

EU RO Mutual Recognition Technical Requirements

NON-METALLIC GRATINGS	Version	0.0
	Adoption Date:	1 January 2018
	Application Date:	1 July 2018
	Tier	6
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1. PRODUCT DESCRIPTION	1
2. DESIGN EVALUATION	2
3. PRODUCTION REQUIREMENTS	5
4. MARKING REQUIREMENTS	5
5. TYPE APPROVAL CERTIFICATE CONTENT	6
6. APPROVAL DATE AND REVISION NUMBER.....	6
7. BACKGROUND INFORMATION / REFERENCES.....	6
8. MAINTENANCE / CLARIFICATION OF TECHNICAL REQUIREMENTS.....	7

1. PRODUCT DESCRIPTION

1.a General description of the product

Glass fiber reinforced plastic (GRP) gratings for use on board vessels and intended for personnel walkways, catwalks, grids used for detachable steps in stairs, ladders, platforms and access areas. Generally used in lieu of steel grids because of their light weight, low thermal conductivity and resistance to corrosion.

1.b Application limitations†

This TR applies to GRP gratings intended for transit of persons only.

This TR does not apply to:

- Grating platforms intended for storage of goods;
- Grating platforms to be installed in potentially explosive hazardous areas;
- Open, semi-closed and closed spaces where fire integrity properties are required by the applicable national and /or international instruments (e.g.: performance criteria L1, L2 and L3, as defined in the Standard ASTM F3059 for walkways or areas which may be used for escape or access for firefighting, emergency operation or rescue).

† The EU MR type approved product is generally not used as a stand-alone product, but integrated as component in a sub-system or system. When a product is presented with an EU RO MR Type Approval Certificate for given application, its acceptability with regards to conditions defined in 1b, 1c and 1d of this Technical Requirement will be evaluated by the EU RO in charge of classing the ship or being in charge of the unit/system certification.

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1.c Intended use

GRP gratings for transit of persons installed on board ships in those locations where no fire integrity requirements are given by the applicable national and/or international instruments. Typical examples of locations where these gratings can be installed are: cofferdams, void spaces, double bottoms, pipe tunnels, etc., but also open decks or semi-enclosed areas which are not intended for firefighting, emergency operation or rescue.

1.d System context

As per item 1.c.

2. DESIGN EVALUATION

2.a Engineering evaluation requirements

2.a.i Technical Requirements

Non-metallic gratings to be installed on board a ship where allowed (see 1.b and 1.c) shall be designed and manufactured so that all type testing requirements indicated in the following paragraph 2.b are satisfied.

2.a.ii Technical documents to be submitted

IMPORTANT: The English Language shall be used for all submitted documents.

The following data shall be submitted by the Manufacturer to the EU RO in the form of technical sheet and drawings:

- a) trade name of the product;
- b) complete description of the product (design temperature, electrostatic property, serviceable life, installation instructions including precautions to be taken at work site, repair procedures and criteria for determining whether repairs are necessary or not, details of marking);
- c) description of the production process;
- d) conditions and limits of use (maximum allowed span, etc.);
- e) dimensions of the grating panels;
- f) dimensions of the load bearing elements of the gratings and their meshes;
- g) schematic position and dimensions of the supporting frame and holding system;

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- h) materials (plastic resin type, reinforcement type, detailed information of all reinforcements employed in cases where a reference number for the filament winding process is not specified, full information regarding type of gel-coat or thermoplastic liner employed during construction, cure and post-cure conditions (including their temperature and times), resin / reinforcement ratio, winding angle and orientation, mass per area (kg/m²));
- i) design load for which approval is required;
- j) technical specification of anti-aging properties of the used GRP material;
- k) anti-slip surface treatment in relation to the conditions of use;
- l) drawings and supporting documentation (certificates and reports for previously carried out relevant tests, details of all relevant standards, all relevant design drawings, catalogues, data sheets, calculations and functional descriptions, fully detailed sectional assembly drawings showing GPR);
- m) historical record of the company (the manufacturer);
- n) company background and brief description of the factory;
- o) documents related to the quality control system of the company (the manufacturer), including custody of raw materials (place of storage, temperature control, humidity control, storage period, etc.), work process control (temperature and humidity in the premises of the plant), inspection system and organization of inspection department (inspection and test performed at the factory);
- p) documents on the quality system of the company (the manufacturer);
- q) storage means of finished products;
- r) packing, packaging and marking methods;
- s) documents on types of joints and working procedures;
- t) documents on the bonding procedures including material used, tools and fixtures, joints and fixtures, cure temperature, dimensional requirements and tolerances, test acceptance criteria upon completion of the assembly;
- u) other data and information deemed necessary.

2.b Type testing requirements

Type tests shall be carried out on at least one sample selected from the production line or 'at random' from stock for each type and size of grid panel for which type approval is required.†

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2.b.i Fire test requirements

a) Self-extinguishing test

The material used to manufacture the gratings shall be tested according to the test method laid down in the ASTM Standard D635-14 "Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position".

The following acceptance criteria shall be used:

- a) the test specimen does not burn with a flame after the ignition source is removed;
- b) if the test specimens continue to burn with a flame after removal of the ignition source, the flame front does not pass the 100 mm mark;
- c) if the flame front passes the 100 mm mark, it does not have a linear burning rate exceeding 60 mm/min.

b) Fire retardant test

The material used to manufacture the gratings shall be tested according to the test method laid down in the 2010 FTP Code (MSC.307(88)) Annex 1 Part 2 (*Smoke and toxicity test*) and Part 5 (*Test for surface flammability*). The criteria established for materials used for bulkheads, linings or ceilings are to be complied with. Alternatively, the material shall be tested according to the ASTM E-84 "*Standard Test Method for Surface Burning Characteristics of Building Materials*", with a flame spread index not greater than 20 and a smoke developed index not greater than 450 (as per Level LO according to Standard ASTM F3059).

2.b.ii Anti-slip requirements

The grating shall have a minimum anti-slip level equal to R13V10, determined in accordance with Standard DIN 51130:2014: "*Testing of floor coverings - Determination of the anti-slip properties - Workrooms and fields of activities with slip danger - Walking method - Ramp test*".

2.b.iii Strength test

A prototype of every kind of grating panel proposed, together with its supporting frame, shall be subjected to the load tests indicated below in order to verify the maximum deflection.

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- a) The grid panel shall be able to withstand the load of four adults, assuming average weight of 82.5 kg per person, standing in the most severe positions for the structure;
- b) The grid panel shall be able to withstand a load of 1.5 kN applied in the most severe position for the structure concentrated on an area of 200 mm x 200 mm;
- c) The grid panel shall be able to withstand a uniform distributed load of 2 kN/m².

The grid panel is deemed suitable if, when subjected to all the above test load conditions, the max deflection does not exceed 1/200th of the span, namely the distance between two consecutive supports of the panel.

For each different load position, it shall be recorded in the test report the associated degree of deflection.

Tests shall be carried out in the presence of the EU RO Surveyor. In cases where the tests are conducted at Nationally Accredited Laboratories, the presence of the EU RO surveyor may be omitted†.

† For further clarification of witnessing of tests and sampling the test specimen(s), refer to paragraphs 6, 7 and 8 of the EU RO "Design Evaluation Scheme" procedure (Appendix V of EU RO Framework Document for the Mutual Recognition of Type Approval found on <http://www.euomr.org/Guidance%20for%20Mutual%20Recognition>)

3. PRODUCTION REQUIREMENTS

Refer to EU RO "Product Quality Assurance (PQA)" procedure (Appendix VI of EU RO Framework Document for the Mutual Recognition of Type Approval found on <http://www.euomr.org/Guidance%20for%20Mutual%20Recognition>)

4. MARKING REQUIREMENTS

Manufacturers of the approved equipment are, in principle, to mark the product before shipment for identification of approved equipment as per referenced standard. In addition, and as a minimum, the following items to be marked at the suitable place:

- a) Manufacturer's name or equivalent;
- b) Type No. or symbol;

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- c) Serial No. and date of manufacture;
- d) Particulars or ratings.

5. TYPE APPROVAL CERTIFICATE CONTENT

The EU RO MR Type Approval Certificate shall contain the minimum information as defined in the EU RO Framework Document for the Mutual Recognition of Type Approval - see Appendix I of EU RO MR Type Approval Certificate Information.

The following information is specifically applicable to products relevant to this technical requirement and shall be included on the EU RO MR Type Approval Certificate:

- a) Identification of the resin type;
- b) Dimensions of grating panels, frames and type of holding systems for which approval is sought;
- c) Mass per area (kg/m²) including tolerances.

6. APPROVAL DATE AND REVISION NUMBER

Date	Revision	Comment
2018-01-01	0.0	Approved by EU RO MR Steering Committee

7. BACKGROUND INFORMATION / REFERENCES

- a) EU RO Framework Document for the Mutual Recognition of Type Approval;
- b) ASTM D635-14 "Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position";
- c) DIN 51130:2014: "Testing of floor coverings - Determination of the anti-slip properties - Workrooms and fields of activities with slip danger - Walking method - Ramp test";

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- d) ASTM E-84 "Standard Test Method for Surface Burning Characteristics of Building Materials";
- e) 2010 FTP Code "International Code for Application of Fire Test Procedures";
- f) ASTM F3059-15 "Standard Specification for Fibre-Reinforced Polymer (FRP) Gratings Used in Marine Construction and Shipbuilding".

8. MAINTENANCE & CLARIFICATION OF TECHNICAL REQUIREMENTS

Anyone wishing to propose changes to this document or request clarification of technical issues should contact the EU RO MR Group Secretariat in the first instance:
Secretariat@euomr.org.

Review and approval of change requests shall follow the EU RO MR Maintenance Process detailed in the EU RO Framework Document for the Mutual Recognition of Type Approval: <http://www.euomr.org/Guidance%20for%20Mutual%20Recognition>

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