
INTERNATIONAL STANDARD



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Recommended practice for the X-ray inspection of fusion welded butt joints for aluminium and its alloys and magnesium and its alloys 5 to 50 mm thick

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

International Standard ISO 2437 was drawn up by Technical Committee ISO/TC 44, *Welding*.

It was approved in January 1972 by the Member Bodies of the following countries :

Austria	Ireland	Sweden
Belgium	Israel	Switzerland
Canada	Italy	Thailand
Chile	Japan	Turkey
Czechoslovakia	Netherlands	United Kingdom
Egypt, Arab Rep. of	New Zealand	U.S.A.
Finland	Norway	U.S.S.R.
France	Romania	
India	Spain	

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Germany
South Africa, Rep. of

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0 INTRODUCTION

In the same way as it appeared desirable to publish recommendations for the radiographic inspection of fusion welded joints for steel, it has been thought worthwhile also to prepare similar recommendations for the inspection of fusion welded butt joints for aluminium and its alloys and for magnesium and its alloys.

In the present state of knowledge of radiographic inspection of welds, it is undesirable to impose strict rules to be followed in order to obtain the best results; the final result depends upon many variables, for example the characteristics of the X-ray equipment, the characteristics of films and screens, the characteristics and accessibility of welds.

However, it is possible, within certain limits, to assess the radiographic quality by means of such devices as image quality indicators (I.Q.I.), which are specified in ISO/R 1027, *Radiographic image quality indicators – Principles and identification*, and ISO 2504, *Radiography of welds and viewing conditions for films – Utilization of recommended patterns of image quality indicators (I.Q.I.)*.

It should be noted that the shape, size and accessibility of the objects considered here may necessitate differences in the positioning of the X-ray equipment and of the films in relation to the welded joint being examined.

These points are covered in section 5.

1 SCOPE

This International Standard provides general guidance on the techniques of weld radiography with the object of enabling satisfactory results to be obtained and it enunciates some rules which are based on generally accepted practice and the fundamental theory of the subject.

2 FIELD OF APPLICATION

This International Standard relates to the examination of

fusion welded butt joints in plates and circumferential fusion welded butt joints in pipes¹⁾ of aluminium and its alloys and of magnesium and its alloys of thicknesses ranging from 5 to 50 mm.

It should not be regarded as giving acceptance standards for joints and is concerned only with radiography as such.

3 CLASSIFICATION

The examination techniques are divided into the following two classes :

- Class A, general technique for X-ray examination;
- Class B, more sensitive X-ray technique.

Most cases are covered by the correct use of the specifications given for Class A.

Class B (high-sensitivity X-ray radiography) is intended only for more important and difficult cases when the Class A technique is unlikely to reveal the defects sought. It generally requires longer exposure times.

4 GENERAL

4.1 Protection

Exposure of any part of the human body to X-rays can be highly injurious to health. It is therefore essential that, wherever X-ray equipment is in use, adequate precautions should be taken to protect the radiographer and any other person in the vicinity.

Safety precautions to be taken against X-rays are those in force in each country ²⁾.

4.2 Surface preparation

In general, surface preparation may not be necessary for radiography, but where surface irregularities might cause

1) Besides its conventional meaning, the word "pipe" used in this text should be understood to cover other cylindrical bodies such as tubes, penstocks, pressure vessels, etc.

2) In default of such regulations, reference should be made to the latest Recommendations of the International Commission on Radiological Protection.