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# International Standard



# 1106/2

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## **Recommended practice for radiographic examination of fusion welded joints — Part 2 : Fusion welded butt joints in steel plates thicker than 50 mm and up to and including 200 mm in thickness**

*Pratiques recommandées pour l'examen radiographique de joints soudés par fusion — Partie 2 : Joints soudés bout à bout par fusion de tôles d'acier d'épaisseur supérieure à 50 mm mais inférieure ou égale à 200 mm*

**First edition — 1985-05-15**

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**UDC 621.791.052.4 : 620.183.6 : 778.33**

**Ref. No. ISO 1106/2-1985 (E)**

**Descriptors :** steels, metal plates, welding, fusion welding, welded joints, butt welds, tests, radiographic analysis.

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 1106/2 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, as a replacement for ISO 2405-1972 with editorial amendments of minor importance. A revision of ISO 1106/2 taking into account International Standards prepared by ISO/TC 135, *Non-destructive testing*, (for example, ISO 5579, *Non-destructive testing — Radiographic examination of metallic materials by X- and gamma rays — Basic rules*) will be considered in the future programme of work of ISO/TC 44.

# Recommended practice for radiographic examination of fusion welded joints —

## Part 2 : Fusion welded butt joints in steel plates thicker than 50 mm and up to and including 200 mm in thickness

### 0 Introduction

The radiographic techniques suitable for examination of fusion butt welds in steel plates less than or equal to 50 mm thick are described in ISO 1106/1. This part of ISO 1106 is arranged on similar lines to cover welds in plate thicknesses greater than 50 mm and up to and including 200 mm.

This part of ISO 1106 should have the effect of ensuring more unified practice and thus simplify the interpretation of radiographs. It does not lay down standards of acceptance for the welds.

There is only a limited number of types of equipment suitable for this work (for example there are no commercial X-ray sets operating between 400 and 1 000 kV). The available equipment has been arranged into a number of groups and techniques have been detailed which are suitable for the production of satisfactory radiographs from the equipment in each group. Many clauses in the recommended practice are common to all the techniques.

The steel thickness for which each type of equipment is considered to be suitable is given in table 1; it is possible to use betatrons and linear accelerators for greater thicknesses.

The figure indicates the relative performance of the various types of equipment in terms of IQI sensitivity, using the techniques described. These values of sensitivity are not mandatory, but are given as a guide for choosing a technique for a particular weld thickness.

Explanatory notes are included, as necessary.

### 1 Scope

This part of ISO 1106 specifies general techniques of weld radiography with the object of enabling satisfactory results to be obtained economically. The techniques are based on generally accepted practice and the fundamental theory of the subject.

### 2 Field of application

This part of ISO 1106 applies to the radiographic examination of fusion welded joints for steel plates thicker than 50 mm and up to and including 200 mm in thickness.

It does not lay down radiographic criteria of acceptance for the joints, but is concerned with the radiographic techniques to be used.

### 3 References

ISO 1027, *Radiographic image quality indicators for non-destructive testing — Principles and identification*.

ISO 1106/1, *Recommended practice for radiographic examination of fusion welded joints — Part 1 : Fusion welded butt joints in steel plates up to 50 mm thick*.

ISO 2504, *Radiography of welds and viewing conditions for films — Utilization of recommended patterns of image quality indicators (IQI)*.

ISO 5576, *Industrial radiology — Non-destructive testing — Vocabulary*.<sup>1)</sup>

IRCP Publication 9, *Recommendations of the International Commission on Radiological Protection*.

### 4 Definitions

For the purpose of this part of ISO 1106, the definitions given in ISO 5576 apply.

### 5 General

#### 5.1 Protection against ionizing radiations

**WARNING** — Exposure of any part of the human body to X-rays or  $\gamma$ -rays can be highly injurious to health. Wherever X-ray equipment or radioactive sources are in use, adequate precautions shall be taken to protect the radiographer and any other person in the vicinity.

1) At present at the stage of draft. (Revision of Appendix-1969 to ISO/R 947, ISO/R 1027 and ISO/R 1106.)