

27 April 2018

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## **Agreement**

### **Concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these United Nations Regulations\***

(Revision 3, including the amendments which entered into force on 14 September 2017)

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#### **Addendum 105 – UN Regulation No. 106**

#### **Revision 2 - Amendment 5**

Supplement 15 to the original version of the Regulation – Date of entry into force: 10 February 2018

#### **Uniform provisions concerning the approval of pneumatic tyres for agricultural vehicles and their trailers**

This document is meant purely as documentation tool. The authentic and legal binding texts is: ECE/TRANS/WP.29/2017/70 (as amended by paragraph 71 of the report ECE/TRANS/WP.29/1131).



**UNITED NATIONS**

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\* Former titles of the Agreement:  
Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958 (original version);  
Agreement concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, done at Geneva on 5 October 1995 (Revision 2).

*Paragraph 1.*, amend to read:

## **"1. Scope**

This Regulation covers new pneumatic tyres \* designed primarily, .....

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\* For the purpose of this Regulation "tyres" means "pneumatic tyres".

*Paragraph 2.1.*, amend to read:

2.1. "Type of agricultural tyre" means tyres which do not differ in such essential characteristics as:

- (a) The manufacturer's name;
- (b) Tyre-size designation;
- (c) Category of use:
  - (i) Tractor - steering wheel;
  - (ii) Tractor - drive wheel - standard tread;
  - (iii) Tractor - drive wheel - special tread;
  - (iv) Implement - traction;
  - (v) Implement - trailer;
  - (vi) Implement - mixed applications;
  - (vii) Forestry machines – standard tread;
  - (viii) Forestry machines – special tread;
  - (ix) Construction applications (IND).
- (d) Structure (diagonal or (bias-ply), bias-belted, radial-ply);
- (e) Speed category symbol;
- (f) Load capacity index;
- (g) Tyre cross-section."

*Insert a new paragraph 2.2.* to read:

"2.2. "Manufacturer" means the person or body who is responsible to the Type Approval Authority (TAA) for all aspects of the type-approval and for ensuring the conformity of production."

*Insert a new paragraph 2.3.* to read:

"2.3. "Brand name/trademark" means the identification of the brand or trademark as defined by the tyre manufacturer and marked on the sidewall(s) of the tyre. The brand name/trademark may be the same as that of the manufacturer."

*Insert a new paragraph 2.4.* to read:

"2.4. "Trade description/commercial name" means an identification of a range of tyres as given by the tyre manufacturer. It may coincide with the brand name/trademark."

Paragraph 2.16., amend the table by adding diameter code 'd' 28.5 as follows:

...

"d" symbol expressed by codes	Value to be used for the calculation in paras. 6.2.1. and 6.4 (mm)
...	...
26.5	673
28.5	724
30.5	775

..."

Renumber paragraphs 2.2. to 2.15.7. (former) as paragraphs 2.5. to 2.18.7.

Paragraph 2.15.8., amend to read:

"2.18.8. The letters "IF" before the nominal section width in case of "Improved Flexion Tyre"."

Insert a new paragraph 2.18.9., to read:

"2.18.9. The letters "VF" before the nominal section width in case of "Very High Flexion Tyre".

Renumber paragraphs 2.15.9. to 2.42. as paragraphs 2.18.10. to 2.45. and in the new paragraph 2.23.1., replace "pneumatic tyre" by "tyre".

Paragraph 2.25. (former 2.22.), amend to read:

"2.25. "Implement tyre" means a tyre designed primarily for agricultural machines or interchangeable towed equipments (vehicles in category S) or for agricultural trailers (vehicles in category R); however it may also equip either front steering wheels and drive wheels of agricultural and forestry tractors (vehicles in category T), but it is not suitable for sustained high torque services; "

Paragraph 2.26. (former 2.23.), amend to read:

"2.26. "Traction tyre" means a tyre designed primarily for the equipment of driven axles agricultural machinery, excluding sustained high torque services. The tread pattern of the tyre generally consists of blocks, lugs or cleats. The type of application is identified with the symbol: "

Paragraph 2.27. (former 2.24.), amend to read:

"2.27. "Trailer tyre" means a tyre designed for the equipment of non-driven (trailed) axles of interchangeable towed equipments, agricultural machinery or trailers;"

Paragraph 2.28. (former 2.25.), amend to read:

"2.28. "Mixed applications tyre" means a tyre designed to be fitted to either driven and non-driven axles of interchangeable towed equipments, agricultural machinery or trailers; "

Paragraph 3.1., amend to read:

"3.1. Tyres submitted for approval shall bear on both sidewalls the following markings:

3.1.1. The manufacturer's name or the brand name/trademark;"

*Insert a new paragraph 3.1.2. to read:*

"3.1.2. The trade description/commercial name (see paragraph 2.4. of this Regulation). However, the trade description is not required when it coincides with the brand name/trademark."

*Paragraph 3.1.2., renumber and amend to read:*

"3.1.3. The tyre-size designation;"

*Renumber paragraphs 3.1.3. to 3.1.3.3. as paragraphs 3.1.4. to 3.1.4.3.*

*Paragraph 3.1.4., renumber and amend to read:*

"3.1.5. The "service description""

*Renumber paragraph 3.1.4.1. as paragraph 3.1.5.1.*

*Paragraph 3.1.4.2., renumber and amend to read:*

"3.1.5.2. In the case of implement tyre for mixed applications, two service descriptions one for "trailer" applications and the other for "traction" applications, each supplemented with the relevant symbol (see paragraphs 2.26. and 2.27. above) as follows:"

*Renumber paragraphs 3.1.5. and 3.1.6. as paragraphs 3.1.6. and 3.1.7.*

*Paragraph 3.1.7., renumber and amend to read:*

"3.1.8. The inscriptions "F-1" or "F-2" or "F-3" in the case of a tractor steering wheel tyre that is not already marked as per paragraph 2.18.6. above; "

*Renumber paragraphs 3.1.8. to 3.1.8.2. as paragraphs 3.1.9. to 3.1.9.2.*

*Paragraph 3.1.9., renumber and amend to read:*

"3.1.10. The inscription "IMPLEMENT" in the case of an implement tyre that is not already marked as per paragraph 2.18.5. above;"

*Delete paragraph 3.1.12.*

*Renumber paragraphs 3.1.10. to 3.1.11. as paragraphs 3.1.11. to 3.1.12.*

*Paragraph 3.1.13., amend to read:*

"3.1.13. The inscription "R-4" in the case of a construction application tyre, identified in Annex 5, Table 9, that is not already marked as per paragraph 2.18.12. above. "

*Delete paragraph 3.2.*

*Insert a new paragraph 3.2. to read:*

"3.2. Tyres submitted for approval shall bear on one sidewall only the following markings: "

*Paragraph 3.3., renumber and amend to read (delete the reference to footnote 2):*

"3.2.1. The date of manufacture in the form of a group of four digits, the first two showing the week and the last two the year of manufacture"

*Paragraph 3.4., renumber and amend to read:*

"3.2.2. The type approval mark, the model of which is given in Annex 2. "

*Paragraphs 3.5. to 3.5.2., shall be deleted*

*Paragraph 3.5.3.*, renumber and amend to read:

"3.3. All markings shall be clearly and legibly moulded and produced as part of the process during manufacture. The use of branding or other methods of marking after completion of the original manufacturing process is not permitted."

*Renumber paragraph 3.6.* as paragraph 3.4.

*Paragraphs 4.1. to 4.1.2.2.*, amend to read:

"4.1. The application for approval of a type of tyre for agricultural and forestry services with regard to this Regulation shall be submitted by the tyre manufacturer or by his duly accredited representative. It shall specify:

4.1.1. The tyre-size designation;

4.1.2. The manufacturer's name;

4.1.2.1. The brand name(s)/trademark(s);

4.1.2.2. The trade description(s)/commercial name(s)."

*In paragraph 5.1.* replace "pneumatic tyre" by "tyre".

*Paragraph 5.2.*, amend to read:

"5.2. An approval number shall be assigned to each type approved. Its first two digits (at present 00, for the Regulation in its original form) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party shall not assign the same number to another type of tyre covered by this Regulation."

*In paragraphs 5.3. and 5.4.*, replace "pneumatic tyre" by "tyre".

*Paragraph 6.1.1.*, amend to read:

"6.1.1. The section width shall be obtained by means of the following formula:

$$S = S1 + K (A - A1),$$

Where:

S is the "section width" rounded to the nearest millimetre related to the measuring rim;

S1 is "the nominal section width" in mm, as shown on the sidewall of the tyre in the tyre designation as prescribed;

A is the width (expressed in mm)<sup>4</sup> of the measuring rim, as shown by the manufacturer in the descriptive note;

A1 is the width of the theoretical rim; it is taken to equal S1 multiplied by the factor X as specified by the tyre manufacturer; and K is taken to equal 0.4."

*Paragraph 6.2.1.*, amend to read:

"6.2.1. Except as provided by paragraph 6.2.2., the outer diameter of a tyre is calculated by the following formula:

$$D = d + 2 H$$

Where:

D is the outer diameter expressed in mm;

D is the conventional number denoting the nominal rim diameter expressed in mm (see paragraph 2.16.);

H is the nominal section height rounded to the nearest millimetre and is equal to:

$$H = 0.01 \cdot Ra \cdot S1$$

Where:

Ra is the nominal aspect ratio;

S1 is the "nominal section width" in mm.

All as shown on the sidewall of the tyre in the tyre-size designation in conformity with the requirements of paragraph 2.15."

*Paragraph 6.3.2., amend to read:*

"6.3.2. The overall width of a tyre may not exceed the section width determined pursuant to paragraph 6.1. by more than the following:

Radial construction: +5 per cent

Diagonal (bias) construction: +8 per cent

Calculated value to be rounded to the nearest mm"

*Paragraph 6.4.1., amend to read:*

"6.4.1. The outer diameter of a tyre must not be outside the values D min and D max obtained from the following formulae:

$$D \text{ min} = d + 2 \cdot H \text{ min}$$

$$D \text{ max} = d + 2 \cdot H \text{ max}$$

Where

Hmin = H • a , rounded to the nearest mm

Hmax = H • b , rounded to the nearest mm

"H" and "d" are as defined in paragraph 6.2.1.

Coefficients "a" and "b" are specified in paragraph 6.4.2."

*In paragraphs 8.1., 9.1. and 10., replace "pneumatic tyre" by "tyre".*

*Paragraphs 11.1. to 11.3., amend to read:*

"11.1. The Contracting Parties to the 1958 Agreement which apply this Regulation shall communicate to the United Nations Secretariat the names and addresses of the Technical Services responsible for conducting approval tests and, where applicable, of the approved test laboratories and of the Type Approval Authorities which grant approval and to which forms certifying approval, or extension of approval, or refusal of approval or withdrawal of approval or production definitively discontinued, issued in other countries, are to be sent.

11.2. The Contracting Parties to the 1958 Agreement which apply this Regulation may designate laboratories of tyre manufacturers as approved test laboratories.

11.3. Where a Contracting Party to the 1958 Agreement applies paragraph 11.2. above, it may, if it so desires, be represented at the tests by one or more persons of its choice."

Annex 1, amend to read:

## "Communication

.....

of a type of tyre for agricultural vehicles pursuant to UN Regulation No. 106"

Item 1. amend to read:

"1. Manufacturer's name and address :....."

Item 2. amend to read:

"2. Tyre type designation<sup>3</sup>....."

2.1. Brand-name(s)/trademark(s): .....

2.2. Trade description(s)/ Commercial name(s): ....."

Delete item 3.

Renumber items 4. to 5.2. as items 3. to 4.2.

Item 5.3., renumber and amend to read:

"4.3. Structure: diagonal or bias-ply/bias belted/radial<sup>2</sup>"

Renumber paragraphs 5.4 to 14. as paragraphs 4.4. to 13.

Insert Footnote 3, to read:

"\_\_\_\_\_

<sup>3</sup> A list of brand name(s)/trademark(s) or Trade description(s)/ Commercial name(s) may be annexed to this communication. "

Annex 2, amend to read:

"...

The above approval mark affixed to a tyre shows that the type of tyre concerned has been approved in the Netherlands (E 4) pursuant to UN Regulation No. 106 under approval number 002439.

..."

Annex 5

Table 4, amend to read:

### "Drive wheel tyres for agricultural tractors - Low section series

Tyre size designation (I)	Theoretical rim width code (A1)		Nominal section width (S1) (mm)		Overall diameter (D) (mm)	Nominal rim diameter (d)(mm)
		IF / VF		IF / VF		
300/70R20	9		295		952	508
320/70R20	10		319		982	508
320/70R24	10		319		1 094	610
320/70R28	10		319		1 189	711
360/70R20	11		357		1 042	508

Tyre size designation (1)	Theoretical rim width code (A1)		Nominal section width (S1) (mm)		Overall diameter (D) (mm)	Nominal rim diameter (d)(mm)
		IF / VF		IF / VF		
360/70R24	11		357		1 152	610
360/70R28	11		357		1 251	711
380/70R20	12	13	380	379	1 082	508
380/70R24	12	13	380	379	1 190	610
380/70R28	12	13	380	379	1 293	711
420/70R24	13	14	418	415	1 248	610
420/70R28	13	14	418	415	1 349	711
420/70R30	13	14	418	415	1 398	762
480/70R24	15	16	479	475	1 316	610
480/70R26	15	16	479	475	1 372	660
480/70R28	15	16	479	475	1 421	711
480/70R30	15	16	479	475	1 478	762
480/70R34	15	16	479	475	1 580	864
480/70R38	15	16	479	475	1 681	965
520/70R26	16	18	516	521	1 456	660
520/70R30	16	18	516	521	1 536	762
520/70R34	16	18	516	521	1 640	864
520/70R38	16	18	516	521	1 749	965
580/70R38	18	20	577	580	1 827	965

(1) "Improved flexion tyres" are identified by means of the letters "IF" added in front of the size designation (e.g. IF480/70R38) ; "Very high flexion tyres" are identified by means of the letters "VF" added in front of the size designation (e.g. VF480/70R38) – see paragraphs 2.18.8. and 2.18.9. of this Regulation."

Table 7, add the following entries:

"

Tyre size designation	Theoretical rim width code (A1)	Nominal section width (S1) (mm)	Overall diameter (D) (mm)	Nominal rim diameter (d) (mm)
...				
24X8.00-12	6.5	204	610	305
24X10.00-12	8	254	610	305
26X8.00-12	6.5	204	660	305
26X8.00-14	6.5	204	660	356
27X10.00-14	8	254	686	356
27X12.00-14	9.5	304	686	356
28X9.00-14	7	227	711	356
28X10.00-12	8	254	711	305
28X10.00-15	8	254	711	381



<i>Tyre size designation</i>	<i>Theoretical rim width code (A1)</i>	<i>Nominal section width (S1) (mm)</i>	<i>Overall diameter (D) (mm)</i>	<i>Nominal rim diameter (d) (mm)</i>
28X11.00-14	9	281	711	356
28X11.00-15	9	281	711	381
28X12.00-12	9.5	304	711	305
29X9.00-14	7	227	737	356
29X9.00-15	7	227	737	381
29X9.00-16	7	227	737	406
29X9.50-15	7.5	240	737	381
29X11.00-14	9	281	737	356
29X11.00-16	9	281	737	406
30X9.00-14	7	227	762	356
30X10.00-14	8	254	762	356
30X10.00-15	8	254	762	381
30X11.00-14	9	281	762	356
31X10.00-17	8	254	787	432
32X10.00-16	8	254	813	406
32X10.00-18	8	254	813	457
...				

Table 9, add the following entry:

"

<i>Tyre size designation</i>	<i>Theoretical rim width code (A1)</i>	<i>Nominal section width (S1) (mm)</i>		<i>Overall diameter (D) (mm)</i>		<i>Nominal rim diameter (d) (mm)</i>
		<i>Radial</i>	<i>Diagonal</i>	<i>Radial</i>	<i>Diagonal</i>	
...						
11L-16 IND	8	290		850		406
...						

Annex 11

In the pictogram, the unit, amend to read:

"250 kPa MAX"