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FILAMENT-WOUND FRP PRESSURE VESSELS - MATERIALS, DESIGN, MANUFACTURING AND TESTING

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 13923

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English Version

Filament-wound FRP pressure vessels - Materials, design, manufacturing and testing

Récipients sous pression en PRV par enroulement filamentaire - Matériaux, conception, fabrication et essais

Fadengewickelte Druckbehälter aus textilfaserverstärkten Kunststoffen - Werkstoffe, Konstruktion, Herstellung und Prüfung

This European Standard was approved by CEN on 22 September 2005.

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Foreword

This European Standard (EN 13923:2005) 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of an identical text or by endorsement, at the latest by May 2006, and conflicting national standards shall be withdrawn at the latest by May 2006.

This European Standard falls under the Pressure Equipment Directive (PED) and supports essential requirements of this EC Directive.

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this European Standard.

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

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Introduction

This European Standard specifies two design methods for filament wound GRP pressure vessels. In this European Standard only the winding is considered in the calculation of the strength and the stiffness of the shell.

Method A, describes the calculation of the reinforcement of the cylindrical shell and the end domes based on netting theory. The design is verified by prototype testing.

Method B, describes the calculation of the reinforcement of the cylindrical shell and the end domes based on laminate theory.

The design and manufacture of filament wound GRP pressure vessels involve a number of different materials, such as resins, thermoplastics and reinforcement fibres. It is implicit that vessels conforming to this European Standard should be made only by manufacturers and operators who are competent and suitably equipped to fulfil all requirements, using materials manufactured by competent and experienced material manufacturers.

This European Standard specifies stress and strain limits and the requirements for the acceptance testing.

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