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FRP Composites Grating Manual

for Pultruded and Molded Grating and Stair Treads

SECOND EDITION

ACMA
American Composites Manufacturers Association

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American National Standards Institute, Inc.

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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, light weight, 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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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 is limited to applications using FRP grating for horizontal walkway surfaces to support pedestrian loads and non-motorized wheeled traffic.

This manual provides an overview of fiberglass grating and provides users with load tables, tolerances and ordering information to assist engineers and designers with selection of 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 (U.S. Customary Units) 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.

