

# JAPANESE INDUSTRIAL STANDARD

Translated and Published by Japanese Standards Association

 $JIS \ G \ 0803^{\,:\,2021}$ 

(JISF)

Radiographic examination with film for the weld seam of welded steel tubes

**ICS** 23.040.10; 77.040.20; 77.140.75

Reference number: JIS G 0803: 2021 (E)

G 0803: 2021

Date of Establishment: 2015-05-20

Date of Revision: 2021-03-22

Date of Public Notice in Official Gazette: 2021-03-22

Investigated by: Japanese Industrial Standards Committee

Standards Board for ISO area

Technical Committee on Metal and Inorganic Materials

JIS G 0803: 2021, First English edition published in 2021-11

Translated and published by: Japanese Standards Association Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

In the event of any doubts arising as to the contents, the original JIS is to be the final authority.

© JSA 2021

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan HN

## Contents

	J	Page		
Introduction ······1				
1	Scope ····	· 1		
2	Normative references ·····	· 1		
3	Terms and definitions	$\cdot 2$		
4 4.1 4.2 4.3 4.4 4.5	General requirements Timing of inspection Inspection operators Steel tube properties Identification of weld seam position Identification symbols	·2 ·3 ·3 ·3		
4.6 4.7	Permanent markings  Overlap of film	$\cdot 3$		
5 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 5.10 5.11 5.12	Test method General Image quality classes Film system and intensifying screen Salt intensifying screen Back-scattered and internally scattered X-ray radiation Direction of the beam of radiation Diagnostic length Exposure techniques Separation between the film and the weld surface Source-to-weld distance Exposure conditions X-ray tube voltage	· 4 · 4 · 4 · 4 · 5 · 5 · 5 · 5 · 5 · 6		
6 6.1 6.2 6.3	Image quality  Image quality and image quality indicator  IQI value corresponding to the image quality classes  Application of IQI for the double wall penetration technique	· 7 10 13		
7	Processing of film			
8	Viewing conditions for radiographs			
9.1 9.2 9.3	Classification  Imperfections  Defects	13 13		

## G 0803:2021

10	Acceptance limits · · · · · · · · · · · · · · · · · · ·	14
10.1	General ·····	
10.2	Cracks, incomplete penetration and lack of fusion ······	14
10.3	Slag inclusions and gas pockets ······	14
10.4	Elongated slag inclusions	14
10.5	Undercuts ·····	
10.6	Undercuts on the inside and outside welds ·····	15
11	Acceptance ·····	15
11.1	Steel tubes without defects ·····	15
11.2	Steel tubes with defects · · · · · · · · · · · · · · · · · · ·	
11.3	Handling of suspect tubes ·····	15
12	Test report ·····	16
Anne	x A (informative) Examples of distribution of imperfections	17
Anne	x JA (informative) Comparison table between JIS and corresponding	
	International Standard ·····	20

### **Foreword**

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Iron and Steel Federation (JISF) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (JIS G 0803:2015), which has been technically revised.

This **JIS** document is protected by the Copyright Act.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, published patent application or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, published patent application or utility model rights.

Blank

# Radiographic examination with film for the weld seam of welded steel tubes

JIS G 0803: 2021

#### Introduction

This Japanese Industrial Standard has been prepared based on **ISO 10893-6**: 2019, Edition 2, with some modifications of the technical contents.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JA.

### 1 Scope

This Standard specifies requirements for film-based radiographic X-ray testing of the longitudinal or helical weld seams of automatic fusion arc-welded steel tubes (hereafter referred to as steel tubes) for the detection of imperfections.

- NOTE 1 As an alternative, see **JIS G 0804** established based on **ISO 10893-7** for digital radiographic testing.
- NOTE 2 The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 10893-6: 2019 Non-destructive testing of steel tubes — Part 6: Radiographic testing of the weld seam of welded steel tubes for the detection of imperfections (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

### 2 Normative references

Part or all of the provisions of the following standards, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

- JIS G 0203 Glossary of terms used in iron and steel (Products and quality)
- JIS G 0431 Steel products Employer's qualification system for non-destructive testing (NDT) personnel
- JIS Z 2300 Terms and definitions of nondestructive testing
- JIS Z 2305 Non-destructive testing Qualification and certification of NDT personnel
- JIS Z 2306 Radiographic image quality indicators for non-destructive testing
- JIS Z 4561 Viewing illuminators for industrial radiograph