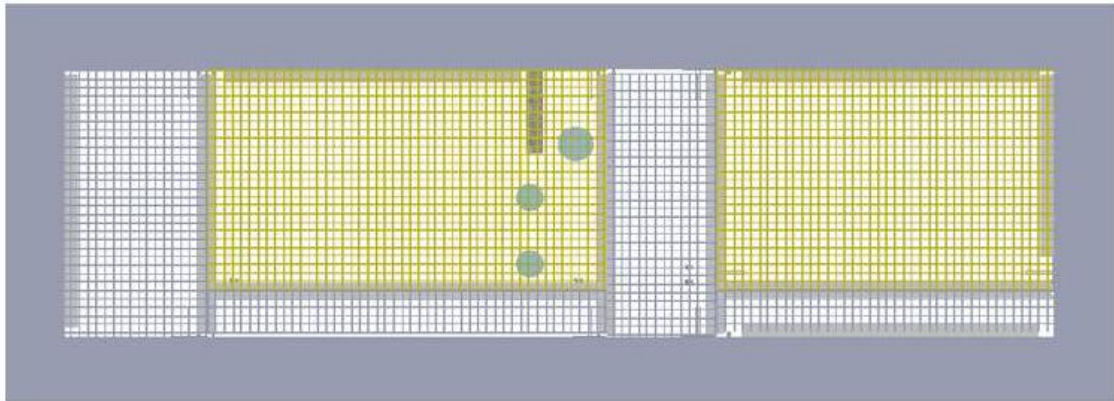
❌ **Critical:** A cut-out should not simply be made on site without considering whether the remaining grating has sufficient support and structural capacity.

Design Considerations for Cut-Outs

- 01
Size of the opening
- 02
Location within the panel
- 03
Whether load-bearing bars have been removed
- 04
Whether additional support is required
- 05
Whether the opening needs a framed edge
- 06
Whether the modified panel remains suitable for the intended loading

Best Practice

For complex fabrication, providing the supplier with the layout drawings at the design stage can allow the grating system to be designed and fabricated more efficiently – reducing risk of structural compromise and avoiding costly site modifications.



6. Corrosive Environments

Both moulded and pultruded GRP grating can provide excellent corrosion resistance compared with conventional steel grating. However, GRP is not automatically resistant to every chemical or operating condition – the appropriate resin system must be selected for the actual environment.

Typical Applications

- Wastewater treatment
- Water treatment
- Chemical processing
- Coastal and marine locations
- Industrial processing
- Dosing areas
- Areas exposed to moisture
- Areas where regular washing occurs

Environmental Factors to Assess

- Chemical concentration
- Exposure frequency
- Temperature
- Resin system compatibility
- Duration of exposure
- UV exposure
- Cleaning chemicals

❏ Resin system selection is critical. Confirm chemical compatibility with the manufacturer before specification – do not assume a standard resin is suitable for aggressive environments.

7. Mesh Size & 8. Slip Resistance

Two further selection criteria — mesh configuration and surface finish — are frequently treated as secondary decisions but have direct implications for safety, function, and compliance.

Mesh Size

The choice of mesh is not simply an aesthetic decision. Mesh size can affect:

- Foot safety
- Small-object retention
- Drainage and ventilation
- Light transmission
- Debris accumulation
- Accessibility and cleaning requirements

Where small objects could fall through the grating, a smaller mesh configuration may be more appropriate. For areas where liquid retention, debris control or a more solid walking surface is required, solid-top GRP grating may be considered.

Slip Resistance

GRP grating is often selected for environments where slip resistance is important, including:

- Wet areas and water treatment plants
- Outdoor walkways
- Industrial processing areas
- Marine environments
- Areas subject to oil or other contaminants

The designer should specify the required surface finish and consider the expected operating environment. For particularly demanding applications, the appropriate slip-resistant surface should be selected based on the manufacturer's tested performance.

Which is Better: Moulded or Pultruded?

There is no universal answer. The correct question is: **Which type of GRP grating is most appropriate for the specific loading, span, environment and application?**

Moulded GRP Grating

- Loading can occur in multiple directions
- Standard panel configurations are required
- Open mesh grating is required
- Corrosion resistance is a primary consideration
- Conventional industrial walkways or platforms
- A broad range of mesh configurations is required

Pultruded GRP Grating

- Longer spans are required
- Higher structural capacity is required
- Loading is predominantly in one direction
- Minimising support steelwork is desirable
- A high strength-to-weight ratio is important
- The application is particularly demanding structurally

Information to Provide to a GRP Grating Supplier

Providing the right information at the enquiry stage can make the specification and quotation process considerably faster. If you have these details, a specialist supplier can help determine the most appropriate product and identify any issues before manufacture.

Application & Location

What is the grating being used for? Indoor, outdoor, marine, water treatment, chemical plant, etc.

Panel Size & Span

Required length and width of panels. Distance between supports.

Loading

Uniformly distributed and/or point load values.

Mesh & Surface

Standard, mini mesh, solid top, etc. Required slip-resistant finish.

Environment

Chemical, temperature, UV and moisture exposure details.

Quantity & Drawings

Number of panels or approximate area. GA drawings, support layouts or CAD files where available.

Need Help Selecting GRP Grating?

Choosing between moulded and pultruded grating is only one part of the design process. Relinea can assist with the selection and specification of GRP grating for walkways, platforms, flooring, stair treads, trench covers and other access applications.

Technical Assessment

For projects where span, loading, fabrication or environmental conditions are critical, provide your drawings and project requirements so the appropriate GRP solution can be assessed.

Contact Relinea

Need help with a GRP grating specification? Contact Relinea's technical team to discuss your project requirements.

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GRP Grating Selection: Key Principles Summary

A structured approach to GRP grating specification reduces risk, improves performance, and avoids costly errors. The following principles underpin every successful selection.

Define Loading First

Establish UDL, point load, span, and deflection limits before selecting any product.

Match Resin to Environment

GRP is not universally chemical-resistant. Confirm resin compatibility for the actual exposure conditions.

Assess Cut-Outs Structurally

Never cut grating on site without evaluating the effect on load capacity and support requirements.

Specify Mesh and Surface

Mesh size and slip resistance are safety-critical decisions, not aesthetic ones.

Engage the Supplier Early

Providing drawings and project data at enquiry stage enables faster, more accurate specification.

- ❏ For demanding or unusual applications, always consult the grating supplier before finalising the specification. Manufacturer engineering data takes precedence over generic product descriptions.

Contact & Resources

Get in Touch

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