SLOVENSKI STANDARD
SIST EN 13530-2:2003/A1:2004

01-september-2004

Kriogene posode - Velike premiļne, vakuumsko izolirane posode - 2. del: Naļrtovanje, izdelava, nadzor in preskus

Cryogenic vessels - Large transportable vacuum insulated vessels - Part 2: Design, fabrication, inspection and testing

Kryo-Behälter - Große ortsbewegliche vakuum-isolierte Behälter - Bemessung, Herstellung und Prüfung

Récipients cryogéniques - Grands récipients transportables isolés sous vide - Partie 2: Conception, fabrication, inspection et essais

Ta slovenski standard je istoveten z: **EN 13530-2:2002/A1:2004**

ICS:

23.020.40	Proti mrazu odporne posode (kriogenske posode)	Cryogenic vessels

SIST EN 13530-2:2003/A1:2004 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English version

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This amendment A1 modifies the European Standard EN 13530-2:2002; it was approved by CEN on 9 January 2004.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of 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.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 13530-2:2002/A1:2004) has been prepared by Technical Committee CEN/TC 268 “Cryogenic vessels”, the secretariat of which is held by AFNOR.

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 September 2004, and conflicting national standards shall be withdrawn at the latest by September 2004.

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.

Replace 4.3.6.2.6 by the following text

4.3.6.2.6 Stiffening rings

In addition to the ends, effective reinforcing elements may be regarded as including the types of element illustrated in Figure 3. The reinforcing elements, including the stiffening rings welded to the shell and the portion *L* of the shell (see Figure 3), shall satisfy the following conditions:

$$I \geq 0{,}042 S_{\mathrm{k}} \frac{p D_{\mathrm{a}}^{3} l'_{\mathrm{b}}}{10E} \qquad (14)$$

For demonstrated satisfactory experience a factor of safety S_K equal to or greater than 1,3 is acceptable.

$$A \geq 0{,}5 S_{\mathrm{p}} \frac{p D_{\mathrm{a}} l'_{\mathrm{b}}}{10K} \qquad (15)$$

The moment of inertia I is relative to the neutral axis of the reinforcing element cross-section parallel to the shell axis (see axis xx in Figure 3).

The flat bar stiffness and the Γ, T, H or U profile stiffness shall satisfy the conditions given in Figure 3.

The stiffening rings shall extend completely around the circumference of the shell and be securely attached to it.

Where stiffening rings are joined to the shell by means of intermittent welds, the fillet welds at each side shall cover at least one third of the shell circumference, be uniformly distributed (see Figure 1) and the number of weld discontinuities shall be at least 2 *n*. The number of buckling lobes *n* is obtained as indicated in 4.3.6.2.4.

If the inner vessel can be subjected to an external pressure a calculation shall be performed to ascertain its suitability. The formula in section 4.3.6.2.6 (14) may be used or substituted by the following formula for the inner vessel only.

$$I \geq \frac{0{,}124\, p D_a^3 \sqrt{D_a s}}{10E}$$

The portion of the shell supported by the reinforcing element has a length of

$$l'_b = \sqrt{D_a s}$$

NOTE The inner vessel is not normally subjected to external pressure. For this condition to exist there is a negative pressure in the inner vessel and atmospheric pressure in the interspace between the inner vessel and the jacket. The pressure *p* is defined by the designer.

Replace in 4.3.2.4 (b) the paragraph concerning the cylindrical shells by the following text

– cylindrical shells : S_p = 1,4

Sk = 2.2 may be used if there is evidence of suitable in service experience to support this.