

GRP-PAAGID JA -MAHUTID MAAPEALSEKS
KASUTAMISEKS. OSA 2: KOMPOSIITMATERJALID.
KEEMILINE VASTUPIDAVUS

GRP tanks and vessels for use above ground - Part 2:
Composite materials - Chemical resistance

EESTI STANDARDI EESSÕNA

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English version

**GRP tanks and vessels for use above ground - Part 2:
Composite materials - Chemical resistance**

Réservoirs et récipients en PRV pour utilisation hors sol -
Partie 2: Matériaux composites - Résistance chimique

Oberirdische GFK-Tanks und -Behälter - Teil 2:
Verbundwerkstoffe - Chemische Widerstandsfähigkeit

This European Standard was approved by CEN on 26 June 2003.

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Foreword

This document (EN 13121-2:2003) has been prepared by Technical Committee CEN/TC 210 “GRP tanks and vessels”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by April 2004, and conflicting national standards shall be withdrawn at the latest by April 2004.

This European Standard 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 97/23/EC.

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

This standard is Part 2 of EN 13121 which in total covers materials, design, manufacture, inspection, delivery, installation and maintenance of GRP tanks and vessels for use above ground. This Part 2 specifies requirements for chemical resistance of composite materials used for GRP tanks and vessels for the storage or processing of fluids, for use above ground. The tanks and vessels may be factory made or site built, with or without lining.

Annexes A and B are normative. Annex C is informative.

This document includes a bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

European Standard EN 13121 consists of the following parts under the general title "GRP tanks and vessels for use above ground":

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

These four parts together define the responsibilities of the tank or vessel manufacturer, the materials manufacturers or suppliers and the purchaser.

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 tanks and vessels conforming to this Standard should be made only by manufacturers who are competent and suitably equipped to fulfil all requirements, using materials manufactured by competent and experienced material manufacturers.

EN 13121-1 gives the requirements necessary to establish that the GRP material and any thermoplastic lining will have the required chemical and thermal resistance to the service conditions. EN 13121-1 specifies the requirements for the specification conditions and acceptance conditions for GRP and thermoplastic materials, which are necessary in order to establish the chemical resistance properties of these materials in accordance with this Part of the standard. EN 13121-2 gives the requirements necessary to establish that the GRP material and any thermoplastic lining will have sufficient chemical and thermal resistance to service conditions. Part 2 defines the requirements for the protective layer and the structural laminate as well as defining methods for proof of suitability to meet the chemical/thermal effects caused by the fluids and of determination of the partial design factor, A_2 , as required for design in accordance with prEN 13121-3. Five methods are described — use of Media Lists, use of resin manufacturers data, use of thermoplastics manufacturers data, service experience and sample testing. The manufacturer of the tank or vessel may choose any one of these methods subject to there being sufficient data available in that method for the particular application.

Together with the requirements and acceptance conditions for the raw materials determined in EN 13121-1, the design and workmanship requirements as determined in prEN 13121-3 and the delivery, handling, installation and maintenance recommendations given in EN 13121-4, EN 13121-2 completes the total standard's requirements.

1 Scope

This European Standard gives requirements for chemical resistance of composite materials used for GRP tanks and vessels for storage or processing of fluids, for use above ground. The tanks or vessels may be factory made or site built, with or without lining.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 59, *Glass reinforced plastics — Measurement of hardness by means of a Barcol impressor.*

EN 590, *Automotive fuels — Diesel - Requirements and test methods..*

EN 13121-1:2003, *GRP tanks and vessels for use above ground — Part 1: Raw materials — Specification conditions and acceptance conditions.*

prEN 13121-3, *GRP tanks and vessels for use above ground — Part 3: Design and workmanship.*

EN 13121-4, *GRP tanks and vessels for use above ground — Part 4: Delivery, installation and maintenance.*

EN ISO 4599, *Plastics — Determination of resistance to environmental stress cracking (ESC) — Bent strip method (ISO 4599:1986).*

EN ISO 6252, *Plastics — Determination of Environmental Stress Cracking (ESC) — Constant-tensile-stress method (ISO 6252:1992).*

EN ISO 14125:1998, *Fibre-reinforced plastic composites — Determination of flexural properties (ISO 14125:1998).*

ISO 1172, *Textile-glass-reinforced plastics. Prepregs, moulding compounds and laminates — Determination of the textile-glass and mineral-filler content — Calcination methods.*

ISO 4433-1, *Thermoplastics pipes — Resistance to liquid chemicals — Classification — Part 1: Immersion test method.*

ISO 4433-2, *Thermoplastics pipes — Resistance to liquid chemicals — Classification — Part 2: Polyolefin pipes.*

ISO 4433-3, *Thermoplastics pipes — Resistance to liquid chemicals — Classification — Part 3: Unplasticized poly(vinyl chloride) (PVC-U), high-impact poly(vinyl chloride) (PVC-HI) and chlorinated poly(vinyl chloride) (PVC-C) pipes.*

ISO 4433-4, *Thermoplastics pipes — Resistance to liquid chemicals — Classification — Part 4: Poly(vinylidene fluoride) (PVDF) pipes.*

3 Definitions

For the purposes of this standard in addition to the definitions given in EN 13121-1:2003, the following definitions apply:

3.1

resin layer (RL)

a layer of resin with or without additives in accordance with clause 7 of EN 13121-1:2003, but without nonwovens or any other fibre