

Comments on tyre choosing of UN Regulation No. 51-03

Introduction

Tyres are very important in pass-by noise test, thus there are lots of requirements on tyres in UN Regulation No.51-03, including tyre sizes, tyre pressure, tyre tread depth, commercial available on the market and excluding certain tyre tread pattern during the noise test.

China was also persuaded to exclude these tyre tread patterns during the noise test by several NGOs. But with the research in advance, more questions was found which need common solutions in the vehicle and tyre regulations.

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Footnote of Regulation No. 51-03 on tyre

Annex 3

2.2.2.

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The tyres to be used for the test shall be representative for the vehicle and shall be selected by the vehicle manufacturer and recorded in Addendum to the Communication form (Annex 1, Appendix 1). They shall correspond to one of the **tyre sizes** designated for the vehicle as original equipment. The tyre is or will be **commercially available** on the market at the same time as the vehicle¹. The tyres shall be inflated to the **pressure** recommended by the vehicle manufacturer for the test mass of the vehicle. The tyres shall have at least 1.6 mm **tread depth**.

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¹ Given that the tyre contribution for overall sound emission is significant, regard shall be given for existing regulatory provisions concerning tyre/road sound emissions. **Traction tyres, snow tyres** and **special-use tyres** as defined in **paragraph 2. of Regulation No. 117** shall be excluded during type-approval and conformity of production measurements at the request of the manufacturer in accordance with Regulation No. 117.

Tread pattern types in UN Regulation No. 117

2. Definitions

For the purpose of this Regulation, in addition to the definitions contained in Regulations **No. 30** and **54**, the following definitions apply.

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2.10. "**Traction tyre**" means a tyre in class C2 or C3 bearing the inscription TRACTION and intended to be fitted primarily to the drive axle(s) of a vehicle to maximize force transmission in various circumstances.

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2.11. "**Snow tyre**" means a tyre whose tread pattern, tread compound or structure is primarily designed to achieve in snow conditions a performance better than that of a normal tyre with regard to its ability to initiate or maintain vehicle motion.

2.11.1. "**Snow tyre for use in severe snow conditions**" means a snow tyre whose tread pattern, tread compound or structure is specifically designed to be used in severe snow conditions and that fulfils the requirements of paragraph 6.4. of this Regulation.

2.12. "**Special use tyre**" means a tyre intended for mixed use both on- and off-road or for other special duty. These tyres are primarily designed to initiate and maintain the vehicle in motion in off-road conditions.

2.13. "**Professional off-road tyre**" is a special use tyre primarily used for service in severe off-road conditions.

Differences between No. 117 and No. 30 (54)

Items	No. 117	No. 30 (54)	Remarks
Traction tyre	Yes	No	C2 or C3 bearing the inscription " <u>TRACTION</u> "
Snow tyre	Yes	Yes	----
Snow tyre for use in severe snow conditions	Yes	No	Belongs to "snow tyre" in No.117 (2.11. and 2.11.1.)
Special use tyre	Yes	Yes	"special - use tyre" ≠ "special use tyre"
Professional off-road tyre	Yes	Yes	Do not belongs to "Special use tyre" in No.117 (2.12. and 2.13.) and belongs to "Special use tyre" in No.30 (2.4. and 2.4.1.) and No.54 (2.2.3. and 2.2.3.1.)

How to decide the tread pattern types?

1. Traction tyre

- Bearing the inscription “TRACTION” on sidewall (No.117, 4.2.5.).
- Requirements of “traction tyre” (No.117, 6.5.1.).

2. Snow tyre

- No markings in No.117, and “M+S” on sidewall (No. 30 and No. 54)
- No special requirements but only for C2 and C3 “stage 1 noise limits” (No.117, 6.1.2. and 6.1.3.) .

3. Snow tyre for use in severe snow conditions

- Bearing the inscription “Alpine symbol” on sidewall (No.117).
- Requirements of “Snow tyre for use in severe snow conditions” (No.117, 6.1., 6.2., 6.3., 6.4.).

4. Special use tyre

- Bearing the inscription “MPT”, “ML”, “ET” or “POR”.
- Requirements of “special” (No.117, 6.1., 6.2., 6.3., 6.6.).

5. Professional off-road tyre

- Bearing the inscription “POR”(No.117.)
- Requirements of “special” (No.117, 6.1., 6.2., 6.3., 6.6., 6.7.).

Several examples of tread patterns and markings

Normal	Traction	Snow	Alpine	Special	POR
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Problems in UN No. 30, 51, 54 and 117

1. No. 30

- No definition on “Snow tyre for use in severe snow conditions”.

2. No. 51

- How to decide the tread pattern?
- The exempt for “Snow tyre” is not necessary.
- Potential risk of losing control of “Snow”, “Traction” and “Special” tyres.
- “Special-use tyres” should be “Special use tyres”.

3. No. 54

- No definition on “Snow tyre for use in severe snow conditions”.
- No definition on “Traction tyre”.

4. No. 117

- " 2.13. *Professional off-road tyre*" should be “2.12.1. *Professional off-road tyre*”.
- Potential risk of losing control of “Snow tyres”.

Conclusions

- The exempt range for tyres during UN Regulation No. 51 type approval and COP should be re-considered.
- The markings of tyres should be clear, unique and provide enough information, which will support the type approval and COP of complete vehicles.
- The related UN Regulation No. 30, 54 and 117 should have an amendment for reason of wording, technology and harmonization.



Thanks for your attention



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