European Tyre and Rim
Technical Organisation

Brussels, October 10 2022

To: European Commission DG ENER

ETRMA/ETRTO/BIPAVER proposal for EU labeling for retreaded commercial vehicle tyres (C3 tyres)

Tyre and Retread Industry support the intention of European Commission of establishing a labelling for Commercial Vehicles (C3) retreaded tyres, assuming that suitable measurement methods can be defined.

Tyre and Retread Industry studied sustainable schemes allowing to label the C3 retreaded tyres, these retreaded commercial vehicle tyres having an important market share.

ETRMA, ETRTO and BIPAVER are glad to provide you with this letter the European tyre and retread industry proposal for C3 vehicle tyre retread labeling.

In its approach, Tyre and Retread Industry identified the following needs for suitable labelling for C3 retreaded tyres:

- Provide relevant information to end users and public authorities,
- Promote circular economy,
- Positive contribution to the EU CO2 targets, while preserving safety,
- Economical and technical feasibility (considering that SME's are representing important part of the retread business)

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Tyre and Retread Industry made a feasibility assessment (*) for a retread labeling for C3 retreaded tyres for the following performances:

- Wet grip
- External Noise
- Rolling Resistance

(*) studies performed in 2015-2018, 400 tyres tested, 400k€

For the **Wet Grip** performance, it has been demonstrated that

- the casing design and manufacturing process have a **low impact** on the wet grip performance of the C3 retreaded tyres.
- the tread has a high impact on the wet grip performance of the C3 retreaded tyre.

This means that for **Wet Grip** it is possible to use the **same label classes** as for the new tyre.

For the **External Noise** performance, it has been demonstrated that

- the casing design and manufacturing process have a low impact on the external noise performance of the C3 retreaded tyre.
- the tread has a high impact on the external noise performance of the C3 retreaded tyre.

This means that also for **External Noise** it is possible to use the same label classes as for the new tyre and it is possible to use the same measure and label than identical new tread.

For the **Rolling Resistance (RR)** performance, the test have shown that:

- The **casing design and manufacturing** process have a **high impact** on the rolling resistance performance of the C3 retreaded tyre.
- The **tread** has a **high impact** on the rolling resistance performance of the C3 retreaded tyre.

For the above mentioned reasons, it is not possible to use the same label classes as for the new tyre for C3 retreaded tyre performance.

The study made by ETRTO and BIPAVER has pointed out 3 major parameters that have an impact on the Rolling Resistance retread labeling:

- **Casing**: Casing brand is the major variation source for casing RR with a Casing impact Standard Deviation on RR = **0.35 N/kN**
- **Manufacturing process**: Buffing Radius, Curing temperature and Cushion gauge can have high impact on the rolling resistance performance. Manufacturing process impact Standard Deviation on RR = **0.28 N/kN**
    - Total casing + process variation coming from external factors is:

- $\sigma_{total} = \sqrt[2]{{\sigma_{casing}}^2 + {\sigma_{process}}^2}$ = $(0.35^2+0.28^2)^{0.5}$ = **0.45 N/kN**

  Therefore a bandwidth of 3 times the external variation of **1.5N/kN** and a bandwidth **tolerance of 0.7 N/kN** is **technically needed.**

- **Tread:** The RR of the tread impact can be calculated by subtracting the RRc of the casing of the RRc from the retreaded tyre. For this purpose, a Standard Buffing Process has been prepared.

Considering the above-mentioned assessment, Tyre and Retread Industry propose a C3 retread labeling scheme for **Wet grip** and **External Noise equivalent as the labeling scheme for new tyres.**

However, for **Rolling Resistance**, the labeling of a C3 retreaded tyre is either:

- measured with a representative casing or
- calculated by adding:
  - Rolling Resistance of the added tread and related process

    +
  - Rolling Resistance of the average of the casing size (or group of sizes) coming from retreader measurements or from European casing data base (see proposal in appendix)

As for Rolling Resistance the Retread labeling scheme is not exactly the same as for new tyres, a specific naming of the classes would apply "**RA, RB, RC, RD**" with the following scheme:

Label for new tyre		Label for retreaded tyre	
A	<= 4	RA	<= 4.5
B	4.1 ~ 5	RB	4.5~6
C	5.1 ~ 6		
D	6.1 ~ 7	RC	6.1~7.5
E	>= 7.1		
		RD	>= 7.6
Verification tol: 0.3		Verification tol: 0.7	

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Market surveillance approach proposal is widely presented in the technical report (provided to the Commission services).

In conclusion, Tyre and Retread Industry technical study and feasibility assessment has delivered a labelling proposal for Commercial retreaded tyres for Wet Grip, External Noise, and Rolling Resistance, with the aim to determine an appropriate label, band width and verification tolerance.

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Appendix

1. ETRTO and BIPAVER assessment for the most representative C3 retreaded tyre sizes in Europe.

TOP 12 C3 retreaded tyre sizes are representing more than 97% of the total C3 retread market.

	EU retreaded tyre market	
tyre size		
315/80R22.5	26,27%	1
315/70R22.5	19,07%	2
385/65R22.5	17,65%	3
295/80R22.5	9,55%	4
275/70R22.5	7,87%	5
385/55R22.5	5,05%	6
13R22.5	4,33%	7
295/60R22.5	2,30%	8
265/70R19.5	2,24%	9
315/60R22.5	1,92%	10
445/45R19.5	1,73%	11
435/50R19.5		12
top 12 retread tyre sizes	97,97%	

2. Gantt to perform the casing average RRc assessment

Tyre and retread Industry share their experience with regards to the testplan to establish the average casing RRc for the top sizes.

phase	description		Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
1	tyre size definition								
2	tyre selection (size, application, brand, age, ...)								
3	select casing provider								
4	order and delivery of casings by casing handler								
5	selection of service provider for	tyre preparation							
		testing							
6	casing preparation (standard buffing process)								
7	testing (Rolling Resistance)								
8	postprocessing								

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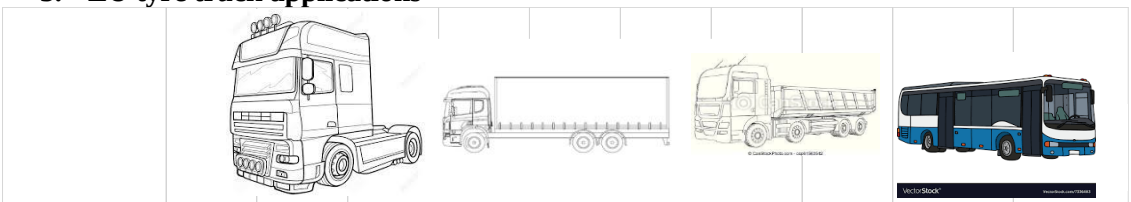
3. EU tyre truck applications



	tractor			rigid			dumper		urban bus	
tyre size	steer	drive	lift axle	steer	drive	lift axle	steer	drive	steer	drive
385/65 R 22.5	X		X	X		X	X			
315/80 R 22.5	X	X	X	X	X		X	X		
315/70 R 22.5	X	X	X	X	X					
295/80 R 22.5	X	X	X	X	X	X				
385/55 R 22.5	X		X	X		X	X			
215/75 R 17.5				X	X					
13/NA R 22.5							X	X		
275/70 R 22.5									X	X
265/70 R 19.5				X	X	X				
245/70 R 17.5				X	X	X				
235/75 R 17.5				X	X	X				
315/60 R 22.5	X	X	X	X	X	X				
285/70 R 19.5				X	X	X				
295/60 R 22.5	X	X	X	X	X	X				
225/75 R 17.5				X	X					
245/70 R 19.5				X	X	X				
435/50 R 19.5										
205/75 R 17.5				X	X					
445/45 R 19.5										

	coach			Trailer	Semi-trailer		Retread position		
tyre size	steer	drive	lift axle				drive	trailer	lift axle
385/65 R 22.5				X	X			X	X
315/80 R 22.5	X	X					X		X
315/70 R 22.5							X		X
295/80 R 22.5	X	X					X		X
385/55 R 22.5				X	X			X	X
215/75 R 17.5					X		X	X	
13/NA R 22.5							X		
275/70 R 22.5				X	X		X	X	
265/70 R 19.5				X	X		X	X	X
245/70 R 17.5				X	X		X	X	X
235/75 R 17.5				X	X		X	X	X
315/60 R 22.5							X		
285/70 R 19.5				X	X		X	X	X
295/60 R 22.5							X		
225/75 R 17.5							X		
245/70 R 19.5				X	X		X	X	X
435/50 R 19.5				X	X			X	
205/75 R 17.5				X	X		X	X	X
445/45 R 19.5				X	X			X	

Retreaded tyres can use casings from all positions, but are usually used on drive, trailer or lift axle positions.