

Guideline for tyre labeling to promote the use of fuel efficient tyres (labeling system)

The purpose of this guideline is to establish: a tyre grading system that is based on both the tyre RR and Wet Grip performance; a definition of the fuel efficient tyre that complies with a certain level of tyre RR and Wet Grip performance; and a labeling system that provides appropriate information on tyres to the consumer as an implementation program of the fuel efficient tyre use promotion which is framed by the Fuel-Efficient Tire Promotion Council.

1. Scope

This guideline applies to summer-use tyres for passenger vehicles that are purchased as replacement tyres by consumers at a tyre dealer etc.

2. Terms and Definitions

1) Fuel efficient tyres

A tyre with an RRC that is not more than the RRC specified in section 4 and which has an adequate performance level from a safety standpoint.

2) Rolling Resistance (RR)

Loss of energy (or energy consumed) per unit of distance traveled.

Note: The International System of Units (SI) unit conventionally used for the rolling resistance is "N·m/m", which is equivalent to a drag force in "N".

3) Rolling Resistance Coefficient (RRC)

Ratio of the rolling resistance to the load on the tyre.

Note: The rolling resistance is expressed in "N" and the load is expressed in "kN". Although the rolling resistance coefficient is dimensionless, in section 3, it is conventionally expressed in N/kN.

4) Wet Grip performance

Grip performance of tyres on a wet-paved surface. (Grip performance when braking, etc)

Note: Wet Grip performance shall be measured based on ISO 23671 and Wet Grip performance shall be calculated based on comparisons of the subject tyre and the reference tyre. In section 3, the Wet Grip Index calculated by ISO 23671 is multiplied by 100.

5) RRC alignment (alignment between test machines) method

A method for correlating RRC measurement results which allows for inter-laboratory comparisons between the reference machine and candidate machine(s) using two predetermined alignment tyres.

6) Alignment tyres

Two predetermined tyres measured by both the candidate and reference machines to perform machine alignment.

Note: The alignment is valid for two years.

Reference tyre for Wet Grip performance test

Special test tyre used as a benchmark in an evaluation program to correct impacts on measuring data caused by differences in road characteristics and testing environments.

3. Grading system

The tyre grading system shall be as follows:

Unit(N/kN)		Unit(-)	
RRC	Grade	Wet Grip performance (G)	Grade
$RRC \leq 6.5$	AAA	$155 \leq G$	a
$6.6 \leq RRC \leq 7.7$	AA	$140 \leq G \leq 154$	b
$7.8 \leq RRC \leq 9.0$	A	$125 \leq G \leq 139$	c
$9.1 \leq RRC \leq 10.5$	B	$110 \leq G \leq 124$	d
$10.6 \leq RRC \leq 12.0$	C		

4. Performance requirements for fuel efficient

tyres RRC: Not more than 9.0

Wet Grip performance shall be within the grading system stipulated in section 3.

5. Labeling method (Display)

The grading system prescribed in section 3 shall be disclosed to the consumer upon the sale of the tyres and, at the same time, the grades of the tyres shall be published in catalogs, on web pages etc. by the format (draft) shown below.

In addition, for fuel efficient tyres that meet the requirements specified in section 4, “the unified fuel efficient tyre mark” shall also be indicated on the label.

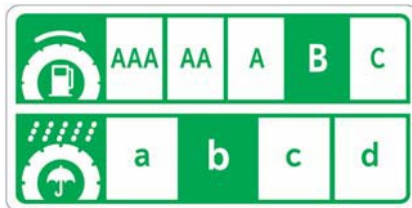
Labeling cannot be applied to tyres which do not satisfy the RRC or Wet Grip grades of the grading system specified in section 3

【Examples of display】

Fuel efficient tyre



Non fuel efficient tyre



【Meaning of marks】



... Standardized mark for fuel efficient tyres



... Rolling Resistance performance



... Wet grip performance

6. Test method

- 1) For RRC, ISO 28580, Passenger car, truck and bus tyres - Methods of measuring rolling resistance - Single point test and correlation of measurement results, shall be applied.
- 2) For Wet Grip performance, ISO 23671, Passenger car tyres — Method for measuring relative wet grip performance — Loaded new tyres, shall be applied

7. Application Period

The provision of consumer information regarding the labeling system based on this guideline shall be applied to tyres by each manufacturer. The application shall begin from January 2010 in voluntary stages.

8. Others

1) Credibility

a) Management of RR test facilities

The quality management standard of ISO/ICE 17025 shall be applied.

b) Alignment method of RRC

For the time being, the alignment of measured RRC shall be conducted by the RRC alignment method with the reference test machine selected from the JATMA members listed in Appendix.

c) Wet Grip performance

Wet Grip performance shall be measured based on ISO 23671 and Wet Grip performance shall be calculated based on comparisons of the subject tyre and the reference tyre. The Wet Grip Index calculated by ISO 23671 is multiplied by 100.

d) Submission of data

Each tyre manufacturer shall submit its data(test results for representative tire sizes) as evidence to the Tire Fair Trade Council in accordance with The Fair Competition Code and The Enforcement Rules of the Fair Competition established by the Tire Fair Trade Council and based on the Act against Unjustifiable Premiums and Misleading Representations.

2) How to inform consumers

Educate consumers about fuel efficient tyres, grading definitions and the contents of the grading display through manufacturer product catalogs, web pages and the labels attached to tyres.

3) Revision and amendment of the guideline

Revised and amended as necessary while taking into consideration consumer awareness of fuel efficient tyres, advances in technology and adjustment conversions of other countries.

[Supplementary Provisions]

1. When ISO 28580 and ISO 23671 are revised, the test will be performed according to the revised version, but the period from the current version to the revised version is 6 months from the date of issue of the revised version.
2. The revision history, issuance date and application start date of this document are shown in the table below.

Revision	Issue date	Start of application
1st edition	December 4, 2009	January 1, 2010
2nd edition	November 4, 2020	March 1, 2021

The RRC alignment method

“Alignment” is a method of aligning values of rolling resistance (RR) measured by different test methods or test machines, utilizing two predetermined tyres (alignment tyres).

Alignment is conducted using the regression formula below. The regression formula is derived from rolling resistance coefficient (RRC) of a set of two alignment tyres, which have different RRC, measured by both a determined reference machine and a candidate machine.

$$RRC_{Ref} = A_n \times RRC_{Can-n} + B_n$$

RRC_{Ref} : RRC value aligned with a reference machine RRC

$Can-n$: RRC value measured by a candidate machine-n

With this regression formula, RRC values measured by a candidate machine are aligned with those of a reference machine.

ISO 28580 also specifies the followings:

- Conditions for the reference and candidate machines
- Alignment tyre requirements
- Alignment procedure

Correlation of RRC between the reference machine and the candidate machine

