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**National Standard of the People's Republic of China**

**中华人民共和国国家标准**

GB/T 3323-2005

Substitute GB/T 3323-1987

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**Radiographic examination of fusion welded  
joints in metallic materials**

**金属熔化焊焊接接头射线照相**

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## **NOTICE**

This code is written in Chinese and English. The Chinese text shall be taken as the ruling one in the event of any inconsistency between the Chinese text and the English text.

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## Foreword

This Standard is revised of the “Radiographic examination and quality classification of fusion welded butt joints in steel materials” GB/T 3323-1987. This standard adopted the Europe Code EN 1435 of “Non-destructive inspection of weld seam Radiographic examination of fusion weld seam” during the revision. Necessary treatments have been done in the adduction of this Europe Code during the revision adoption process to ensure the applicability and coordination of the standard.

The main differences between this standard and EN 1435 “Non-destructive inspection of weld seam Radiographic examination of fusion weld seam” are:

—This standard specified the quality classification of the welded joints in the form of datum appendix, while the EN 1435 standard has no specifications of quality classifications.

—During the revision, to ensure the graphic quality of the negative film, this standard deleted the item specified in EN 1435 that it doesn’t need to set IQI in each negative film when it can ensure the same radiographic technical condition and the IQI value has no difference.

—For the material that has tendency of crack delay, this standard specified that the radiographic examination shall be done at least after 24 h after the welding.

The main differences in the technical contents in this standard compared with the former one are:

—More emphasize the penetrated graphic technology of the radiographic, and put the relative specifications of the quality classifications of the welded joints in Appendix C.

—The penetrated graphic technology pays more attention to the reasonability and maneuverability.

—Pay more attention to the economical efficiency at the same time of ensuring the defection detection ratio.

This standard was established in 1982, and this revision is the secondary one.

These standard substitutes “Radiographic examination and quality classification of fusion welded butt joints in steel materials” GB/T 3323-1987 from the date of implementation.

This standard was put forward and returned by the National Standardization Technical Committee for Welding of China.

The units of drafting out this standard are: Harbin training center for welding technology in engineering industry, National qualification identification evaluation committee for non-destructive inspection persons for boiler & pressure vessel, and Jiang Su safety inspection center institute for boiler & pressure vessel.

The main drafters of this standard are: Xie Yinglong, Qiang Tianpeng, Chen Yu, Li Yan, Zheng Shicai and Deng Yigang.

# **Radiographic examination of fusion welded joints in metallic materials**

## **1 Scope**

This standard specified the basic methods of X-ray and  $\gamma$ -ray radiographic. This standard is fit for the fusion welded joints of plates and pipes in metallic materials.

## **2 Normative adduction files**

The items in the following files become the one in this standard through the adduction of this standard. For all the adduction files that indicated the date, all the revision contents (not including the corrected one) or revision versions are not fit for this standard, but, it is encouraged that all the units that come to the agreement according to this standard do the research if they can use the newest version of these files. For all the adduction files that didn't indicate the date, its newest version is fit for this standard.

GB 18871-2002 Basic standards for protection of ionizing radiation and safety of radiation source

GB/T 9445 Qualification identification and certification of non-destructive inspection persons

GB 16357 Standard for protection of radiation sanitation of industrial X-ray detection

GB 18465 Requirement for protection of radiation sanitation of industrial  $\gamma$ -ray detection

JB/T 7902 Line-type IQI

JB/T 7903 Film watching lamp of negative film in the industrial radiographic examination

ISO 11699-1 Non-destructive inspection Film of industrial radiographic Part one: Classification for the film system of industrial radiographic

ISO 11699-2 Non-destructive inspection Film of industrial radiographic Part two: Control of film treatment in virtue of reference data

EN 462-1 Non-destructive inspection Graphic quality of radiographic Part one: Determination of line-type IQI and the IQI value

EN 462-2 Non-destructive inspection Graphic quality of radiographic Part two: Determination of ladder orifice-type IQI and the IQI value

EN 584-1 Non-destructive inspection Film of industrial radiographic Part one: Classification for the film system of industrial radiographic

## **3 Terms, definition and symbols**

### **3.1 Nominal thickness, $t$**

It means the nominal wall thickness of the parent metal, not considering the manufacture deviation.

### **3.2 Penetrated thickness, $w$**

The nominal thickness of the parent metal in the direction of the radial penetrated graphic.



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