

საქართველოს სტანდარტი

GRP ავზები და ჭურჭელი მიწის ზედაპირზე გამოსაყენებლად-ნაწილი 3:
პროექტირება და წარმოება

საქართველოს სტანდარტებისა და მეტროლოგიის
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English Version

GRP tanks and vessels for use above ground - Part 3: Design and workmanship

Réservoirs et récipients en PRV pour applications hors
sol - Partie 3 : Conception et fabrication

Oberirdische GFK-Tanks und -Behälter - Teil 3:
Auslegung und Herstellung

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 13121-3:2016) has been prepared by Technical Committee CEN/TC 210 “GRP tanks and vessels”, the secretariat of which is held by SFS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2016, and conflicting national standards shall be withdrawn at the latest by October 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13121-3:2008+A1:2010.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

The following changes were made in this new edition of EN 13121-3:

- the standard was totally revised so as to make it comply with EN 1990; and
- sections covering "Flat panels" and "Loading from local loads" removed from the standard.

EN 13121, *GRP tanks and vessels for use above ground*, is currently composed of the following parts:

- *Part 1: Raw materials — Specification conditions and acceptance conditions;*
- *Part 2: Composite materials — Chemical resistance;*
- *Part 3: Design and workmanship;*
- *Part 4: Delivery, installation and maintenance;*
- *Part 5: Example of calculation (CEN/TR 13121-5; in preparation).*

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საინფორმაციო ცენტრი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

Introduction

The five parts of EN 13121 together define the responsibilities of the tank or vessel manufacturer and the materials to be used in their manufacture.

EN 13121-1 specifies the requirements and acceptance conditions for the raw materials - resins, curing agents, thermoplastics linings, reinforcing materials and additives. These requirements are necessary in order to establish the chemical resistance properties determined in EN 13121-2 and the mechanical, thermal and design properties determined in this part of EN 13121. Together with the workmanship principles determined in this Part 3, requirements and acceptance conditions for raw materials ensure that the tank or vessel will be able to meet its design requirements. EN 13121-4 of this standard specifies recommendations for delivery, handling, installation and maintenance of GRP tanks and vessels

The design and manufacture of GRP tanks and vessels involve a number of different materials such as resins, thermoplastics and reinforcing fibres and a number of different manufacturing methods. It is implicit that vessels and tanks covered by this standard are made only by manufacturers who are competent and suitably equipped to comply with all the requirements of this standard, using materials manufactured by competent and experienced material manufacturers.

Metallic vessels, and those manufactured from other isotropic, homogeneous materials, are conveniently designed by calculating permissible loads based on measured tensile and ductility properties. GRP, on the other hand, is a laminar material, manufactured through the successive application of individual layers of reinforcement. As a result there are many possible combinations of reinforcement type that will meet the structural requirement of any one-design case. This allows the designer to select the laminate construction best suited to the available manufacturing facilities and hence be most cost effective.

In considering a layered GRP structure it is assumed that it is the glass reinforcement that provides the stiffness and strength required to resist mechanical loadings. Also, since the quantity of glass reinforcement is most readily assessed by weight, the weight of glass per unit area (m) is used instead of thickness in determining mechanical properties, thus the concepts of load and modulus are replaced by unit strength (u) and unit modulus (X), these being defined in Table 1.

It is possible that future advances in resin technology would allow tanks and vessels to be considered for operating temperatures above 120 °C. Should such a situation arise and a manufacturer wish to take advantage of such developments then all other requirements of this standard will be maintained and such tanks and vessels will only be designed in accordance with the advanced design method given in 7.9.3.

NOTE To convert a unit load, or a unit modulus to a load and a modulus respectively, U and X may be simply divided by t , where t is the thickness per weight of glass per unit area of the lamina, or laminate under consideration.