FRP Composites
Grating Manual
For Pultruded and Molded
Grating and Stair Treads
American National Standard
FRP Composites Grating Manual
For Pultruded and Molded Grating and Stair Treads

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This manual was developed by representative member companies of the Fiberglass Grating Manufacturers Council (FGMC) of the American Composites Manufacturers Association (ACMA) to provide guidance on the design, selection and specification of fiberglass grating. The following are members of the FGMC:

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The Fiberglass Grating Manufacturers Council (FGMC) of the American Composites Manufacturers Association (ACMA) also acknowledges and expresses gratitude to the non-member volunteer contributions made by material suppliers, fiberglass grating manufacturers, engineers and specifiers, and academia in developing this standard and the code of standard practice. For further information concerning the activities of the FGMC please refer to: www.fiberglassgrating.org.
PREFACE

This preface is included as background information only. It is not part of the official American National Standard FRP Composites Grating Manual For Pultruded and Molded Grating and Stair Treads.

The Fiberglass Grating Manufacturers Council (FGMC) of the American Composites Manufacturers Association (ACMA) has supported the preparation and development of this Manual. Manufacturers of FRP composites grating represented on the Council manufacture fiberglass grating products conforming to the standards and specifications contained herein.

Fiberglass grating has been manufactured and used since the 1960s. It exhibits many features (as compared to metal gratings or wood decks) that are beneficial in a variety of applications. These features include corrosion and rot resistance, lightweight, high strength-to-weight, electrical and thermal non-conductivity and molded-in colors. Due to the relatively low modulus of elasticity of glass fiber reinforced polymers, fiberglass grating is always controlled by the serviceability (deflection) limit state rather than strength limit states. This design methodology results in very high, real safety factors.

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# TABLE OF CONTENTS

LIST OF TABLES AND FIGURES ........................................... xii

1.0 GENERAL SCOPE ....................................................... 1

2.0 GRATING MANUFACTURING PROCESSES .......................... 3

3.0 STANDARD MARKING SYSTEM ..................................... 5

4.0 STANDARD MOLDED GRATING DETAILS ....................... 6

5.0 STANDARD PULTRUDED GRATING DETAILS ..................... 7

6.0 TOLERANCES OF MANUFACTURED AND FABRICATED PANELS .. 8

7.0 LOAD TABLES ........................................................... 10

  7.1 Inch-Pound Units .................................................. 11
      Molded Grating – Uniform Load ................................. 11
      Molded Grating – Concentrated Line Load ..................... 12
      Pultruded Grating – Uniform Load .............................. 13
      Pultruded Grating – Concentrated Line Load .................. 15

  7.2 SI Units ............................................................... 17
      Molded Grating – Uniform Load ................................. 17
      Molded Grating – Concentrated Line Load ..................... 18
      Pultruded Grating – Uniform Load .............................. 19
      Pultruded Grating – Concentrated Line Load .................. 21

8.0 ANCHORING DETAILS, BANDING AND KICK PLATES .............. 23

  8.1 Anchoring Details .................................................. 23

  8.2 Banding & Kick Plates ............................................. 24

9.0 ORDERING INFORMATION .......................................... 26

10.0 STANDARD SPECIFICATION – MOLDED AND PULTRUDED GRATING .27

11.0 CODE OF STANDARD PRACTICE .................................. 33

12.0 GLOSSARY OF TERMS ............................................... 37

APPENDIX A – TEST METHODS OF TESTING GRATING PANELS ....... 43

APPENDIX B – GRATING DESCRIPTIONS ............................ 50
LIST OF TABLES

Table 3.1 – Standard Marking Systems for Molded and Pultruded Grating ........................................ 5
Table 6.1 – General Tolerances of Grating Panels. ................................................................. 8
Table 7.1 – Molded Grating – Uniform Load (Deflection in inches) ......................................... 11
Table 7.2 – Molded Grating – Concentrated Line Load (Deflection in inches) ................... 12
Table 7.3 – Pultruded Grating – Uniform Load (Deflection in inches) .................................. 13
Table 7.4 – Pultruded Grating – Concentrated Line Load (Deflection in inches) ............... 15
Table 7.5 – Molded Grating – Uniform Load (Deflection in millimeters) ............................... 17
Table 7.6 – Molded Grating – Concentrated Line Load (Deflection in millimeters) ............... 18
Table 7.7 – Pultruded Grating – Uniform Load (Deflection in millimeters) ......................... 19
Table 7.8 – Pultruded Grating – Concentrated Line Load (Deflection in millimeters) .......... 21
Table A-1 – Number of Load Bars .............................................................................................. 43
Table A-2 – Required Test Spans & Sample Lengths – Pultruded Grating ............................... 43
Table A-3 – Required Test Spans & Sample Lengths – Molded Grating .................................. 44
LIST OF FIGURES

Figure 2.1 – Molded Grating with Embedded Grit ........................................ 3
Figure 2.2 – Molded Grating with Meniscus Surface ................................. 3
Figure 2.3 – Pultrusion Process ................................................................. 4
Figure 2.4 – Pultruded Grating Assembly .................................................. 4
Figure 4.1 – Standard Molded Grating Details ......................................... 6
Figure 5.1 – Standard Pultruded Grating Details ...................................... 7
Figure 6.1 – Grating Clearances ............................................................... 9
Figure 7.1 – Molded Grating – Uniform Load. .......................................... 11
Figure 7.2 – Molded Grating – Concentrated Line Load ........................... 12
Figure 7.3 – Pultruded Grating – Uniform Load ....................................... 13
Figure 7.4 – Pultruded Grating – Concentrated Line Load ....................... 15
Figure 7.5 – Molded Grating – Uniform Load .......................................... 17
Figure 7.6 – Molded Grating – Concentrated Line Load ........................... 18
Figure 7.7 – Pultruded Grating – Uniform Load ....................................... 19
Figure 7.8 – Pultruded Grating – Concentrated Line Load ....................... 21
Figure 8.1 – Anchoring Options for Molded and Pultruded Grating .......... 23
Figure 8.2 – FRP Edge Banding for Molded Grating ............................... 24
Figure 8.3 – FRP Kick Plates for Molded Grating ................................... 24
Figure 8.4 – FRP Banding/Kick Plates for Pultruded Grating ................... 25
Figure A-1 – Testing Layout for Pultruded Grating – Span 12 inches ...... 45
Figure A-2 – Testing Layout for Pultruded Grating – Span 24 inches ...... 45
Figure A-3 – Testing Layout for Pultruded Grating – Span 30 inches ...... 45
Figure A-4 – Testing Layout for Pultruded Grating – Span 36 inches ...... 46
Figure A-5 – Testing Layout for Pultruded Grating – Span 42 inches ...... 46
Figure A-6 – Testing Layout for Pultruded Grating – Span 48 inches ...... 46
Figure A-7 – Testing Layout for Pultruded Grating – Span 54 inches ...... 47
Figure A-8 – Testing Layout for Pultruded Grating – Span 60 inches ...... 47
Figure A-9 – Testing Layout for Pultruded Grating – Span 72 inches ...... 47
Figure A-10 – Testing Layout for Molded Grating .................................. 48
Figure A-11 – Testing Layout for Rectangular Molded Grating ................ 49
1.0 GENERAL SCOPE

1.1 Scope

The purpose of this manual is the publication of a consensus performance standard for fiberglass grating and to delineate the standardized testing procedures to be used to assure compliance of fiberglass grating products to those standardized herein.

This manual provides an overview of fiberglass grating and provides users with load tables, tolerances and ordering information to assist engineers and designers with designing fiberglass grating. Chapter 10 contains a Construction Specifications Institute (CSI) specification that will assist specifiers in the preparation of contract documents associated with fiberglass grating. Chapter 11 includes a Code of Standard Practice to introduce the reader to the recommended standard practice that demonstrates how fiberglass grating manufacturers are guided in making quality products.

1.2 Definition

Throughout this manual the reader will find the acronym FRP used. FRP refers to Fiber Reinforced Polymer and is a term used in the composites industry. It is common within the composites industry that the terminology referencing the fiber is often associated with fiberglass as this is the dominant fiber reinforcement used in fiberglass gratings.

1.3 Values

Values expressed in this manual are in both inch-pound units and SI units. Values stated in inch-pound units are regarded as the standard.

1.4 Advantages of FRP Grating

FRP grating and stair treads consist of an engineered polymer (plastic) and a reinforcement (typically fiberglass) and are further enhanced by the addition of other constituents specific to the end use performance or environmental concerns. The combination of materials produces some of the strongest, most versatile materials for their weight that composites technology has developed.

Through the selection and use of key materials the fiberglass grating manufacturer can tailor the end product to meet the stringent demands of the load performance, the application environment and durability requirements as specified.

FRP grating and stair treads produced will provide many benefits including: high strength and stiffness retention, light weight parts and consolidation, creep resistance, resistance to environmental factors (freeze-thaw, weathering, chemical and temperature, and fire performance) to name a few.

For further information, the reader is directed to FGMC website: www.fiberglassgrating.org
1.5 Applications

FRP grating and stair treads have been used very successfully in the following applications:

- Pedestrian walkways
  - Recreation
  - Public access
- Industrial walkways and work platforms
  - Chemical processing
  - Oil and gas exploration and refining
  - Water, and waste water facilities
  - Food preparation facilities

The versatility of FRP composites allows the fiberglass grating manufacturer to tailor fit the end product to meet the individual specifier’s needs.