
Changes to legislation: There are outstanding changes not yet made to Commission Regulation (EU) 2017/2400. Any changes that have already been made to the legislation appear in the content and are referenced with annotations. (See end of Document for details) View outstanding changes

ANNEX X

CERTIFICATION PROCEDURE FOR PNEUMATIC TYRES

1. Introduction

This Annex describes the certification provisions for tyre with regard to its rolling resistance coefficient. For the calculation of the vehicle rolling resistance to be used as the simulation tool input, the applicable tyre rolling resistance coefficient C_r for each tyre supplied to the original equipment manufacturers and the related tyre test load F_{ZTYRE} shall be declared by the applicant for pneumatic tyre approval.

2. Definitions

For the purposes of this Annex, in addition to the definitions contained in UN/ECE Regulation No. 54 and in UN/ECE Regulation No.117, the following definitions shall apply:

- (1) 'Rolling resistance coefficient C_r ' means a ratio of the rolling resistance to the load on the tyre
- (2) 'The load on the tyre F_{ZTYRE} ' means a load applied to the tyre during the rolling resistance test.
- (3) 'Type of tyre' means a range of tyres which do not differ in such characteristics as:
 - (a) Manufacturer's name;
 - (b) Brand name or trade mark
 - (c) Tyre class (in accordance with Regulation (EC) No 661/2009)
 - (d) Tyre-size designation;
 - (e) Tyre structure (diagonal (bias-ply), radial);
 - (f) Category of use (normal tyre, snow tyre, special use tyre) as defined in UN/ECE Regulation No.117;
 - (g) Speed category (categories);
 - (h) Load-capacity index (indices);
 - (i) Trade description/commercial name;
 - (j) Declared tyre rolling resistance coefficient

3. General requirements

3.1. The tyre manufacturer plant shall be certified to ISO/TS 16949.

3.2. Tyre rolling resistance coefficient

The tyre rolling resistance coefficient shall be the value measured and aligned in accordance with Regulation (EC) No 1222/2009, Annex I part A, expressed in N/kN and rounded to the first decimal place, according to ISO 80000-1 Appendix B, section B.3, rule B (example 1).

3.3. Measurement provisions

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The tyre manufacturer shall test either in a laboratory of Technical Services as defined in Article 41 of Directive 2007/46/EC which carry out in its own facility the test referred to in paragraph 3.2, or in its own facilities in the case:

- (i) of the presence and responsibility of a representative of a Technical Service designated by an approval authority, or
- (ii) the tyre manufacturer is designated as a technical service of Category A in accordance with Directive 2007/46/EC Art.41.

3.4. Marking and traceability

[^{F1}3.4.1. The tyre shall be clearly identifiable in respect to the certificate covering it for the corresponding rolling resistance coefficient.]

Textual Amendments

F1 Substituted by [Commission Regulation \(EU\) 2019/318 of 19 February 2019 amending Regulation \(EU\) 2017/2400 and Directive 2007/46/EC of the European Parliament and of the Council as regards the determination of the CO₂ emissions and fuel consumption of heavy-duty vehicles \(Text with EEA relevance\).](#)

- 3.4.2. [^{F1}The tyre manufacturer shall use the markings affixed to the side wall of the tyre or affix an additional identifier to the tyre.] The additional identification shall ensure a unique link of the tyre and its rolling resistance coefficient. It may take a form of:
- quick response (QR) code,
 - barcode,
 - radio-frequency identification (RFID),
 - an additional marking, or
 - other tool fulfilling the requirements of 3.4.1.
- 3.4.3. If an additional identifier is used it shall remain readable until the moment of sales of the vehicle.
- 3.4.4. In line with Article 19(2) of Directive 2007/46/EC, no type-approval mark is required for tyre certified in accordance with this Regulation.
4. Conformity of the certified CO₂ emissions and fuel consumption related properties
- 4.1. Any tyre certified under this Regulation shall be in conformity to the declared rolling resistance value as per paragraph 3.2 of this Annex.
- 4.2. In order to verify conformity of the certified CO₂ emissions and fuel consumption related properties, production samples shall be taken randomly from series production and tested in accordance with the provisions set out in paragraph 3.2.
- 4.3. Frequency of the tests
- 4.3.1 The tyre rolling resistance of at least one tyre of a specific type intended for the sales to the original equipment manufacturers shall be tested every 20 000 units of this type per year (e.g. 2 conformity verifications per year of the type whose annual sales volume to the original equipment manufacturers is between 20 001 and 40 000 units).

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- 4.3.2 In case the deliveries of a specific tyre type intended for the sales to the original equipment manufacturers is between 500 and 20 000 units per year, at least one conformity verification of the type shall be carried out per year.
- 4.3.3 In case the deliveries of a specific tyre type intended for the sales to the original equipment manufacturers is below 500 units, at least one conformity verification as described in paragraph 4.4 shall be applied every second year.
- 4.3.4 If the volume of tyres delivered to the original equipment manufacturers indicated in 4.3.1 is met within 31 calendar days the maximum number of conformity verifications as described in paragraph 4.3 is limited to one per 31 calendar days.
- 4.3.5 The manufacturer shall justify (ex. by showing sales numbers) to the approval authority the number of tests which has been performed
- 4.4 Verification procedure
- 4.4.1 A single tyre shall be tested in accordance with paragraph 3.2. By default, the machine alignment equation shall be the one valid at the date of verification testing. Tyre manufacturer may request the application of the alignment equation that was used during the certification testing and reported in the information document.
- 4.4.2 In the case the value measured is lower or equal to the declared value plus 0,3 N/kN, the tyre is considered compliant.
- 4.4.3. In the case, the value measured exceeds the declared value by more than 0,3 N/kN, three additional tyres shall be tested. If the value of the rolling resistance of at least one of the three tyres exceeds the declared value by more than 0,4 N/kN, provisions of Article 23 shall apply.

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[^{F1}Appendix 1

MODEL Maximum format: A4 (210 × 297 mm)
OF A
CERTIFICATE
OF A
COMPONENT,
SEPARATE
TECHNICAL
UNIT
OR
SYSTEM
CERTIFICATE ON CO₂ EMISSIONS AND FUEL CONSUMPTION RELATED
PROPERTIES OF A TYRE FAMILY

Communication concerning: — granting ^a — extension ^a — refusal ^a — withdrawal ^a	Administration stamp
a 'delete as appropriate'	

of a certificate on CO₂ emission and fuel consumption related properties of a tyre family in accordance with Commission Regulation (EU) 2017/2400, as amended by Commission Regulation (EU) 2019/318

Certification number: ...

Hash: ...

Reason for extension: ...

1. Manufacturer's name and address: ...
2. If applicable, name and address of manufacturer's representative: ...
3. Brand name/trade mark: ...
4. Tyre type description: ...
 - (a) Manufacturer's name ...
 - (b) Brand name or trade mark
 - (c) Tyre class (in accordance with Regulation (EC) No 661/2009) ...
 - (d) Tyre-size designation ...
 - (e) Tyre structure (diagonal (bias-ply); radial) ...
 - (f) Category of use (normal tyre, snow tyre, special use tyre) ...
 - (g) Speed category (categories) ...
 - (h) Load-capacity index (indices) ...
 - (i) Trade description/commercial name ...

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- (j) Declared tyre rolling resistance coefficient ...
5. Tyre identification code(s) and technology(ies) used to provide identification code(s), if applicable:

Technology:	Code:
...	...

6. Technical Service and, where appropriate, test laboratory approved for purposes of approval or of verification of conformity tests: ...
7. Declared values:
- 7.1. declared rolling resistance level of the tyre (in N/kN rounded to the first decimal place, in accordance with ISO 80000-1 Appendix B, section B.3, rule B (*example 1*))
 C_r, \dots [N/kN]
- 7.2. tyre test load in accordance with Regulation (EC) No 1222/2009 Annex I part A (85 % of single load, or 85 % of maximum load capacity for single application specified in applicable tyre standards manuals if not marked on tyre.)
 $F_{ZTYRE} \dots$ [N]
- 7.3. Alignment equation: ...
8. Any remarks: ...
9. Place: ...
10. Date: ...
11. Signature: ...
12. Annexed to this communication are: ...]

Changes to legislation: There are outstanding changes not yet made to Commission Regulation (EU) 2017/2400. Any changes that have already been made to the legislation appear in the content and are referenced with annotations. (See end of Document for details) View outstanding changes

Appendix 2

Tyre rolling resistance coefficient information document

SECTION 1.

I

- Name and address of manufacturer
- 0.2 Make (trade name of manufacturer)
- 0.3 Name and address of applicant:
- 0.4 Brand name/ trade description:
- 0.5 Tyre class (in accordance with Regulation (EC) No 661/2009)
- 0.6 Tyre-size designation;
- 0.7 Tyre structure (diagonal (bias-ply); radial);
- 0.8 Category of use (normal tyre, snow tyre, special use tyre);
- 0.9 Speed category (categories);
- 0.10 Load-capacity index (indices);
- 0.11 Trade description/commercial name;
- 0.12 Declared rolling resistance coefficient;
- 0.13 Tool(s) to provide additional rolling resistance coefficient identification code (if any);
- F²0.14.

Textual Amendments

F2 Deleted by [Commission Regulation \(EU\) 2019/318 of 19 February 2019 amending Regulation \(EU\) 2017/2400 and Directive 2007/46/EC of the European Parliament and of the Council as regards the determination of the CO2 emissions and fuel consumption of heavy-duty vehicles \(Text with EEA relevance\).](#)

- 0.15 Load F_{ZTYRE} : ... [N]
- F²0.16

SECTION.

II

- Approval Authority or Technical Service [or Accredited Lab]:
- 2. Test report No.:
- 3. Comments (if any):
- [F¹4. Date of test report:]
- 5. Test machine identification and drum diameter/surface:
- 6. Test tyre details:
- 6.1. Tyre size designation and service description:

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- 6.2. Tyre brand/ trade description:
- 6.3. Reference inflation pressure: kPa
7. Test data:
 - 7.1. Measurement method:
 - 7.2. Test speed: km/h
 - 7.3. Load F_{ZTYRE} : N
 - 7.4. Test inflation pressure, initial: kPa
 - 7.5. Distance from the tyre axis to the drum outer surface under steady state conditions, r_L : m
 - 7.6. Test rim width and material:
 - 7.7. Ambient temperature: °C
 - 7.8. Skim test load (except deceleration method): N
8. Rolling resistance coefficient:
 - 8.1. Initial value (or average in the case of more than 1): N/kN
 - 8.2. Temperature corrected: ... N/kN
 - 8.3. Temperature and drum diameter corrected: N/kN
 - 8.4. [^{F1}Alignment equation:]
 - 8.5. [^{F3}Rolling resistance level of the tyre (in N/kN rounded to the first decimal place, in accordance with ISO80000-1 Appendix B, section B.3, rule B (example 1)) $C_{r,aligned}$: ... [N/kN]]

Textual Amendments

- F3** Inserted by [Commission Regulation \(EU\) 2019/318 of 19 February 2019 amending Regulation \(EU\) 2017/2400 and Directive 2007/46/EC of the European Parliament and of the Council as regards the determination of the CO2 emissions and fuel consumption of heavy-duty vehicles \(Text with EEA relevance\).](#)

9. Date of test:

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Appendix 3

[^{F1}Input parameters for the simulation tool]

Introduction

This Appendix describes the list of parameters to be provided by the component manufacturer as input to the simulation tool. The applicable XML schema as well as example data are available at the dedicated electronic distribution platform.

Definitions

- [^{F1}(1) ‘Parameter ID’:
(2) ‘Type’:
string ... sequence of characters in ISO8859-1 encoding
token ... sequence of characters in ISO8859-1 encoding, no leading/trailing whitespace
date ... date and time in UTC time in the format: YYYY-MM-DD $\mathit{THH:MM:SSZ}$ with italic letters denoting fixed characters e.g. ‘2002-05-30 $\mathit{T09:30:10Z}$ ’
integer ... value with an integral data type, no leading zeros, e.g. ‘1800’
double, X ... fractional number with exactly X digits after the decimal sign (‘.’) and no leading zeros e.g. for ‘double, 2’: ‘2345.67’; for ‘double, 4’: ‘45.6780’
- (3) ‘Unit’ ... physical unit of the parameter
- Set of input parameters

TABLE 1

Input parameters ‘Tyre’

Parameter name	Param ID	Type	Unit	Description/Reference
Manufacturer	P230	token		
Model	P231	token		Trade name of manufacturer
[^{F1} CertificationNumber	P232	token]
Date	P233	date		Date and time when the component hash is created.
AppVersion	P234	token		Version number identifying the evaluation tool
RRCDeclared	P046	double, 4	[N/N]	
FzISO	P047	integer	[N]	
[^{F1} Dimension	P108	string	[-]	Allowed values (non-exhaustive): ‘9.00 R20’, ‘9 R22.5’,

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			'9.5 R17.5', '10 R17.5', '10 R22.5', '10.00 R20', '11 R22.5', '11.00 R20', '11.00 R22.5', '12 R22.5', '12.00 R20', '12.00 R24', '12.5 R20', '13 R22.5', '14.00 R20', '14.5 R20', '16.00 R20', '205/75 R17.5', '215/75 R17.5', '225/70 R17.5', '225/75 R17.5', '235/75 R17.5', '245/70 R17.5', '245/70 R19.5', '255/70 R22.5', '265/70 R17.5', '265/70 R19.5', '275/70 R22.5', '275/80 R22.5', '285/60 R22.5', '285/70 R19.5', '295/55 R22.5', '295/60 R22.5', '295/80 R22.5', '305/60 R22.5', '305/70 R19.5', '305/70 R22.5', '305/75 R24.5', '315/45 R22.5', '315/60 R22.5', '315/70 R22.5', '315/80 R22.5', '325/95 R24', '335/80 R20', '355/50 R22.5', '365/70 R22.5', '365/80 R20', '365/85 R20', '375/45 R22.5', '375/50 R22.5', '375/90 R22.5', '385/55 R22.5', '385/65 R22.5', '395/85 R20', '425/65 R22.5', '495/45
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				R22.5', '525/65 R20.5']
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Appendix 4

Numbering

1. Numbering:

[^{F1}1.1. Certification number for tyres shall comprise the following:

eX*YYYY/YYYY*ZZZZ/ZZZZ*T*0000*00

Section 1	Section 2	Section 3	Additional letter to section 3	Section 4	Section 5
Indication of country issuing the certificate	HDV CO ₂ certification Regulation (2017/2400)	Latest amending Regulation (ZZZZ/ZZZZ)	T = Tyre	Base certification number 0000	Extension 00]

Changes to legislation:

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Changes and effects yet to be applied to :

- Annex 10 point 3.3 words substituted by [S.I. 2022/1273 reg. 83\(8\)\(a\)\(i\)](#)
- Annex 10 point 3.3(i) words substituted by [S.I. 2022/1273 reg. 83\(8\)\(a\)\(ii\)](#)
- Annex 10 point 3.3(ii) words substituted by [S.I. 2022/1273 reg. 83\(8\)\(a\)\(iii\)](#)
- Annex 10 point 3.4.4 words substituted by [S.I. 2022/1273 reg. 83\(8\)\(b\)](#)

Changes and effects yet to be applied to the whole legislation item and associated provisions

- Signature words omitted by [S.I. 2022/1273 reg. 82\(18\)](#)
- Annex 5 Appendix 6 point 1.3 substituted by [S.I. 2022/1273 reg. 83\(4\)\(b\)\(i\)](#)
- Annex 5 Appendix 6 point 1.4.1 image substituted by [S.I. 2022/1273 reg. 83\(4\)\(b\)\(iii\)\(aa\)](#)
- Annex 5 Appendix 6 point 1.5.1 image substituted by [S.I. 2022/1273 reg. 83\(4\)\(b\)\(iv\)\(aa\)](#)
- Annex 5 Appendix 4 point 7.4 word substituted by [S.I. 2022/1273 reg. 83\(4\)\(a\)](#)
- Annex 5 Appendix 6 point 2.1 word substituted by [S.I. 2022/1273 reg. 83\(4\)\(b\)\(v\)](#)
- Annex 5 Appendix 6 point 1.4.1 words omitted by [S.I. 2022/1273 reg. 83\(4\)\(b\)\(iii\)\(bb\)](#)
- Annex 5 Appendix 6 point 1.5.1 words omitted by [S.I. 2022/1273 reg. 83\(4\)\(b\)\(iv\)\(bb\)](#)
- Annex 5 Appendix 6 point 1.4 words substituted by [S.I. 2022/1273 reg. 83\(4\)\(b\)\(ii\)](#)
- Annex 5 Appendix 6 point 2.1 table words substituted by [S.I. 2022/1273 reg. 83\(4\)\(b\)\(vi\)](#)
- Annex 10 Appendix 4 point 1.1 word substituted by [S.I. 2022/1273 reg. 83\(8\)\(d\)\(i\)](#)
- Annex 10 Appendix 1 words substituted by [S.I. 2022/1273 reg. 83\(8\)\(c\)](#)
- Annex 10 Appendix 4 point 1.1 table words substituted by [S.I. 2022/1273 reg. 83\(8\)\(d\)\(ii\)](#)
- Annex 7 Appendix 5 point 1.3 substituted by [S.I. 2022/1273 reg. 83\(6\)\(c\)\(i\)](#)
- Annex 7 Appendix 5 point 1.4.1 image substituted by [S.I. 2022/1273 reg. 83\(6\)\(c\)\(iii\)\(aa\)](#)
- Annex 7 Appendix 1s. 1 point 000.5 word substituted by [S.I. 2022/1273 reg. 83\(6\)\(b\)\(ii\)](#)
- Annex 7 Appendix 1 words inserted by [S.I. 2022/1273 reg. 83\(6\)\(b\)\(i\)\(aa\)](#)
- Annex 7 Appendix 1 words omitted by [S.I. 2022/1273 reg. 83\(6\)\(b\)\(i\)\(bb\)](#)
- Annex 7 Appendix 5 point 1.4.1 words omitted by [S.I. 2022/1273 reg. 83\(6\)\(c\)\(iii\)\(bb\)](#)
- Annex 7 Appendix 5 point 1.4 words substituted by [S.I. 2022/1273 reg. 83\(6\)\(c\)\(ii\)](#)
- Annex 7 Appendix 5 point 2.1 words substituted by [S.I. 2022/1273 reg. 83\(6\)\(c\)\(iv\)](#)
- Annex 7 Appendix 5 point 2.1 table words substituted by [S.I. 2022/1273 reg. 83\(6\)\(c\)\(v\)](#)
- Annex 8 Appendix 8 point 1.3 substituted by [S.I. 2022/1273 reg. 83\(7\)\(d\)\(i\)](#)
- Annex 8 Appendix 8 point 1.4.1 image substituted by [S.I. 2022/1273 reg. 83\(7\)\(d\)\(iii\)\(aa\)](#)
- Annex 8 Appendix 4 table 11 word omitted by [S.I. 2022/1273 reg. 83\(7\)\(c\)\(i\)](#)
- Annex 8 Appendix 4 table 13 word omitted by [S.I. 2022/1273 reg. 83\(7\)\(c\)\(i\)](#)
- Annex 8 Appendix 4 table 15 word omitted by [S.I. 2022/1273 reg. 83\(7\)\(c\)\(ii\)\(aa\)](#)
- Annex 8 Appendix 4 table 15 word omitted by [S.I. 2022/1273 reg. 83\(7\)\(c\)\(ii\)\(bb\)](#)
- Annex 8 Appendix 1s. 1 point 000.6 word substituted by [S.I. 2022/1273 reg. 83\(7\)\(b\)\(ii\)](#)

- Annex 8 Appendix 8 point 2.1 word substituted by S.I. 2022/1273 reg. 83(7)(d)(iv)
- Annex 8 Appendix 1 words inserted by S.I. 2022/1273 reg. 83(7)(b)(i)(aa)
- Annex 8 Appendix 1 words omitted by S.I. 2022/1273 reg. 83(7)(b)(i)(bb)
- Annex 8 Appendix 8 point 1.4.1 words omitted by S.I. 2022/1273 reg. 83(7)(d)(iii)(bb)
- Annex 8 Appendix 8 point 1.4 words substituted by S.I. 2022/1273 reg. 83(7)(d)(ii)
- Annex 8 Appendix 8 point 2.1 table words substituted by S.I. 2022/1273 reg. 83(7)(d)(v)
- Annex 2 Appendix 2s. 2 point 2 omitted by S.I. 2022/1273 reg. 83(2)(b)(ii)
- Annex 2 Appendix 2 words inserted by S.I. 2022/1273 reg. 83(2)(b)(i)
- Annex 6 Appendix 7 point 1.3 substituted by S.I. 2022/1273 reg. 83(5)(e)(i)
- Annex 6 Appendix 7 point 1.5 image substituted by S.I. 2022/1273 reg. 83(5)(e)(iii)(aa)
- Annex 6 Appendix 7 point 2.1 word substituted by S.I. 2022/1273 reg. 83(5)(e)(iv)
- Annex 6 Appendix 1 words omitted by S.I. 2022/1273 reg. 83(5)(c)
- Annex 6 Appendix 7 point 1.5 words omitted by S.I. 2022/1273 reg. 83(5)(e)(iii)(bb)
- Annex 6 Appendix 2 point 8 words substituted by S.I. 2022/1273 reg. 83(5)(d)
- Annex 6 Appendix 3 point 8 words substituted by S.I. 2022/1273 reg. 83(5)(d)
- Annex 6 Appendix 4 point 8 words substituted by S.I. 2022/1273 reg. 83(5)(d)
- Annex 6 Appendix 5 point 8 words substituted by S.I. 2022/1273 reg. 83(5)(d)
- Annex 6 Appendix 7 point 1.4 words substituted by S.I. 2022/1273 reg. 83(5)(e)(ii)
- Annex 6 Appendix 7 point 2.1 table words substituted by S.I. 2022/1273 reg. 83(5)(e)(v)
- Art. 3(5) omitted by S.I. 2022/1273 reg. 82(4)(a)
- Art. 3(16) words substituted by S.I. 2022/1273 reg. 82(4)(b)
- Art. 3(20) words substituted by S.I. 2022/1273 reg. 82(4)(c)
- Art. 10(1a) inserted by S.I. 2022/1273 reg. 82(8)(b)
- Annex 10a para. 3(f) words inserted by S.I. 2022/1273 reg. 83(9)(a)
- Annex 10a para. 3(f) table words substituted by S.I. 2022/1273 reg. 83(9)(b)(c)
- Art. 12(8) inserted by S.I. 2022/1273 reg. 82(10)