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Rolling stock
Exhaust emission tests for diesel traction engines



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 - Appendix B
 - Appendix D
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 - Appendix F

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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:

Rail System Forum - Rolling Stock Sector - SET_12 "Internal combustion engines"

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

UIC Leaflet 624, 5th edition, dated February 2017

It complements the following standards:

(see Reference documents - page 5)

The following IRSs constitute a complementary series:

IRS 60623-1, IRS 60623-2, IRS 60623-3

Executive summary

This IRS deals with the limit values for the exhaust gas emissions from diesel traction engines and specifies the method by which these emissions are to be determined.

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

UIC Leaflet 624, 5th edition, dated February 2017

It complements the following standards:

(see [Reference documents - page 5](#))

Field of application

This IRS applies to diesel engines for railway traction, except for engines for special locomotives (e.g. refinery or mine locomotives) and traction engines with an output of less than 130 kW.

It applies to all new engines installed in new vehicles. It also applies to vehicles whose engines have been replaced.

Reference documents

The following referenced documents are indispensable for the application of this document.

For dated references, only the edition cited applies.

For undated references, the latest edition of the referenced document (including any amendments) applies.

1. International Railway Solution (IRS)

International Union of Railways (UIC)

- [1] *IRS 60623-1: Railway applications – Rolling stock - Approval procedures for diesel engines of motive power units*
- [2] *IRS 60623-2: Railway applications – Rolling stock - Approval tests for diesel engines of motive power units*
- [3] *IRS 60623-3: Railway applications - Series tests and acceptance conditions for diesel engines of motive power units*

2. International Standards

International Organization for Standardization (ISO)

- [4] *ISO 3046-3: Reciprocating internal combustion engines - Performance - Part 3: Test measurements*
- [5] *ISO 8178-4: Reciprocating internal combustion engines - Exhaust emission measurement - Part 4: steady-state and transient test cycles for different engine applications*
- [6] *ISO 8178-5: Reciprocating internal combustion engines - Exhaust emission measurement - Part 5: Test fuels*
- [7] *ISO 8178-6: Reciprocating internal combustion engines - Exhaust emission measurement - Part 6: Report of measuring results and tests*

3. Miscellaneous

European Union

- [8] *Directive 2004/26/EC of the European Parliament and of the Council of 21 April 2004 amending Directive 97/68/EC on the approximation of the laws of the Member States relating to measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery, Official Journal L 146, 30/04/2004 P. 0001 - 0110*
- [9] *Regulation (EU) 2016/1628 of the European parliament and of the council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC, 2016*