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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 6417.1-2005

**Classification and explanation of imperfections in fusion
welded joints**

(English Translation)

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Foreword

This Part is identical to ISO 6520-1.1998 Welding and allied processes - Classification of geometric imperfections in metallic materials - Part 1. Fusion welding (English version).

This Part makes necessary editorial changes when conducting equivalent conversion of the international standard, so as to ensure the coordination and operability of the standard.

Compared with ISO 6520-1.1998, the main changes in content of this Part are as follows.

- Based on welding terms of GB/T 3375, this Part more-accurately defines "welding imperfection" and "welding defect";
- Annex A makes specific instructions on crack category and recommends the internationally-accepted defect back-sheet reference assessment code system.

This Part is an amendment to GB/T 6417-1986 Classification and explanation of imperfections in fusion welded joints. Compared with GB/T 6417-1986, the two main changes are as follows.

- Added new welding imperfection categories;
- Refined the previous welding imperfection.

Since the implementation of this Part, it replaces GB/T 6417-1986.

Annex A of this Part is informative.

This Part was proposed by China Machinery Industry Federation.

This Part shall be under the jurisdiction of National Technical Committee on Welding of Standardization Administration of China.

The drafting organization of this Part. Harbin Welding Institute.

Main drafter of this Part. Piao Dongguang.

This Part was issued in 1986 for the first time. This Standard is the first revision.

Classification and explanation of imperfections in
fusion welded joints

1 Scope

This Part will serve as the basis for a precise classification and description of weld imperfections in fusion welded joints.

This Part applies to various welding imperfections in fusion welded joints. Other imperfections (e.g. metallurgical imperfections) are not included.

2 Normative references

The following standards contain the provisions which, through reference in GB/T 6417, constitute the provisions of this Part. For dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard. However, the parties who enter into agreement based on this Part are encouraged to investigate whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this Part.

GB/T 3375 Welding terminology

3 Definitions

In addition to the terms of GB/T 3375, the following definitions also apply.

3.1 welding imperfection

any deviation from the ideal weld, e.g., discontinuous weld, loose weld or bad connection; "imperfection" for short;

3.2 welding defect

imperfection that exceeds stipulated limits.

4 Classification and symbol of imperfection

According to its nature, welding imperfection can be classified into 6 groups.

Annex A

(Informative)

Classification of cracks

This annex lists cracks during or after welding.

When a full description of cracking is necessary, it is recommended that a combination of the classification numbers according to Table 1 with the letters used in Table A.1 be used.

International Institute of Welding (IIW) usually uses this reference code system to access radiographs.

Table A.1 Classification and explanation of welding cracks

Reference code Name and explanation

E Weld cracking (Cracks occurring during or after welding)

Ea - hot crack

Eb - solidification crack

Ec - liquation crack

Ed - precipitation induced crack

Ee - age hardening crack

Ef - cold crack

Eg - ductility-dip crack (brittle crack)

Eh - shrinkage crack

Ei - hydrogen induced crack

Ej - lamellar tearing

Ek - toe crack

El - ageing induced crack (nitrogen diffusion crack)

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