



Organisation intergouvernementale pour les
transports internationaux ferroviaires

Zwischenstaatliche Organisation für den
internationalen Eisenbahnverkehr

Intergovernmental Organisation for
International Carriage by Rail


Uniform Technical Prescription

Subsystem: Rolling stock

NOISE

UTP Noise

Applicable from 01.04.2021

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APTU Uniform Rules (Appendix F to COTIF 1999)

Uniform Technical Prescription **applicable to the subsystem:** **“Rolling stock – NOISE”** **(UTP Noise)**

This UTP has been developed in accordance with COTIF, as amended by OTIF’s Revision Committee in February 2018 and which entered into force on 1 March 2019 (particularly Article 8 of APTU (Appendix F to COTIF). For definitions, see also Article 2 of APTU and Article 2 of ATMF (Appendix G to COTIF).

0. EQUIVALENCE AND TRANSITIONAL PROVISIONS

Following their adoption by the Committee of Technical Experts, the OTIF regulations included in this document are declared equivalent to the corresponding EU regulations within the meaning of Article 13§4 of APTU¹ and Article 3a of ATMF², in particular to:

- The TSI relating to the subsystem “rolling stock – noise” Commission Regulation (EU) No 1304/2014 as last amended by Commission Implementing Regulation (EU) 2019/774 of 16 May 2019, hereinafter referred to as NOI TSI.

The Uniform Technical Prescription (UTP) relating to the Subsystem Rolling Stock – NOISE, which entered into force on 1.12.2015 (reference UTP NOI 2015) are repealed with effect from the date of entry into force of this UTP. However, previous versions may continue to be applied in accordance with the provisions set out in Chapter 7 of these UTP.

The objectives and scope of COTIF and the EU law concerning railways are not identical and it has

¹ **APTU** means the Uniform Rules concerning the Validation of Technical Standards and the Adoption of Uniform Technical Prescriptions applicable to Railway Material intended to be used in International Traffic – Appendix F to COTIF 1999 in the revised version that entered into force on 1 March 2019.

² **ATMF** means the Uniform Rules concerning Technical Admission of Railway Material used in International Traffic – Appendix G to COTIF 1999 in the revised version that entered into force on 1 March 2019.

therefore been necessary to use different terminology for concepts that have a similar, but not identical meaning. The following table lists the terms used in this UTP and the corresponding terms used in the NOI TSI:

| This UTP | NOI TSI |
|--------------------------------------|----------------------------------------------------|
| Uniform Technical Prescription (UTP) | Technical Specification for Interoperability (TSI) |
| Admission to operation ³ | Authorisation |
| UTP verification | EC verification |
| UTP declaration of verification | EC declaration of verification |
| Contracting State | Member State |
| Assessing Entity | Notified Body |

Where provisions in this UTP and the NOI TSI differ in substance, the respective texts are in a 2-column format. The left-hand column and the full width texts show the UTP provisions (OTIF regulations) and the right-hand column shows the European Union TSI texts. Texts in the right-hand column are strictly for information only. For EU law consult the Official Journal of the European Union.

Where differences between texts of this UTP and the European Union NOI TSI are either editorial, or not substantive, or concern the list of terms quoted above, the NOI TSI texts are not generally reproduced. The TSI texts may however be reproduced to improve clarity and readability.

1. INTRODUCTION


In general

Uniform Technical Prescriptions (UTPs)

Technical Specifications for Interoperability (TSI)

lay down for each subsystem (or part of it) the optimal level of harmonised specifications in order to ensure the interoperability of the rail system. Therefore, UTPs harmonise only the specifications

³ The concepts of admission (COTIF) and authorisation (EU) are not equivalent. However, both confirm that a vehicle may be operated in its area of use.

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concerning parameters which are critical to interoperability (basic parameters). The specifications of the UTPs must meet the essential requirements as set out in

UTP GEN-A.

Annex III of Directive (EU) 2016/797.

In line with the proportionality principle this UTP sets out the optimal level of harmonisation related to specifications on the rolling stock subsystem as defined in section 1.1 intended to limit the noise emission

of vehicles in international traffic.

of the rail system within the Union.

1.1 Technical scope

1.1.1 Scope related to rolling stock

This UTP applies to all rolling stock within the scope of

UTP LOC&PAS and UTP WAG.

Regulation (EU) No 1302/2014 (LOC&PAS TSI) and Regulation (EU) No 321/2013 (WAG TSI).

1.1.2 Scope related to operational aspects

Alongside national provisions, where these exist, this UTP

Alongside with Commission Decision 2012/757/EU⁴ (OPE TSI) this TSI

applies to the operation of freight wagons which are used on railway infrastructure designated as “quieter routes”.

1.2 Geographical scope

The geographical scope of this UTP corresponds to the scopes defined in section

1.2 of UTP LOC&PAS and in section 1.2 of UTP WAG,

1.2 of Regulation (EU) No 1302/2014 and in section 1.2 of Regulation (EU) No 321/2013,

each for their rolling stock (RST) concerned.


2. DEFINITION OF THE SUBSYSTEM

A ‘unit’ means the rolling stock which is subject to the application of this UTP, and therefore subject to the

UTP verification procedure. Chapter 2 of UTP LOC&PAS and chapter 2 of UTP WAG

‘EC’ verification procedure. Chapter 2 in the annex to Regulation (EU) No 1302/2014 and chapter 2 in the annex to Regulation (EU) No 321/2013

⁴ Commission Decision 2012/757/EU of 14 November 2012 concerning the technical specification for interoperability relating to the operation and traffic management subsystem of the rail system in the European Union and amending Decision 2007/756/EC (OJ L 345, 15.12.2012, p. 1).

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describe what a unit can consist of.

The requirements of this UTP apply to the following categories of rolling stock:

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>a) <u>Locomotives and passenger rolling stock, including thermal or electric traction units, self-propelling thermal or electric trains, and passenger coaches.</u> This category is further defined in chapter 2</p> <p>of UTP LOC&PAS</p> <p>and shall be referred to in this UTP as locomotives, electric multiple units (EMU), diesel multiple units (DMU) and coaches;</p> <p>b) <u>Freight wagons, including low-deck vehicles designed for the entire network and vehicles designed to carry lorries.</u> This category is further defined in chapter 2</p> <p>of UTP WAG</p> <p>and shall be referred to in this UTP as wagons;</p> <p>c) <u>Special vehicles, such as on-track machines.</u> This category is further defined in chapter 2</p> <p>of UTP LOC&PAS</p> <p>and consists of on-track machines (referred to in this UTP as OTMs) and infrastructure inspection vehicles, which belong to the categories in points a) or b), depending on their design.</p> | <p>set out in section 2 in Annex I of Directive (EU) 2016/797:</p> <p>in the annex to Regulation (EU) No 1302/2014</p> <p>in the annex to Regulation (EU) No 321/2013</p> <p>in the annex to Regulation (EU) No 1302/2014</p> |
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3. ESSENTIAL REQUIREMENTS

All basic parameters set out in this UTP shall be linked to at least one of the essential requirements as set out in

UTP GEN-A 2017.

Annex III of Directive (EU) 2016/797.

Table 1 indicates the allocation.

Table 1. Basic parameters and their link to the essential requirements

| Point | Basic parameter | Essential requirements | | | | | |
|-------|----------------------------------------|------------------------|------------------------------|--------|--------------------------|-------------------------|---------------|
| | | Safety | Reliability and availability | Health | Environmental protection | Technical compatibility | Accessibility |
| 4.2.1 | Limits for stationary noise | | | | 1.4.4 | | |
| 4.2.2 | Limits for starting noise | | | | 1.4.4 | | |
| 4.2.3 | Limits for pass-by noise | | | | 1.4.4 | | |
| 4.2.4 | Limits for driver's cab interior noise | | | | 1.4.4 | | |

4. CHARACTERISATION OF THE SUBSYSTEM

4.1 Introduction

This Chapter sets out the optimal level of harmonisation related to specifications on the rolling stock subsystem intended to limit the noise emission of the

Union

rail system

in accordance with the objectives set out in COTIF. and to achieve interoperability.

4.2 Functional and technical specifications of the subsystems

The following parameters have been identified as critical for the interoperability (basic parameters)


- “stationary noise”,
- “starting noise”,
- “pass-by noise”,
- “driver's cab interior noise”.

The corresponding functional and technical specifications allocated to the different categories of rolling stock are set out in this section. In case of units equipped with both thermal and electric power the relevant limit values under all normal operation modes shall be respected. If one of these operation modes foresees the use of both thermal and electric power at the same time the less restrictive limit value applies. In accordance with

Article 8§6 of APTU and Article 2(aa) of ATMF,

Articles 4(5) and 2(13) of Directive (EU) 2016/797,

provision may be made for specific cases. Such provisions are indicated in section 7.3.

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The assessment procedures for the requirements in this section are defined in the indicated points and sub points of chapter 6.

4.2.1 Limits for stationary noise

The limit values for the following sound pressure levels under normal vehicle conditions concerning the stationary noise allocated to the categories of the rolling stock subsystem are set out in table 2:

- the A-weighted equivalent continuous sound pressure level of the unit ($L_{pAeq,T[unit]}$),
- the A-weighted equivalent continuous sound pressure level at the nearest measuring position i considering the main air compressor ($L_{pAeq,T}^i$) and
- the AF-weighted sound pressure level at the nearest measuring position i considering impulsive noise of the exhaust valve of the air dryer (L_{pAFmax}^i).

The limit values are defined at a distance of 7.5 m from the centre of the track and 1.2 m above the top of the rail.

Table 2. Limit values for stationary noise

| Category of the rolling stock subsystem | $L_{pAeq,T [unit]} [dB]$ | $L_{pAeq,T}^i [dB]$ | $L_{pAFmax}^i [dB]$ |
|------------------------------------------------------|--------------------------|---------------------|---------------------|
| Electric locomotives and OTMs with electric traction | 70 | 75 | 85 |
| Diesel locomotives and OTMs with diesel traction | 71 | 78 | |
| EMUs | 65 | 68 | |
| DMUs | 72 | 76 | |
| Coaches | 64 | 68 | |
| Wagons | 65 | n.a. | n.a. |

The demonstration of conformity is described in point 6.2.2.1.

4.2.2 Limits for starting noise

The limit values for the AF-weighted maximum sound pressure level ($L_{pAF,max}$) concerning the starting noise allocated to the categories of the rolling stock subsystem are set out in table 3. The limit values are defined at a distance of 7.5 m from the centre of the track and 1.2 m above the top of the rail.

Table 3: Limit values for starting noise

| Category of the rolling stock subsystem | $L_{pAF,max}$ [dB] |
|------------------------------------------------------------------------------------------------|--------------------|
| Electric locomotives with total tractive power $P < 4500$ kW | 81 |
| Electric locomotives with total tractive power $P \geq 4500$ kW OTMs with electric traction | 84 |
| Diesel locomotives $P < 2000$ kW at the engine output shaft | 85 |
| Diesel locomotives $P \geq 2000$ kW at the engine output shaft OTMs with diesel traction | 87 |
| EMUs with a maximum speed $v_{max} < 250$ km/h | 80 |
| EMUs with a maximum speed $v_{max} \geq 250$ km/h | 83 |
| DMUs $P < 560$ kW/engine at the engine output shaft | 82 |
| DMUs $P \geq 560$ kW/engine at the engine output shaft | 83 |

The demonstration of conformity is described in point 6.2.2.2.

4.2.3 Limits for pass-by noise

The limit values for the A-weighted equivalent continuous sound pressure level at a speed of 80 km/h ($L_{pAeq,Tp,(80 \text{ km/h})}$) and, if applicable, at 250 km/h ($L_{pAeq,Tp,(250 \text{ km/h})}$) concerning the pass-by noise allocated to the categories of the rolling stock subsystem are set out in table 4. The limit values are defined at a distance of 7.5 m from the centre of the track and 1.2 m above the top of the rail.

Measurements at speeds higher than or equal to 250 km/h shall also be made at the ‘additional measurement position’ with a height of 3.5 m above top of rail in accordance with chapter 6 of EN ISO 3095:2013 and assessed against the applicable limit values of table 4.

Table 4: Limit values for pass-by noise

| Category of the rolling stock subsystem | $L_{pAeq,Tp}$ (80 km/h) [dB] | $L_{pAeq,Tp}$ (250 km/h) [dB] |
|------------------------------------------------------|------------------------------|-------------------------------|
| Electric locomotives and OTMs with electric traction | 84 | 99 |
| Diesel locomotives and OTMs with diesel traction | 85 | n.a. |
| EMUs | 80 | 95 |
| DMUs | 81 | 96 |
| Coaches | 79 | n.a. |
| Wagons (normalised to $APL=0,225$)* | 83 | n.a. |

*APL: the number of axles divided by the length over the buffers [m^{-1}]

The demonstration of conformity is described in point 6.2.2.3.

4.2.4 Limits for the driver's cab interior noise

The limit values for the A-weighted equivalent continuous sound pressure level ($L_{pAeq,T}$) concerning the noise within the driver's cab of electric and diesel locomotives, OTMs, EMUs, DMUs and coaches fitted with a cab are set out in table 5. The limit values are defined in the vicinity of the driver's ear.

Table 5: Limit values for driver's cab interior noise

| Noise within the driver's cab | $L_{pAeq,T}$ [dB] |
|--------------------------------------------------------------------------|-------------------|
| At standstill with horns sounding | 95 |
| At maximum speed v_{max} if $v_{max} < 250$ km/h | 78 |
| At maximum speed v_{max} if $250 \text{ km/h} \leq v_{max} < 350$ km/h | 80 |

The demonstration of conformity is described in point 6.2.2.4.

4.3 Functional and technical specifications of the interfaces


This UTP has the following interfaces with the rolling stock subsystem:

Interface with subsystems of points a), b), c) and e) of chapter 2 (dealt with in

UTP LOC&PAS) with regard to

Regulation (EU) No 1302/2014) with regard to

- stationary noise,
- starting noise (not applicable to coaches),

| | | | | |
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- pass-by noise,
- interior noise within the driver’s cab, where applicable.

Interface with subsystems of point d) of chapter 2 (dealt with in

UTP WAG) with regard to

- pass-by noise,
- stationary noise.

Regulation (EU) No 321/2013) with regard to

This TSI has the following interface with the operation and traffic management subsystem (dealt with in Decision 2012/757/EU) with regard to:

- pass-by noise.

4.4 Operating rules

Requirements concerning the operating rules for the subsystem rolling stock are set out in

section 4.4 and Appendix K of UTP LOC&PAS and in section 4.4 and Appendix I of UTP WAG.

For the purpose of this UTP a ‘quieter route’ means a part of the railway infrastructure that for noise environmental reasons is only suitable for the operation of wagons which are compliant with point 7.2.2.2 of this UTP.

Contracting States may define quieter routes on their territory in accordance with Appendix D.

On quieter routes, States may restrict or forbid the use of wagons not compliant with point 7.2.2.2 of this UTP.


In compliance with Article 15a § 4 of ATMF, the infrastructure manager shall make available to any rail transport undertaking operating on its network information concerning the location of quieter routes, if any. This information shall be made available without delay.

section 4.4 of the Annex of Regulation (EU) No 1302/2014 and in section 4.4 of the Annex of Regulation (EU) No 321/2013.

4.4.1 Specific rules for the operation of wagons on quieter routes in case of degraded operation

States may define contingency arrangements for the operation on quieter routes of wagons not compliant with point 7.2.2.2.

The contingency arrangements as defined in point 4.2.3.6.3 of the Annex of Decision 2012/757/EU include the operation of wagons not compliant with point 7.2.2.2 on quieter routes.

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This measure can be applied to address capacity restrictions or operational constraints caused by rolling stock failures, extreme weather conditions, accidents or incidents and infrastructure failures.

4.4.2 Specific rules for the operation of wagons on quieter routes in case of infrastructure works and wagon maintenance

The operation of wagons not compliant with point 7.2.2.2 on quieter routes shall be possible in case of wagon maintenance activities where only a quieter route is available in order to access the maintenance workshop.

Contingency arrangements

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| shall be defined to ensure that wagons not compliant with point 7.2.2.2 can continue to be operated when, due to infrastructure works, the use of a quieter route is the only suitable alternative. | set out in point 4.4.1 are applicable in case of infrastructure works where |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

4.5 Maintenance rules

Requirements concerning the maintenance rules for the subsystem rolling stock are set out in

| | |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| section 4.5 of UTP LOC&PAS and in section 4.5 of UTP WAG. | section 4.5 of the Annex of Regulation (EU) No 1302/2014 and in section 4.5 of the Annex of Regulation (EU) No 321/2013. |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|

4.6 Professional qualifications

Not applicable.


4.7 Health and safety conditions

| | |
|----------------|-------------------------------------------------|
| ⁽⁵⁾ | See Article 6 of this Regulation ⁶ . |
|----------------|-------------------------------------------------|

⁵ The EU provisions for section 4.7 on health and safety conditions must take into account the way the rolling stock is operated. This is outside the scope of this UTP NOI and is not therefore repeated on the left-hand side. Notwithstanding this, Contracting States may have provisions in force, either through national or regional (e.g. EU) law, which regulate the use of a vehicle which fulfils the UTP NOI in order to ensure compliance with lower exposure action values for cabin interior noise.

⁶ Article 6 of the EU Decision enacting the NOI TSI:

“Compliance with the lower exposure action values set out in Article 3 of Directive 2003/10/EC of the European Parliament and of the Council (OJ L 42, 15.2.2003, p. 38), shall be ensured by compliance with the driver’s cabin interior noise level, as set out in point 4.2.4 of the Annex to this Regulation as well as by appropriate operational conditions to be defined by the railway undertaking.”

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4.8 Data to be recorded

European register of authorised types of vehicles

In accordance with UTP GEN-C 2017 and the OTIF uniform format of certificates, the following noise related characteristics shall be recorded in the Technical File⁷:


- Pass-by noise level (dB(A)) [Number] (dB(A))
- Pass-by noise level was measured under reference conditions [Boolean] Y/N (see point 6.2.2.3.1)
- Stationary noise level (dB(A)) [Number] (dB(A))
- Starting noise level (dB(A)) [Number] (dB(A))

The data of the rolling stock that must be recorded in the “European register of authorised types of vehicles (ERATV)” are set out in Decision 2011/665/EU.

5. INTEROPERABILITY CONSTITUENTS

There is no interoperability constituent specified in this UTP.

⁷ UTP GEN-C 2017 means: Uniform Technical Prescription (UTP) General Provisions TECHNICAL FILE, in the version that entered into force on 1.12.2017.

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6. CONFORMITY ASSESSMENT AND

UTP VERIFICATION

Innovative solutions

In order to adapt to technological progress, innovative solutions may be required, which do not comply with the specifications set out in this UTP and/or to which the assessment methods set out in this UTP cannot be applied. In that case, new specifications and/or new assessment methods associated with those innovative solutions shall be developed.

Innovative solutions may be related to the rolling stock subsystem, its parts and its ICs.

If an innovative solution is proposed, the manufacturer or his authorised representative shall declare how it intends to deviate from or complement the relevant provisions of this UTP. On the basis of this declaration, one of the entities listed in Article 6 § 2 of APTU, or the Secretary General may submit the new specifications and/or new assessment methods to the Committee of Technical Experts for analysis and approval.


If the CTE supports the new specifications and/or new assessment methods, the appropriate functional and interface specifications, which need to be included in the UTP in order to allow the use of this innovative solution, shall be developed and

EC VERIFICATION

(8)

⁸ Article 7 of the EU Regulation enacting the NOI TSI:

- "1. In order to adapt to technological progress, innovative solutions may be proposed by the manufacturer or its authorised representative which do not comply with the specifications set out in the Annex and/or for which the assessment methods set out in the Annex cannot be applied.*
- 2. Innovative solutions may be related to the rolling stock subsystem, its parts and its interoperability constituents.*
- 3. Where an innovative solution is proposed, the manufacturer or his authorised representative established within the Union shall state in what way it deviates from or how it complements the relevant provisions of this TSI and shall submit the deviations to the Commission for analysis. The Commission may request the opinion of the Agency on the proposed innovative solution.*
- 4. The Commission shall deliver an opinion on the proposed innovative solution. If this opinion is positive, the appropriate functional and interface specifications and the assessment method, which need to be included in the TSI in order to allow the use of this innovative solution, shall be developed by the Agency and subsequently integrated into the TSI during the revision process pursuant to Article 5 of Directive (EU) 2016/797. If the opinion is negative, the proposed innovative solution shall not be used.*
- 5. Pending the review of the TSI, a positive opinion delivered by the Commission shall be considered as an acceptable means of compliance with the essential requirements of Directive (EU) 2016/797 and may therefore be used for the assessment of the subsystem."*

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subsequently integrated into the UTP during its revision processes.

Pending the revision of the UTP, the Committee of Technical Experts may already consider the new specifications and/or new assessment methods as an acceptable means of compliance with the essential requirements of UTP GEN-A. In such case the Committee of Technical Experts shall instruct the Secretary General as to how the new specifications and/or new assessment methods shall be communicated to the Contacting States and be made public.

6.1 Interoperability constituents

Not applicable.

6.2 Subsystem rolling stock regarding noise emitted by rolling stock

6.2.1 Modules

The

UTP verification

EC verification

shall be performed in accordance with the module(s) described in table 6.


Table 6:

Assessment procedures for the verification of subsystems

Modules for EC verification of subsystems

| SB | Type examination | EC-Type Examination |
|-----|------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| SD | Quality management system of the production process | EC verification based on quality management system of the production process |
| SF | Verification based on product verification | EC verification based on product verification |
| SH1 | Verification based on full quality management system plus design examination | EC verification based on full quality management system plus design examination |

These modules are specified in detail in

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UTP GEN-D⁹.

Decision 2010/713/EU.

6.2.2 Assessment procedures for verification

The applicant shall choose one of the following assessment procedures consisting of one or more modules for the

UTP verification

EC verification

of the subsystem:

- (SB+SD),
- (SB+SF),
- (SH1).

Within the application of the chosen module or module combination the subsystem shall be assessed against the requirements defined in section 4.2. If necessary, additional requirements concerning the assessment are given in the following points.

6.2.2.1 Stationary noise

The demonstration of conformity with the limit values on stationary noise as set out in point 4.2.1 shall be carried out in accordance with sections 5.1, 5.2, 5.3, 5.4, 5.5 (without clause 5.5.2), 5.7 and clause 5.8.1 of EN ISO 3095:2013.

For the assessment of the main air compressor noise at the nearest measuring position i , the $L_{pAeq,T}^i$ indicator shall be used with T representative of one operating cycle as defined in section 5.7 of EN ISO 3095:2013. Only the train systems that are required for the air compressor to run under normal operating conditions shall be used for this. The train systems which are not needed for the operation of the compressor may be switched off to prevent contribution to the noise measurement. The demonstration of conformity with the limit values shall be carried out under the conditions solely necessary for operation of the main air compressor at the lowest rpm.

For the assessment of the impulsive noise sources at the nearest measuring position i , the L_{pAFmax}^i indicator shall be used. The relevant noise source is the exhaust from the valves of the air dryer.

6.2.2.2 Starting noise


The demonstration of conformity with the limit values on starting noise as set out in point 4.2.2 shall be carried out in accordance with chapter 7 (without clause 7.5.1.2) of EN ISO 3095:2013. The maximum level method referring to section 7.5 of EN ISO 3095:2013 shall apply. Deviating from clause 7.5.3 of EN ISO 3095:2013 the train shall accelerate from standstill up to 30 km/h and then maintain the speed.

In addition the noise shall be measured at a distance of 7.5 m from the centre of the track and a height of 1.2 m above top of rail. The “averaged level method” and the “maximum level method” in accordance with section 7.6 and 7.5 respectively of EN ISO 3095:2013 shall apply and the train shall accelerate from standstill up to 40 km/h and then maintain the speed. The measured values are not assessed against any limit value and shall be recorded in the technical file

and communicated to OTIF Secretary General.

and communicated to the Agency.

⁹ General Provisions, UTP GEN-D Assessment procedures (modules) that entered into force on 1.10.2012

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For OTMs the starting procedure shall be performed without additional trailer loads.

6.2.2.3 Pass-by noise

The demonstration of conformity with the limit values on pass-by noise as set out in point 4.2.3 shall be carried out in accordance with points 6.2.2.3.1 and 6.2.2.3.2.

6.2.2.3.1 Test track conditions

The tests shall be performed on a reference track as defined in section 6.2 of EN ISO 3095:2013.

However, it is permitted to carry out the test on a track that does not comply with the reference track conditions in terms of acoustic rail roughness level and track decay rates as long as the noise levels measured in accordance with point 6.2.2.3.2 do not exceed the limit values set out in point 4.2.3.

The acoustic rail roughness and the decay rates of the test track shall be determined in any case. If the track on which the tests are performed does meet the reference track conditions, the measured noise levels shall be marked 'comparable', otherwise they shall be marked 'non-comparable'. It shall be recorded in the technical file whether the measured noise levels are 'comparable' or 'non-comparable'.

The measured acoustic rail roughness values of the test track remain valid during a period starting 3 months before and ending 3 months after this measurement, provided that during this period no track maintenance has been performed which influences the rail acoustic roughness.

The measured track decay rate values of the test track shall remain valid during a period starting 1 year before and ending 1 year after this measurement, provided that during this period no track maintenance has been performed which influences the track decay rates.

Confirmation shall be provided in the technical file that the track data related to the type's pass-by noise measurement were valid during the day(s) of testing, e.g. by providing the date of last maintenance having an impact on noise.

Furthermore, it is permitted to carry out tests at speeds equal to or higher than 250 km/h on slab tracks. In this case the limit values shall be 2 dB higher than those set out in point 4.2.3.


6.2.2.3.2 Procedure

The tests shall be carried out in accordance with the provision in sections 6.1, 6.3, 6.4, 6.5, 6.6 and 6.7 (without 6.7.2) of EN ISO 3095:2013. Any comparison against limit values shall be carried out with results rounded to the nearest integer decibel. Any normalisation shall be performed before rounding. The detailed assessment procedure is set out in points 6.2.2.3.2.1, 6.2.2.3.2.2 and 6.2.2.3.2.3.

6.2.2.3.2.1 EMU, DMUs, locomotives and coaches

For EMU, DMUs, locomotives and coaches three classes of maximum operational speed are distinguished:

1. If the maximum operational speed of the unit is lower than or equal to 80 km/h, the pass-by noise shall be measured at its maximum speed v_{\max} . This value shall not exceed the limit value $L_{pAeq,Tp(80\text{ km/h})}$ as set out in point 4.2.3.
2. If the maximum operational speed v_{\max} of the unit is higher than 80 km/h and lower than 250 km/h, the pass-by noise shall be measured at 80 km/h and at its maximum speed. Both measured pass-by noise values $L_{pAeq,Tp(v_{\text{test}})}$ shall be normalised to the reference speed of 80

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km/h $L_{pAeq,Tp(80\text{ km/h})}$ using formula (1). The normalised value shall not exceed the limit value $L_{pAeq,Tp(80\text{ km/h})}$ as set out in point 4.2.3.

$$L_{pAeq,Tp(80\text{ km/h})} = L_{pAeq,Tp(v_{test})} - 30 \cdot \log(v_{test}/80\text{ km/h}) \quad (1)$$

v_{test} = Actual speed during the measurement

3. If the maximum operational speed v_{max} of the unit is equal to or higher than 250 km/h, the pass-by noise shall be measured at 80 km/h and at its maximum speed with an upper test speed limit of 320 km/h. The measured pass-by noise value $L_{pAeq,Tp(v_{test})}$ at 80 km/h shall be normalised to the reference speed of 80 km/h $L_{pAeq,Tp(80\text{ km/h})}$ using formula (1). The normalised value shall not exceed the limit value $L_{pAeq,Tp(80\text{ km/h})}$ as set out in point 4.2.3. The measured pass-by noise value at maximum speed $L_{pAeq,Tp(v_{test})}$ shall be normalised to the reference speed of 250 km/h $L_{pAeq,Tp(250\text{ km/h})}$ using formula (2). The normalised value shall not exceed the limit value $L_{pAeq,Tp(250\text{ km/h})}$ as set out in point 4.2.3.

$$L_{pAeq,Tp(250\text{ km/h})} = L_{pAeq,Tp(v_{test})} - 50 \cdot \log(v_{test}/250\text{ km/h}) \quad (2)$$

v_{test} = Actual speed during the measurement

6.2.2.3.2.2 Wagons

For wagons two classes of maximum operational speed are distinguished:

1. If the maximum operational speed v_{max} of the unit is lower than or equal to 80 km/h, the pass-by noise shall be measured at its maximum speed. The measured pass-by noise value $L_{pAeq,Tp(v_{test})}$ shall be normalised to a reference APL of $0,225\text{ m}^{-1}$ $L_{pAeq,Tp(APL_{ref})}$ using formula (3). This value shall not exceed the limit value $L_{pAeq,Tp(80\text{ km/h})}$ as set out in point 4.2.3.

$$L_{pAeq,Tp(APL_{ref})} = L_{pAeq,Tp(v_{test})} - 10 \cdot \log(APL_{wag}/0,225\text{ m}^{-1}) \quad (3)$$

APL_{wag} = Number of axles divided by the length over the buffers [m^{-1}]

v_{test} = Actual speed during the measurement

2. If the maximum operational speed v_{max} of the unit is higher than 80 km/h, the pass-by noise shall be measured at 80 km/h and at its maximum speed. Both measured pass-by noise values $L_{pAeq,Tp(v_{test})}$ shall be normalised to the reference speed of 80 km/h and to a reference APL of $0,225\text{ m}^{-1}$ $L_{pAeq,Tp(APL_{ref}, 80\text{ km/h})}$ using formula (4). The normalised value shall not exceed the limit value $L_{pAeq,Tp(80\text{ km/h})}$ as set out in point 4.2.3.

$$L_{pAeq,Tp(APL_{ref}, 80\text{ km/h})} = L_{pAeq,Tp(v_{test})} - 10 \cdot \log(APL_{wag}/0,225\text{ m}^{-1}) - 30 \cdot \log(v_{test}/80\text{ km/h}) \quad (4)$$

APL_{wag} = Number of axles divided by the length over the buffers [m^{-1}]


v_{test} = Actual speed during the measurement

6.2.2.3.2.3 OTMs

For OTMs the same assessment procedure as set out in 6.2.2.3.2.1 applies. The measuring procedure shall be performed without additional trailer loads.

OTMs are deemed to comply with the pass-by noise level requirements in point 4.2.3 without measuring when they are:

- solely braked by either composite brake blocks or disc brakes, and
- equipped with composite scrubbers, if scrubber blocks are fitted.

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6.2.2.4 Driver's cab interior noise

The demonstration of conformity with the limit values on the driver's cab interior noise as set out in point 4.2.4 shall be carried out in accordance with EN 15892:2011. For OTMs the measuring procedure shall be performed without additional trailer loads.

6.2.3 Simplified evaluation

Instead of the test procedures as set out in point 6.2.2, it is permitted to substitute some or all of the tests by a simplified evaluation. The simplified evaluation consists of acoustically comparing the unit under assessment to an existing type (further referred to as the reference type) with documented noise characteristics.

The simplified evaluation may be used for each of the applicable basic parameters "stationary noise", "starting noise", "pass-by noise" and "driver's cab interior noise" autonomously and shall consist of providing evidence that the effects of the differences of the unit under assessment do not result in exceeding the limit values set out in section 4.2.

For the units under simplified evaluation, the proof of conformity shall include a detailed description of the noise relevant changes compared to the reference type. From this description, a simplified evaluation shall be performed. The estimated noise values shall include the uncertainties of the applied evaluation method. The simplified evaluation can either be a calculation and/or simplified measurement.

A unit certified on the basis of the simplified evaluation method shall not be used as a reference unit for a further evaluation.

If the simplified evaluation is applied for pass-by noise, the reference-type shall comply with at least one of the following:

- Chapter 4 and for which the pass-by noise results are marked 'comparable',
- Chapter 4 of Decision 2011/229/EU¹⁰

or Chapter 4 of UTP NOI¹¹ which entered
into force on 1.12.2012


and for which the pass-by noise results are marked 'comparable',
- Chapter 4 and for which the pass-by noise results are marked 'comparable',
- Chapter 4 of Decision 2006/66/EC¹²,
- Chapter 4 of Decision 2008/232/EC¹³.

¹⁰ Commission Decision of 4 April 2011 concerning the technical specifications of interoperability relating to the subsystem rolling stock - noise of the trans-European conventional rail system (OJ L 99, 13.4.2011, p.1-39)

¹¹ General Provisions, Rolling stock - NOISE, UTP, APTU (Ref: A 94-04/2.2012, which entered into force on 01.12.2012)

¹² Commission Decision of 23 December 2005 concerning the technical specification for interoperability relating to the subsystem rolling stock — noise of the trans-European conventional rail system (OJ L 37, 8.2.2006, p.1-49)

¹³ Commission Decision of 21 February 2008 concerning a technical specification for interoperability relating to the rolling stock sub-system of the trans-European high-speed rail system (OJ L 84, 26.3.2008, p.132-392)

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In case of a wagon which parameters remain, compared to the reference type, within the permitted range of table 7 it is deemed without further verification that the unit complies with the limit values on pass-by noise as set out in point 4.2.3.

Table 7: Permitted variation of wagons for the exemption from verification

| Parameter | permitted variation (compared to the reference unit) |
|-----------------|-----------------------------------------------------------------------------------------------|
| Max. unit Speed | Any speed up to 160 km/h |
| Type of wheel | Only if equally or less noisy (acoustic characterisation i. a. w. Annex E of EN 13979-1:2011) |
| Tare weight | Only within the range of + 20% / - 5% |
| Brake block | Only if variation does not result in higher noise emission. |

7. IMPLEMENTATION

7.1 Application of this UTP to new subsystems

In accordance with Article 7 § 1 of ATMF, compliance with this UTP is one of the conditions for a new vehicle to be admitted to circulation in international traffic.

The UTP certificate of verification and/or conformity to type of a new vehicle established in accordance with UTP NOI, which entered into force on 1.12.2015, shall be considered valid until the type or design certificate expires¹⁴.

See Article 8 of this Regulation.¹⁵

7.2 Application of this UTP to existing subsystems

The principles to be applied by the applicants and authorising entities in case of change(s) to an existing rolling stock or rolling stock type are defined in


¹⁴ EU Decision 2008/232/EC concerning High Speed Rolling Stock and EU Decision 2011/229/EU concerning conventional locomotives and passenger rolling stock, have no equivalent in OTIF regulations. As a result, a declaration of verification and/or conformity to type /of a new vehicle established in accordance with Decision 2008/232/EC or Decision 2011/229/EU is not recognised in OTIF and such vehicles are therefore subject to admission in accordance with ATMF Article 6 § 4.

¹⁵ Article 8 of the EU Decision enacting the NOI TSI:

"The declaration of verification and/or conformity to type of a new vehicle established in accordance with Decision 2011/229/EU shall be considered valid:

- for locomotives, EMUs, DMUs and coaches until the type or design certificate needs to be renewed as stated in Decision 2011/291/EU for cases where the latter decision was applied, or until 31 May 2017 for other cases;*
- for wagons until 13 April 2016.*

The declaration of verification and/or conformity to type of a new vehicle established in accordance with Decision 2008/232/EC shall be considered valid until the type or design certificate needs to be renewed as stated in this Decision."

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section 7.1.2 of UTP LOC&PAS and in section 7.2 of UTP WAG.

point 7.1.2 of the Annex to Regulation (EU) No 1302/2014 and section 7.2 of the Annex to Regulation (EU) No 321/2013.

7.2.1 Provisions in case of changes to existing rolling stock or rolling stock type

The applicant shall ensure that the noise levels of rolling stock subject to change(s) remain below the limits set out in the UTP which was applicable when the rolling stock in question was first admitted to operation. If no UTP existed at the time of the first admission to operation, the applicant shall ensure that the noise levels of the rolling stock subject to change(s) are either not increased or remain below the limits set out in

the UTP NOI which entered into force on 1.12.2012 or UTP NOI 2015 which entered into force on 1.12.2015.

Decision 2006/66/EC or Decision 2002/735/EC.

If an assessment is required, it shall be limited to the basic parameters affected by the change(s).

If the simplified evaluation is applied, the original unit may represent the reference unit in accordance with the provisions of point 6.2.3.

The replacement of a whole unit or (a) vehicle(s) within a unit (e.g. replacement after severe damage) does not require a conformity assessment against this UTP, as long as the unit or the vehicle(s) are identical to the ones they replace.

7.2.2 Additional provisions for the application of this UTP to existing wagons

Unless indicated otherwise in a particular implementing rule in section 7.4, from 8 December 2024, wagons within the scope of UTP WAG which are not covered by point 7.2.2.2 of this UTP shall not be operated on the quieter routes. However, this

The restriction of the operation set out in Article 5a of this Regulation¹⁶

shall not apply to wagons mostly operated on lines with a gradient of more than 40 ‰, wagons with a maximum operating speed higher than 120 km/h, wagons with a maximum axle load higher than 22.5 t, wagons exclusively operated for infrastructure works and wagons used in rescue trains.

If a wagon is being equipped with quieter brake blocks as defined in point 7.2.2.1 and no noise sources are added to the wagon, then it shall be assumed that the requirements of point 4.2.3 are met without further testing.

7.2.2.1 Quieter brake blocks


A quieter brake block is a brake block belonging to one of the following categories:

- Brake block listed in Appendix G of

UTP WAG;

Regulation (EU) No 321/2013;

¹⁶ Article 5a: "From 8 December 2024, wagons within the scope of Regulation (EU) No 321/2013 which are not covered by point 7.2.2.2 [...] shall not be operated on the quieter routes."

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- Brake block assessed in accordance with the procedure set out in Appendix F of this UTP.

7.2.2.2 Wagons operated on quieter routes

Wagons belonging to one of the categories below can be operated on the quieter routes within their area of use:

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> – Wagons compliant with either; <ul style="list-style-type: none"> ○ the UTP NOI which entered into force on 1.12.2012, or ○ the UTP NOI 2015 which entered into force on 1.12.2015, or ○ with this UTP, or ○ wagons holding an EC declaration of verification against a Technical Specification for Interoperability of the European Union which is equivalent to one of the UTPs listed above | <ul style="list-style-type: none"> – Wagons holding an EC declaration of verification against Commission Decision 2006/66/EC concerning the technical specification for interoperability relating to the subsystem ‘rolling stock — noise’ of the trans-European conventional rail system; – Wagons holding an EC declaration of verification against Commission Decision 2011/229/EU concerning the technical specifications of interoperability relating to the subsystem ‘rolling stock – noise’ of the trans-European conventional rail system; – Wagons holding an EC declaration of verification against this TSI; |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
- Wagons fitted with quieter brake blocks as defined in point 7.2.2.1 or brake discs for the service brake function;
 - Wagons fitted with composite brake blocks listed in Appendix E for the service brake function. The operation of these wagons on the quieter routes shall be limited in accordance with the conditions described in this appendix.

7.3 Specific cases

7.3.1 Introduction

The specific cases, as listed in point 7.3.2, are classified as:


- “P” cases: “permanent” cases.
- “T” cases: “temporary” cases, where it is recommended that the target system is reached by 2020 (an objective set in Decision 2010/661/EU).

7.3.2 List of specific cases

7.3.2.1 Specific cases

The Specific Cases for Member States of the European Union are those which are specified in the NOI TSI.

In addition to the above, the following specific cases apply:

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7.4 Particular implementation rules

7.4.1 Particular implementation rules for the application of this UTP to existing wagons (point 7.2.2)


The particular implementation rules for Member States of the European Union are those which are specified in the NOI TSI.

In addition to the above, the following particular implementation rules apply:

- Particular implementation rules for Switzerland:
('P') Quieter routes shall cover the entire Swiss railway network.

7.4.2 Particular implementation rules for wagons operated on quieter routes (point 7.2.2.2)

The particular implementation rules for Member States of the European Union are those which are specified in the NOI TSI.

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Appendix A - Open points

| Element of the rolling stock subsystem | Clause of this UTP | Technical aspect not covered by this UTP | Comments |
|----------------------------------------|------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
| Quieter brake block | 7.2.2.1 and Appendix F | Assessment of the acoustic properties of the brake blocks | Alternative technical solutions available (see point 7.2.2) |

Appendix B - Standards referred to in this

UTP | **TSI**


| UTP/TSI | | Standard | |
|--------------------------------|---------|-----------------------------------|---------|
| Characteristics to be assessed | | References to mandatory standards | Chapter |
| Stationary noise | 4.2.1 | - | - |
| | 6.2.2.1 | EN ISO 3095:2013 | 5 |
| Starting noise | 4.2.2 | - | - |
| | 6.2.2.2 | EN ISO 3095:2013 | 7 |
| Pass-by noise | 4.2.3 | EN ISO 3095:2013 | 6 |
| | 6.2.2.3 | EN ISO 3095:2013 | 6 |
| Driver's cab interior noise | 4.2.4 | - | - |
| | 6.2.2.4 | EN 15892:2011 | all |
| Simplified evaluation | 6.2.3 | EN 13979-1:2011 | Annex E |

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Appendix C Assessment of the rolling stock subsystem

| Characteristics to be assessed, as specified in section 4.2 | | | | | Particular assessment procedure |
|-------------------------------------------------------------|-------|---------------|-----------|--------------|---------------------------------|
| | | Design review | Type Test | Routine Test | |
| Element of the Rolling Stock sub-system | Point | | | | Point |
| Stationary noise | 4.2.1 | X* | X | n.a. | 6.2.2.1 |
| Starting noise | 4.2.2 | X* | X | n.a. | 6.2.2.2 |
| Pass-by noise | 4.2.3 | X* | X | n.a. | 6.2.2.3 |
| Driver's cab interior noise | 4.2.4 | X* | X | n.a. | 6.2.2.4 |

* Only if the simplified evaluation in accordance with point 6.2.3 is applied.

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Appendix D Quieter routes

D.1 Identification of quieter routes

Contracting States may designate some or all lines open to international traffic as quieter routes in the meaning of this UTP in accordance with the rules applicable in the state concerned.

In case all lines open to international traffic are designated as quieter routes this shall be indicated as a particular implementing rule in chapter 7.4 of this UTP, which shall indicate whether the rule is permanent or temporary and from which date it will apply. For any temporary rule it shall be indicated when it will cease to apply.

If only a part of the network open to international traffic is designated as quieter routes, the Contracting State shall ensure that a precise list of quieter routes open for international traffic is publicly available.

The list shall contain at least the start and end points of the quieter routes and their corresponding sections. If one of these points is at the border, it shall be reflected.


In accordance with Article 5c (1) of this Regulation the Member States shall provide the European Union Agency for Railways ('the Agency') with a list of quieter routes in a format allowing further processing by the users with IT-tools. The list shall contain at least the following information:

- Start and end points of the quieter routes and their corresponding sections, using geographical code location as defined in the register set out in Commission Implementing Decision 2014/880/EU¹⁷ (RINF). If one of these points is at the border of the Member State, it shall be reflected.
- Identification of the sections making up the quieter route

The list shall be provided using the template below:

| Quieter route | Sections in the route | Line identification | Quieter route starts/finishes at the border of the Contracting State |
|-------------------|-----------------------|---------------------|----------------------------------------------------------------------|
| Point A - Point E | Point A - Point B | | Yes POINT E (Country Y) |
| | Point B - Point C | | |
| | Point C - Point D | | |
| | Point D - Point E | | |
| Point F - Point I | Point F - Point G | | No |
| | Point G - Point H | | |
| | Point H - Point I | | |

¹⁷ Commission Implementing Decision 2014/880/EU of 26 November 2014 on the common specifications of the register of railway infrastructure and repealing Implementing Decision 2011/633/EU (OJ L 356 12.12.2014, p. 489).

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Contracting States may provide maps illustrating the quieter routes on a voluntary basis.

The Secretary General shall publish on the website of OTIF the lists of quieter routes and maps provided by Contracting States.

If there are no quieter routes in a Contracting State or if all lines open to international traffic in a Contracting State are quieter routes, this shall be published on the website of OTIF as well.

In addition, the Member States may provide maps illustrating the quieter routes on a voluntary basis. All lists and maps shall be published on the Agency website (<http://www.era.europa.eu>) no later than 9 months after 27.5.2019.

By the same date the Agency shall inform the Commission of the lists and maps of quieter routes. The Commission shall inform the Member States accordingly through the committee referred to in Article 51 of Directive (EU) 2016/797.

D.2 Update of quieter routes

Without prejudice to point D.1, Contracting States may update the list of quieter routes at any time, taking into account reasonable transitional periods allowing actors sufficient time to adjust.


The freight traffic data used for the update of quieter routes in accordance with Article 5c(2) of this Regulation shall refer to the last three years preceding the update for which the data is available. In case the freight traffic due to exceptional circumstances diverges in a given year from that average number by more than 25%, the Member State concerned can calculate the average number on the basis of the remaining two years. Member States shall provide the Agency with the updated quieter routes.

The routes designated as quieter routes shall remain as such following the update unless during the period concerned the volume of traffic has decreased by more than 50% and the average number of daily operated freight trains during the night-time is lower than 12.

In case of new and upgraded lines, the expected volume of traffic shall be used for the designation of those lines as quieter routes.

The Agency shall publish the updated quieter routes on its website (<http://www.era.europa.eu>) no later than 3 months after their reception and they shall apply from the next December timetable change following one year after their publication.

The Agency shall inform the Commission of any changes to the quieter routes. The Commission shall inform the Member States of these changes through the committee referred to in Article 51 of Directive (EU) 2016/797.

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Appendix E Historic composite brake blocks

E.1 Historic composite brake blocks for international use.

Existing wagons equipped with the brake blocks listed below are allowed to be used on the quieter routes within their area of use, until the relevant date set out in Appendix N of UIC Leaflet 541-4.

| Manufacturer/name of product | Designation/type of block | Type of friction coefficient |
|------------------------------|---------------------------|------------------------------|
| Valeo/Hersot Wabco/Cobra | 693 W554 | K |
| Ferodo | I/B 436 | K |
| Abex | 229 | K (Fe - sintered) |
| Jurid | 738 | K (Fe - sintered) |

Wagons equipped with historic composite brake blocks not listed in the table above but already authorised for international traffic


in conformity with the provisions of Decision 2004/446/EC or Decision 2006/861/EC

can still be used without any deadline within the area of use covered by their authorisation.

E.2 Historic composite brake blocks for national use

Existing wagons equipped with the brake blocks listed below are only allowed to be used on the railway networks, including quieter routes, of the corresponding Member States within their area of use.

| Manufacturer/name of the product | Designation/type of block | Member State | Remarks |
|----------------------------------|---------------------------|--------------------|---------|
| Cobra/Wabco | V133 | Italy | |
| Cofren | S153 | Sweden | |
| Cofren | 128 | Sweden | |
| Cofren | 229 | Italy | |
| ICER | 904 | Spain, Portugal | |
| ICER | 905 | Spain, Portugal | |
| Jurid | 838 | Spain, Portugal | |

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Appendix F Assessment of acoustic performance of a brake block

The purpose of this procedure is to demonstrate the acoustic performance of a composite brake block at interoperability constituent level.

This procedure is an open point.

This procedure shall be an open point in accordance with Article 4(6) of Directive (EU) 2016/797.