

1st edition:
Version:

May 2022
Original

Technical Specifications - Permanent Way

Technical Specification for the supply of Spring Steel Washers



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IRS to be classified in volumes of UIC:

Chapter 8 - Technical Specifications

Subsection 84 - Permanent Way

Complete reference in case of citation:

IRS-80864-3:2022, Ed. 1: Technical Specification for the supply of Spring Steel Washers

Approbation date:

28 February 2022

With effect from:

1st May 2022

Application recommended to:

Infrastructure Managers for buying spring steel washers

Keywords:

Technical specification; Supply; Spring steel washers

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Published by the International Union of Railways (UIC)

16 rue Jean Rey, 75015 Paris - France, May 2022

Dépôt Légal May 2022

ISBN 978-2-7461-3191-0



Record of updates:

1st edition, May 2022

1st edition.
UIC Leaflet 864-3 is being replaced by IRS 80864-3.

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Foreword

An International Railway Solution (IRS) is a document drawn up by consensus and applied on a voluntary basis which aims to facilitate and harmonise railway operation.

IRSs are gradually replacing UIC leaflets.

Members of the International Union of Railways (UIC) participate in the creation of IRSs, of which they benefit in full. Furthermore, marketing to railway stakeholders contributes to the sharing and harmonisation of good practices, in accordance with UIC's primary goal.

While IRSs do not have the force of law, they are created and published in a professional manner and with technical approval on the basis of UIC procedures, and have full technical legitimacy in the railway sector.

The "General application" section constitutes the heart of the IRS and contains the working group's expertise applicable in the broadest manner. The addition of a "Specific application" aims to cover factors specific to a region, a type of service, etc.

Some provisions shall be implemented in all cases to ensure correct application and maintain the system's cohesiveness. Certain operational circumstances require that specific provisions be systematically applied by all users of the document.

For the purposes of understanding, the user acknowledges that the expression of:

- obligation indicates requirements to be respected in order to comply with the expertise expressed in the document (usually "shall");
- recommendation indicates options that are favourable but not essential (usually "should");
- permission indicates options that are recognised but without consequence (usually "may");
- capacity indicates possibilities from a technical standpoint and not permissions or probabilities (usually "can").

Obligation, recommendation and capacity can be expressed in the negative to indicate prohibiting, non-recommendation and incapacity.

If applicable, notably for the purposes of compliance with a UIC approval, passages that are recommended or mandatory for the cohesiveness of the system will be accompanied by the letters "R" and "MCS" respectively.

This IRS reflects the following UIC working group expertise:

Track Expert Group - Migration of *UIC Leaflet 864-1*, *864- 2* and *864-3*

It integrates in full or in part the following UIC leaflets:

- *UIC Leaflet 864-3*

It complements the following standards:

- none

The following IRSs constitute a complementary series:

- none

Executive summary

The International Union of Railways (UIC) develops and distributes International Railway Solutions (IRSs) in order to help railway stakeholders, achieve further harmonisation collaboration.

The content of this IRS is the revision of *UIC Leaflet 864-3*, with actualised references to UIC IRS and European Norms, for materials, testing and inspections of products.

It integrates in full or in part the following UIC leaflets:

- *UIC Leaflet 864-3*

It aims to complement the following standards:

- none

Field of application

This IRS describes recommendations concerning the characteristics, quality of materials, manufacture and acceptance conditions for spring steel washers used in railway superstructure.

Spring steel washers are commonly used in mechanical joints between track components and switches and crossings components (e.g. in the assembly of bolts and nuts to securely fasten components like blocks between stock rail and switch rail and crossings elements).

Spring steel washers are also commonly used as components of some rail fastening systems (e.g. between sleeper screws and steel plates).

Reference documents

The following documents are cited in this IRS or strongly support its requirements and recommendations:

1. European Standards

- [1] *EN ISO 9001:2015: Quality management systems - Requirements*
- [2] *EN 10204:2004: Metallic products - Types of inspection documents*
- [3] *EN ISO 377:2017: Steel and steel products - Location and preparation of samples and test pieces for mechanical testing*
- [4] *EN ISO 6507-1:2018: Metallic materials - Vickers hardness test - Part 1: Test method*
- [5] *EN ISO 6508-1:2016: Metallic materials - Rockwell hardness test - Part 1: Test method*
- [6] *EN 10089:2016: Hot-rolled steels for quenched and tempered springs - Technical delivery conditions*

2. International Standards

International Organization for Standardization (ISO)

- [7] *ISO 2859-1:1999: Sampling procedures for inspection by attributes Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*
- [8] *ISO 6892-1:2019: Metallic materials - Tensile testing - Part 1: Method of test at room temperature*