This is a free page sample. Access the full version online.

National Standards Authority of Ireland

STANDARD

I.S. EN 14165:2004

ICS 49.140

National Standards
Authority of Ireland
Dublin 9
Ireland

Tel: (01) 807 3800
Fax: (01) 807 3838

SPACE ENGINEERING STANDARDS -

FRACTURE CONTROL

This Irish Standard was published under the authority of the National Standards Authority of Ireland and comes into effect on:

May 19, 2004

NO COPYING WITHOUT NSAI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

© NSAI 2004

Price Code K

Údarás um Chaighdeáin Náisiúnta na hÉireann

This is a free page sample. Access the full version online.

This is a free page sample. Access the full version online.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14165

April 2004

ICS 49.140

English version

Space engineering standards - Fracture control

Ingénierie Spatiale - Maîtrise de la rupture

Raumfahrttechnik - Überwachung des Rissfortschritts

This European Standard was approved by CEN on 27 February 2004.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a 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 European Standard 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

Management Centre: rue de Stassart, 36 B-1050 Brussels

© 2004 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 14165:2004: E

This is a free page sample. Access the full version online.

Contents

Foreword ... 4

1 Scope ... 5

2 Normative references ... 5

3 Terms, definitions and abbreviated terms ... 6

3.1 Terms and definitions ... 6
3.2 Abbreviated terms ... 10

4 General requirements ... 11

5 Fracture control programme ... 12

5.1 General ... 12
5.2 Responsibilities of supplier ... 12
5.3 Fracture control plan ... 12
5.4 Reviews ... 14
5.4.1 General ... 14
5.4.2 Safety reviews ... 14

6 Identification and evaluation of PFCIs ... 15

6.1 Identification of PFCIs ... 15
6.2 Evaluation of PFCIs ... 15
6.2.1 General ... 15
6.2.2 Selection of the relevant locations on a PFCI ... 16
6.2.3 Damage- tolerant design ... 16
6.2.4 Classification ... 17
6.3 Compliance procedures ... 17
6.3.1 Safe life items ... 17
6.3.2 Fail safe items ... 17
6.3.3 Contained items ... 17
6.4 Documentation requirements ... 17
6.4.1 Analysis and test documents ... 20

7 Fracture mechanics analysis ... 21

7.1 General ... 21
7.2 Analysis ... 21
7.2.1 Analytical life prediction ... 21
7.2.2 Critical crack-size calculation ... 23

8 Special requirements ... 23

8.1 Pressurized systems ... 23
8.1.1 General ... 23
8.1.2 Pressure vessels ... 23
8.1.3 Pressure lines, fittings and components ... 26
8.1.4 Sealed containers ... 26

This is a free page sample. Access the full version online.

8.2 Welds ... 26
8.3 Composites ... 27
8.4 Rotating machinery ... 27
8.5 Glass ... 27
8.6 Fasteners ... 28

9 Material selection general requirements ... 28

10 Quality assurance requirements ... 28

10.1 General ... 28
10.2 Nonconformances ... 29
10.3 Non-destructive inspection ... 29
10.3.1 General ... 29
10.3.2 NDI categories versus initial crack size ... 29
10.4 Inspection requirements ... 33
10.5 Traceability ... 33
10.5.1 General ... 33
10.5.2 Requirements ... 33

11 Reduced fracture control programme ... 34

11.1 General ... 34
11.2 Requirements ... 34

Figures

Figure 1 — Fracture control applicability ... 13
Figure 2 — Fracture control procedures ... 16
Figure 3 — Safe life item evaluation procedure ... 18
Figure 4 — Evaluation procedure for fail safe items ... 19
Figure 5 — Logic for pressure vessel evaluation ... 25
Figure 6 — Initial crack geometries for parts without holes ... 32
Figure 7 — Initial crack geometries for parts with holes ... 32

Tables

Table 1 — Initial crack size summary, standard NDI ... 30
Table 2 — Initial crack summary, standard NDI for welds and castings ... 31

This is a free page sample. Access the full version online.

Foreword

This document (EN 14165:2004) has been prepared by CEN/CS.

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

It is based on a previous version[1)] originally prepared by the ECSS Engineering Working Group, reviewed by the ECSS Technical Panel and approved by the ECSS Steering Board. The European Cooperation for Space Standardization (ECSS) is a cooperative effort of the European Space Agency, National Space Agencies and European industry associations for the purpose of developing and maintaining common standards.

This standard is one of the series of space standards intended to be applied together for the management, engineering and product assurance in space projects and applications.

Requirements in this standard are defined in terms of what shall be accomplished, rather than in terms of how to organize and perform the necessary work. This allows existing organizational structures and methods to be applied where they are effective, and for the structures and methods to evolve as necessary without rewriting the standards.

This European Standard specifies the fracture control requirements to be imposed in space programmes.

The formulation of this standard takes into account the existing ISO 9000 family of documents.

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.

[1)] ECSS-E-30-01A.

SAI GLOBAL

This is a free preview. Purchase the entire publication at the link below:

Product Page

Looking for additional Standards? Visit Intertek Inform Infostore

Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation