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| Issued: | Enters into force: | Validity:Until further notice |
| Legal basis:Vehicles Act (82/2021), section 16, subsection 7; section 44, subsection 55; section 48, subsection 5; section 49, subsection 3; and section 66, subsection 8. |
| Provisions on sanctions for operations violating this Regulation are laid down in: Vehicle Act (82/2021) Sections 10-11  |
| Implemented EU legislation: |
| Modification details:Repeals the Finnish Transport and Communications Agency's Regulation on technical requirements for and type-approval of studded tyres for vehicles (TRAFICOM/220809/03.04.03.00/2019) issued on 10 February 2021. |

Technical requirements for and type-approval of studded tyres for vehicles

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# Scope of application

With this Regulation, the Finnish Transport and Communications Agency issues under the Vehicles Act (82/2021) provisions on technical requirements for studs and studded tyres allowed to be used in road traffic and on technical means to demonstrate the compliance of studs.

Separate provisions on controlling the conformity of the production of studs and tyre–stud combinations shall apply unless otherwise provided in this Regulation.

In addition, this Regulation lays down further provisions on the reports issued by recognised experts and the contents of test certificates.

This Regulation applies to the national type-approval (*type-approval*) of studs used in the tyres of category M and N vehicles and their trailers as well as the type-approval of studded tyres used in the aforementioned vehicle categories. The general requirements specified in this Regulation concerning studded tyres and their studs apply to all tyres intended for road use, unless the stud or tyre–stud combination has been separately type-approved in accordance with this Regulation. The requirements of the Regulation are not applied, however, where studs or studded tyres are to be used in a light automated cargo carrier, in a bicycle or the trailer of a bicycle, in a tractor with a maximum design speed not exceeding 40 km/h, mobile machinery or the trailer of a tractor or mobile machinery.

The granting of type-approval is subject to the condition that the applicant for approval presents a proof of compliance drawn up by a recognised expert on the fulfilment of the requirements of this Regulation for either the tyre–stud combination or, alternatively, the stud type used in the tyre. For Class C3 tyres, type-approval may be granted only to the type of stud used.

# Definitions

For the purposes of this Regulation:

1) *stud* means a piece of equipment that is designed to be used on a vehicle tyre and may be fitted to the tread of the tyre either when the tyre is manufactured or after the fact. Its purpose is to improve the traction of the tyre on icy surfaces;

2) *studded tyre* means a vehicle tyre with studs attached to its tread;

3) *road wear test* means the testing of a studded tyre in accordance with the standard SFS 7503:2018:en or with a measurement procedure that fulfils the national requirements equivalent to that standard laid down by a Member State of the European Economic Area;

4) *tyre rolling circumference* means the distance (m) travelled by a new, loaded tyre in one revolution as defined in a relevant publication of the European tyre standards organisation referred to in Appendix 4 to Annex 6 to UN Regulation No. 117;

5) *stud protrusion* means the perpendicular distance (mm) between the parallel levels determined by the tread surface around the stud installed in a tyre and the outermost tip of the stud;

6) *static stud force* means the force applied to the probe when the measuring device is pressed perpendicular to the tip of a stud in a tyre until the stud has sunk to the level of the tyre tread surface;

7) *test stone* means a piece of stone used in a road wear test that is exposed to the wear caused by studded tyres during the test;

8) *reference stone* means a piece of stone that is used as a baseline for test stones in a road wear test; during the test, the reference stone is stored underwater in a container and is not exposed to the wear caused by studded tyres;

9) *passenger car tyre* means a Class C1 tyre in accordance with the tyre class definition specified in the 02 series of amendments to UN Regulation No. 117;

10) *commercial vehicle tyre* means a Class C2 or C3 tyre in accordance with the tyre class definition specified in the 02 series of amendments to UN Regulation No. 117;

11) *tyre–stud combination type* means, in connection with the type approval of studded tyres, a range of tyre–stud combinations where the tyres do not differ in the following essential characteristics:

1. name of tyre manufacturer;
2. tyre class (C1 or C2);
3. tyre structure, if the difference would have an unfavourable effect on road surface wear;
4. tread pattern model;
5. stud model and name;
	1. stud fabrication materials;
	2. main dimensions and masses of the studs;
6. maximum number of studs per one metre of tyre rolling circumference in the tyre sizes covered by the type of tyre–stud combination;
7. target protrusion for stud installation;

12) *stud type* means studs that do not differ in the following essential characteristics:

1. model name;
2. name of manufacturer;
3. fabrication materials;
4. dimensions;
5. mass;

# General requirements for studded tyres and studs that are not required to be type-approved

The requirements of this section shall apply unless legal provisions require type-approval for studs used in a vehicle tyre or a tyre–stud combination.

A studded tyre may include a maximum of 50 studs per one metre of tyre rolling circumference. A tyre designed for a category L vehicle, a bicycle or a light electric vehicle or a trailer for such vehicles may, however, have a maximum of 100 studs per one metre of tyre rolling circumference.

The mass of studs inserted into a tyre to be used in a vehicle with a maximum classification mass of 3,500 kg or less must not exceed 3.0 g. In this case, the average protrusion of studs when installed in the tyre must not exceed 2.0 mm. Similarly, the mass of studs inserted into a tyre to be used in a vehicle with a maximum classification mass of more than 3,500 kg must not exceed 5.0 g and the average protrusion of the studs when installed in the tyre must not exceed 2.5 mm.

# Type-approval of studded tyres

## Tyre–stud combination requirements, testing and limit values

The type-approval of tyre–stud combinations for Class C1 tyres for passenger cars and Class C2 tyres for commercial vehicles is based on a road wear test conducted in accordance with the standard SFS 7503:2022:en, or with a measurement procedure that fulfils the national requirements equivalent to that standard laid down by a Member State of the European Economic Area, unless otherwise provided below or in Annex 1. All measurement results are to be reported in accordance with the model report in Annex 3 and the related conditions.

The type-approval of a tyre–stud combination requires that, based on a test report prepared by a recognised expert who has been appointed for the tests in question, it can be determined that the tyre–stud combination complies with the requirements of this Regulation. The type-approval process for tyre–stud combinations utilises the applicable road wear test limit values, set out in Table 1, for the tyre load capacity (LI category) in question and the requirements for the tyre–stud combination used in the test as set out in Table 2.

The holder of the type-approval must ensure that all variations of the tyre–stud combination, studs and the quality of the studding used in the said type that it manufactures meet the requirements of this Regulation. When a tyre–stud combination complying with this Regulation is placed on the market, it must meet also the stud protrusion requirements specified in Table 2.

1. Maximum permissible road wear during the different phases of the implementation of the Regulation

 (reference-corrected average value of test stone wear per row):

|  |  |  |
| --- | --- | --- |
| Tyre load capacity  | phase A (200 overruns) | phase A+ (200 overruns) |
| Load rating under 600 kg | 0.9 g | Least favourable tyre option:Limit value [g] = (0.0152 \* LI) - 0.4848 |
| Load rating 600–800 kg | 1.1 g |
| Load rating over 800 kg | 1.4 g |
| Class C2 tyre | 1.8 g  | Least favourable tyre option: Limit value [g] = (0.0076 \* LI) + 0.7 |

1. Stud protrusion requirements for type-approval and placing on the market a tyre–stud combination in accordance with the requirements for phase A or A+ road wear:

|  |  |
| --- | --- |
| 1. Maximum permissible deviation of the average stud protrusion of the tyre from the target protrusion determined by the manufacturer (%)
 | +- 10% |
| 1. Maximum permissible deviation of the protrusion of a single stud from the average protrusion of the studs in the tyre in question (%)
 | +- 30% |
| 1. By way of derogation from point (a) above, if the target protrusion determined by the manufacturer is less than 0.5 mm, the maximum permissible deviation of the average stud protrusion of the tyre from the target protrusion may be at the most (mm)
 | +- 0.1 mm  |

Average stud protrusion is determined in accordance with the standard SFS 7503:2022:en based on 20 consecutive studs on the tyre.

The primary requirement is that the results of the road wear test must be at least 10 per cent below the permissible maximum limit value for road wear specified in Table 1. In other cases, the granting of type-approval requires that the road wear test results of two consecutive tests for the tyre–stud combination in question does not exceed the maximum permissible value for road wear.

The minimum, maximum and average stud forces of the studs used in the tyres that are to be tested must be measured before the road wear measurement but after the stud protrusion test preceding it. The measurement conditions and measurement procedures must be the same as those specified in section 5.2, subsections a.5., a.6., b.1.– b.3. When measuring stud forces, tyre pressure must be as shown in Table 1 of standard SFS 7503:2022:en.

**Phase A requirement compliance and limit values:**

For type-approval in accordance with the limit values applied in phase A of the implementation of this Regulation (Table 1), the tyres that represent the most common tyre size on the market, specified in Annex 1, must be tested for each load capacity range covered by the studded tyre in question.

**Phase A+ requirement compliance and limit values:**

In a road wear test that is conducted according to the limit values specified for phase A+ (Table 1), the test vehicle may only be powered by its front axle. When testing Class C2 tyres for commercial vehicles, however, a vehicle only powered by its rear axle may also be used in the test.

For type-approval in accordance with the limit values applied in phase A+ of the implementation of this Regulation, the test must be performed on at least one alternative to the tyre–stud combination assessed to be the least favourable for the road wear test. The type-approval is granted on the basis of the measurement results of the least favourable alternative.

The tyre that is considered the least favourable alternative for the road wear test is the tyre of the same tyre–stud combination type with the highest number of studs per metre of tyre rolling circumference, unless some other tyre is assessed to be less favourable by a recognised expert or the type-approval authority. In any such case where, based on the number of studs mentioned above, a test tyre need be selected from two or more tyre sizes in the same tyre class, the selected tyre must represent the size and load capacity rating estimated to have the highest number of studded tyres in use on Finnish roads in winter at the time of the type-approval.

## Type-approval markings on tyres and extending an approval

Before a type-approved tyre–stud combination is placed on the market, it must be fitted with an Annex 2-compliant type-approval sticker on the side or tread of the tyre, and said sticker must contain the markings for the type-approval in question. Misleading and unfounded type-approval markings are prohibited. The sticker may be removed when the tyre–stud combination is mounted onto the rim.

In accordance with section 51, subsection 1 of the Vehicles Act, the holder of a type-approval must inform the approval authority of any changes made to a type-approved vehicle, system, component, separate technical unit, part or equipment. The type-approval of a tyre–stud combination may be extended upon separate application if the extension will not cause the tyre–stud combination type to change.

## Ensuring the conformity of production

The procedures for ensuring the conformity of the production of a type-approved tyre–stud combination must be those laid down in the Framework Regulation on motor vehicles and their trailers and its Annex IV, and in the Regulation on procedures for controlling the conformity of production of a vehicle, system, component, separate technical unit, part and equipment, unless otherwise provided by law or regulations.

Where justified, with the consent of the approval authority the manufacturer may alternatively demonstrate that the conditions of the initial assessment are satisfied based on a written report or some other appropriate account.

The holder of a type-approval certificate must ensure that, at minimum, stud protrusion control measurements are carried out in the production process to ensure the quality of the production of each tyre–stud combination. These measurements must cover at least 0.02 per cent of the annual production volume of each tyre size manufactured for each tyre–stud combination. However, these measurements must be carried out annually on at least two tyres per each manufactured tyre size. The results of quality assurance measurements and tests must be reported to the type-approval authority annually or within two weeks if any non-compliances are detected in the measurements or tests.

The holder of a type-approval certificate must also ensure that, whenever any samples or test items are shown to be non-compliant for the test type in question, a new sampling and test run is performed. In such cases, all necessary procedures must be implemented to restore the conformity of the production process with the approved type and to prevent non-compliant products from entering the market.

# Type-approval of studs

## Type-approved stud requirements and number of studs

In this section of the Regulation, a studded tyre may include a maximum of 50 studs per one metre of tyre rolling circumference.

In phase A of the implementation of this Regulation, the type-approval granted to a stud requires that, for a passenger car tyre, the static stud force measured with a protrusion of 1.2 mm may be a maximum of 120 N and the mass of the stud a maximum of 1.1 g. For a Class C2 tyre for commercial vehicles, the aforementioned stud force may be a maximum of 180 N and the mass a maximum of 2.3 g, and for a Class C3 tyre for commercial vehicles, 340 N and 5.0 g respectively when measured with a protrusion of 1.5 mm.

In phase A+ of the implementation of this Regulation, the type-approval of a stud requires that, for a passenger car tyre, the static stud force measured with a protrusion of 1.2 mm may be a maximum of 120 N and the mass of the stud a maximum of 1.0 g. For a Class C2 tyre for commercial vehicles, the aforementioned stud force may be a maximum of 180 N, measured with a protrusion of 1.2 mm, and the mass a maximum of 2.1 g. For a Class C3 tyre for commercial vehicles, stud force may be a maximum of 340 N and mass 5.0 g respectively when measured with a protrusion of 1.5 mm. When placing on the market a tyre equipped with a type-approved stud in accordance with the Regulation, the average of the protrusions of all the studs installed on it must not be greater than 1.4 mm for class C1 and C2 tyres and greater than 1.8 mm for class C3 tires. The protrusion of an individual stud must not exceed the average of the stud protrusions of that tyre by more than 20%.

Stud masses, stud forces and protrusions must be measured by a recognised expert with measuring equipment that is considered sufficient and appropriate as well as an approved level of competence to perform the measurements.

## Measuring the stud force of a passenger car tyre stud

The stud force of passenger car tyre studs is measured with studs that have been appropriately installed in passenger car winter tyres of two different brands designed for studs of the size being measured. A recognised expert selects two tyres from both tyre brands for measurement so that one of the tyres has a maximum load capacity of 600 kg and the other exceeding 600 kg.

The tyre with a maximum load capacity of 600 kg will be selected from the following sizes: 175/65/R14 or 185/60/R15.

The tyre with a maximum load capacity exceeding 600 kg will be selected from the following sizes: 195/65R15 or 205/55R16.

The tyres are delivered to the recognised expert together with rims that are recommended for the respective tyre size in question in the appropriate publication of a European standardisation association referred to in Annex 6, Appendix 4 of UN Regulation No. 117. The tyres that will be used in the measurements must have been manufactured at least 2 weeks before being studded.

The measurements must be conducted in standardised conditions that are subject to the following prerequisites:

* 1. stud protrusion is measured before the measurement of stud force; the protrusion must be 1.2 ± 0.1 mm;
	2. the pressure of the tyre must be 2.0 bar ± 0.1 bar;
	3. the technical service or recognised expert will perform or supervise the installation of the studs that are to be measured;
	4. the measurements must take place one week at the earliest and two weeks at the latest after studding;
	5. the temperature in the measurement facility must be 20 ± 2 °C;
	6. 20 consecutive studs are to be measured from the entire width of the tread, unless there is a specific reason for measuring studs from a more extensive area.

The measurements are to be conducted in the following manner:

* 1. the wheel is subjected to a load that is equal to 70 ± 1 per cent of the tyre’s load capacity;
	2. the load is applied parallel to the tyre radius travelling through the stud and perpendicular to a level surface representing the road surface;
	3. the measurements are taken statically when the stud tip is sunk to the tyre tread level, parallel to the load.

The stud force of a tyre’s studs is the average value of the forces measured in the aforementioned manner. The protrusion is the average value of the measured stud protrusions. If the protrusion does not comply with the value prescribed in section 5.1, the stud force (N) is defined as follows:

F = Fm \* us / um, where

Fm = average value of measured stud forces

us = permissible average value of a protrusion

um = average value of measured protrusions

The purpose of the type-approval process is to check that the average value of the stud forces of the four tyres that have been measured in the aforementioned manner does not exceed the stud force that has been permitted for the stud.

## Measuring the stud force of a commercial vehicle tyre stud

The stud force of Class C2 or C3 commercial vehicle tyre studs is measured using one tyre with appropriately installed studs or as the average value of several tyres. The size of a Class C2 commercial vehicle tyre is 195/70/R15C and the size of a Class C3 tyre is 295/80R22.5, or the closest equivalent to these sizes. A recognised expert will select the test tyres from the tyres manufactured by common brands that have been designed for studs of the size being measured.

The measurements must be conducted in standardised conditions that are subject to the following prerequisites:

1. stud protrusion is measured before the measurement of stud force; the protrusion must be 1.2 ± 0.1 mm for Class C2 tyres and 1.5 ± 0.2 mm for Class C3 tyres;
2. the tyre pressure in Class C2 tyres must be 3.0 ± 0.1 bar, and in Class C3 tyres the tyre pressure must correspond to the test pressure in the 03 series of amendments to UN Regulation No. 54;
3. if necessary, stud holes can be drilled in the Class C3 tyre according to the applicant’s instructions, and the studs must be installed by the recognised expert or by the applicant under the supervision of the recognised expert.

The stud force measuring conditions must correspond to those specified in section 5.2, and the measurements and possible calculations are to be performed in accordance with the principles laid down in section 5.2.

## Type-approval markings on tyres and extending an approval

Before placing on the market a Class C1, C2 or C3 tyre that has been studded with type-approved studs, it may be fitted with an Annex 2-compliant type-approval sticker on the side or tread of the tyre, and said sticker must contain the markings for the type-approval in question. Misleading and unfounded type-approval markings are prohibited.

In accordance with section 51, subsection 1 of the Vehicles Act, the holder of a type-approval must inform the approval authority of any changes made to a type-approved vehicle, system, component, separate technical unit, part or equipment. The type-approval of a stud may be extended upon separate application if the extension will not cause the stud type to change.

## Ensuring the conformity of production

The procedures for ensuring the conformity of the production of type-approved studs must be those laid down in the Framework Regulation on motor vehicles and their trailers and its Annex IV, and in the Regulation on procedures for controlling the conformity of production of a vehicle, system, component, separate technical unit, part and equipment, unless otherwise provided by law or regulations.

Where justified, with the consent of the approval authority the manufacturer may alternatively demonstrate that the conditions of the initial assessment are satisfied based on a written report or some other appropriate account.

# Applying for the type-approval of a stud or tyre–stud combination

The type-approval application must specify the following:

1) the name and address of the stud manufacturer, in the case of an application for type approval of a stud, or the name and address of the tyre manufacturer and corresponding information about the stud manufacturer, in the case of an application for type approval of a tyre-stud combination;

2) name and address of the manufacturer’s representative of the type-approved product manufacturer, if necessary;

3) make and commercial names of the product subject to type-approval;

4) a completed information form conforming to the model in Annex 4;

5) a type-approval certificate conforming to UN Regulation No. 30 or 54 for the tyre sizes tested when it comes to the type approval application for the tyre-stud combination;

6) a drawing of the tyre tread pattern when it comes to the type approval application for the tyre-stud combination.

The application must be accompanied by at least the following documents and samples:

1) a test report prepared by a recognised expert that includes a technical drawing of the stud and the specifications concerning the stud’s materials and design weight;

2) for tyre–stud combinations, a list of companies that perform the studding and the locations and contact details of their studding plants;

3) reference samples of the studs included in the application – at least 10 for each stud type or model.

# Transitional provisions and the provision of information concerning the standard

The road wear test limit values and the maximum stud mass permitted in the type-approval of studs specified in phase A of the implementation of this Regulation will apply to Class C1 passenger car tyres manufactured before 1 January 2027 and to Class C2 and C3 commercial vehicle tyres manufactured before 1 January 2029. The road wear test limit values and the maximum stud mass permitted in the type-approval of studs specified in phase A+ of the implementation of this Regulation will apply to Class C1 passenger car tyres manufactured on or after 1 January 2027 and Class C2 and C3 commercial vehicle tyres manufactured on or after 1 January 2029.

The road wear test limit values and the maximum stud mass permitted in the type-approval of studs in phase A+ will apply as mandatory to a tyre-stud combination of a new type or a new stud type when applying for type-approval for Class C1 passenger car tyres on or after 1 January 2025 or when applying for type-approval for Class C2 or C3 commercial vehicle tyres on or after 1 January 2027.

The requirements for ensuring the conformity of production specified in paragraphs 3 and 4 of section 4.3 must be met when applying for the type-approval of a tyre–stud combination of a new type on or after 1 January 2025.

A tyre-stud combination or a stud for which type-approval has been granted pursuant to the statutes valid at the time of the entry into force of regulation preceding this Regulation or pursuant to corresponding previous regulation may continue to be placed on the market if the Class C1 tyre used for a studded tyre has been manufactured before 1 January 2027 or if a Class C2 or Class C3 tyre has been manufactured before 1 January 2029. If a tyre other than a Class C1, C2 or C3 tyre has been manufactured before 1 January 2022, the studded tyre may continue to be placed on the market if the stud and the studded tyre meet the requirements of the provisions that were in force when the tyre was manufactured, or those of later provisions.

By way of derogation from the above, all type-approved tyre–stud combinations placed on the Finnish market are required to be fitted with type-approval markings in accordance with section 4.2 if the tyre has been manufactured on or after 1 January 2025. In addition, if compliance with the requirements for ensuring conformity of production has not been demonstrated in the type-approval of tyre-stud combinations or studs, the placing on the market of such studded tyres shall only be permitted if the tyre has been manufactured before 1 January 2027.

An application regarding the area of competence of a recognised expert for testing tyre–stud combinations and studs in accordance with this Regulation may be submitted and processed before this Regulation enters into force.

Upon request, the Finnish Transport and Communications Agency provides information on the standard referred to in this Regulation in Finnish and Swedish, as the standard is only available in English and has not been published in Finnish or Swedish.

Kirsi Karlamaa

Director-General

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Deputy Director-General

1. Detailed requirements for road wear measurements

**Test tyres**

The unused test tyres must be mounted on the test vehicle in accordance with their designated rotation direction as the front left and rear left tyres of the vehicle. The test tyres must not be subjected to any run-in before the road wear test.

When performing tests on a tyre–stud combination, the tyre sizes listed below are to be used as test tyres in every load capacity range represented by the tyre type as part of the verification of the fulfilment of phase A limit values. The list below first shows the tyre size to be used in the measurements and then, in an order of preference, the alternative tyre sizes that may be used if the primary tyre sizes are not available:

Load capacity rating under 600 kg:
1) 175/65R14, 2) 185/60R15, 3) 195/55R16

Load capacity rating 600–800 kg:
1) 195/65R15, 2) 205/55R16, 3) 225/45R17

Load capacity rating over 800 kg:
1) 235/65R17, 2) 255/55R18, 3) 255/50R19

Load capacity rating “C2 tyre”:
1) 195/70R15C, 2) 215/65R16C, 3) 225/65R16C, 4) LT225/75R16, 5) LT265/70R17.

If the tyre sizes listed above are not available at the time of testing, the tests may be carried out using another representative tyre size with the same load capacity rating that is the closest equivalent.

**Changes in test tyre stud protrusions during road wear tests**

The average stud protrusion of the test tyres after the test may not deviate from the average stud protrusion measured before the over-run test by more than +/- 25 per cent when the stud protrusion is measured in accordance with the standard SFS 7503:2022:en.

The average value of stud protrusion in test tyres = (average stud protrusion of the test tyre on the front axle + average stud protrusion of the test tyre on the rear axle) / 2.

**Additional requirements for the test stones and reference stones used in the test**

The test and reference stones used in the test must be manufactured from the same excavation batch and their grooving must be implemented in accordance with Figure 1 in the standard SFS 7503:2022:en. In each road wear test, the test stones must be of the same height and belong to the same sorting batch. The height difference between the stones must not exceed 0.5 mm.

**Reference correction**

The calculated correction of road wear results is conducted in the manner specified in the aforementioned standard. The road wear result is corrected in proportion to the average change in mass that has occurred as part of the drying process that the five previously unused reference stones, stored underwater in a container for the duration of the test drives, were subjected to.

1. Type-approval markings on a studded tyre

A rectangular sticker of at least 35 cm2 must be affixed on the outer side of the tyre to its side or tread, and the sticker must contain a clearly legible type-approval marking that meets the following requirements:

1. a reference to the Regulation laying down the type-approval requirements;
2. a drawing of the stud and the national identifier ‘FI’ of the type-approval (black markings);
3. the four-digit sequential number of the type-approval (black markings);
4. the background colour of the label is white, and a phase identifier (A or A+) is marked on the label to indicate the application phase whose requirements the tyres and studs meet.

The markings specified in points 2 and 3 are to be made with characters that are at least 10 mm in height.

In the case of a type-approval of a stud or a type-approval of a tyre–stud combination that was granted before this Regulation entered into force, the entries in points 2 and 3 may be replaced with an alternative, applicable type-approval identifier, e.g. FIN-NA-200x-0x. The markings may be placed on the same sticker with the manufacturer’s other markings, eliminating the need for a separate sticker.

Examples of the type-approval markings used on stickers:

**A FI0123**

**TRAFICOM/383441/03.04.03.00/2022**

↕ a ≥ 10 mm



**TRAFICOM/220809/ TRAFICOM/220809/ /03.04.03.00/2019 03.04.03.00/2019**

**A FI**  **A+ FI**

**0123**  **0123**

1. Model test report

**TEST REPORT No.:**

**Recognised expert
code:**

**Test tyre information**

Size, LI code, speed class

Approval markings (UN ECE R30 or R54)

Approval markings (UN ECE R117 or R164)

Week of manufacture

 Rear tyre [week no]

 Front tyre [week no]

Number of studs in tyre

Number of studs / 1 m of tyre rolling circumference

 Rear tyre [number]

 Front tyre [number]

 Rear tyre [number/m]

 Front tyre [number/m]

**Stud measurements (average of 10 measured studs), materials and stud forces**

Length [mm]

 Average

 Maximum

 Minimum

Stud forces [N]

Bottom flange dimension [mm]

Stud tip protrusion from body [mm]

Front tyre

 Rear tyre

Mass in grams [g]

Stud body material

**Measured stud protrusions [mm] of new test tyres and variation in relation to target protrusion**

Protrusions as new [mm]

Target protrusion [mm]

 Minimum

 Average

 Maximum

Front tyre

Limit value

For each of the 2 tyres

 Rear tyre

Protrusion variation

 -

 Variation average [mm]

+/- 10%

 Both - average

 Variation average [%]

**Variation in individual stud protrusions [mm] and control of protrusions – new test tyres**

Difference between minimum and average stud protrusion [mm]

 Limit value

Difference between maximum and
average stud protrusion [mm]

Limit value

Difference [%]

 + 30%

Difference [%]

Minimum vs. average if target protrusion is under 0.5 mm [mm]

- 30%

 + 0.1mm

Maximum vs. average if target protrusion is under 0.5 mm [mm]

- 0.1 mm

**Measured stud protrusions [mm] on test tyres after test and change in protrusions during the test**

Protrusion after the test [mm]

Limit value

Change during the test [%]

 Minimum

 Maximum

 Average

Front tyre

Rear tyre

-

-

Both - average

+/- 25%

**Test vehicle load by axle**

Load by tyre

Limit value

 Load difference [%]

Mass [kg]

Allowed difference

Front tyre left

Load limits

Mass [%]

 Front tyre right

< 5%

Front axle; left/right

 60–80%

< 5%

Rear axle; left/right

 60–80%

 Rear tyre left

< 5%

Front axle / rear axle

 60–80%

 Rear axle right

 60–80%

 All tyres total

 65–75%

**Test conditions and background information**

Weather : sunny / cloudy / rainy

Test site and date

Driving axle(s): front / rear / 4-wheel

Test car make and model

Ambient temp [oC]

limitation +2 … +20 oC

end:

Test track temp [oC]

middle:

start:

limitation +2 … +25 oC

end:

start:

middle:

Row wear without reference correction [g]

Measured wear in test stone rows 1 / 2 / 3 [mm]

Row 3

Row 2

Row 1

**Results**

Row wear with reference correction [g]

Confidence interval and ref. correction of results

Limit value

% calculated

95% confidence interval [%]

Change in mass of reference stones [%], average

Max 15%

Max 0.025%

**Summary of results (average row wear)** [g]

Row wear limit value [g]:

Row wear ratio to limit value [%]

Re-test requirement if row wear ratio differs from limit value by -10%...0%

**Notes on the test**

Before the road wear test, conduct the measurements for assessing the average value of stud protrusions before conducting the stud force measurements. The protrusion of any stud must not differ more than ± 30% from the measured average protrusion. The average value of stud protrusion for each test tyre must not differ more than ± 10% from the target value set by the tyre manufacturer.

After the road wear test, the protrusions are measured from the test tyres that ran over the stone samples in the full test. The average stud protrusion value after the road wear test must not differ more than ± 25% from the average protrusion measured prior to the test.

**Preparing the test report**

The test report must include a cover page that contains at least the following information:

1. the document register number of the regulation according to which the test was performed;
2. information on the tested tyres (make, manufacturer) and studs (make or type, manufacturer) and the load capacity index categories of the tyres (LI < 90 (under 600 kg), 90 ≤ LI ≤ 100 (600–800 kg) or LI > 100 (over 800 kg) or the LI of the least favourable tyre);
3. information on Regulation implementation phase applied (A or A+);
4. information on the recognised expert who performed the tests;
5. information on whether the relevant requirements have been met;
6. date and signatures;
7. table of contents.

In addition to the above, the appendices to the report must include:

1. drawings and photographs of the tread patterns of the tyres;
2. a dimensional drawing of the stud, including information on the design weight and materials of the stud;
3. justifications used to select the least favourable tyre in the over-run test, if applicable.

The appendices must be marked either with the number of the test report or sequential page numbering to make it clear that they are part of the report.

1. Information document for type-approval

Ilmoituslomake nro

Information document No.

koskien

concerning

UUTTA TYYPPIHYVÄKSYNTÄÄ [ ]

NEW TYPE-APPROVAL

TYYPPIHYVÄKSYNNÄN LAAJENNUSTA [ ]

EXTENSION OF A TYPE-APPROVAL

TYYPPIHYVÄKSYTYN TUOTTEEN VALMISTUKSEN LOPETTAMISTA [ ]

PRODUCTION DEFINITELY DISCONTINUED

koskien nastaa [ ]

concerning stud

rengas-nasta -yhdistelmää [ ]

tyre–stud combination

Liikenne- ja viestintäviraston määräyksen TRAFICOM/383441/03.04.03.00/2022 mukaan.

according to the Regulation TRAFICOM/383441/03.04.03.00/2022 of the Finnish Transport and Communications Agency Traficom.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Tyyppihyväksyntänumero (jos sovellettavissa) |  |  |
|  | Type-approval number (if applicable) |  |
|  |  |  |  |
|  | Renkaan valmistajan nimi ja osoiteName and address of tyre manufacturer |  |  |
|  |  |  |  |
|  | Nastan valmistaja(t) |  |  |
|  | Manufacturer(s) of the stud |  |
|  |  |  |  |
|  | Nastan valmistuspaikan nimi ja osoite |  |  |
|  | Name and address of stud manufacturing plant |  |
|  |  |  |  |
|  | Tyyppihyväksynnän hakijan edustajan nimi ja osoite, jos sellainen on |  |  |
|  | If applicable, name and address of the representative of the type-approval applicant |  |
|  |  |  |  |

Tiedot nastasta

Information on the stud

|  |  |
| --- | --- |
| Merkki (valmistajan kauppanimi)Make (trade name of manufacturer) |  |
| MalliModel |  |
| MateriaaliMaterial |  |
| PituusLength |  |
| Mitat (laippa)Dimensions (flange) |  |
| MassaWeight |  |
| Mikäli käytetään useampaa (erilaista) nastamallia, kuvaus erilaisten nastojen sijoittelusta renkaassa:In case more than one (different) stud models are used in a tyre, a description of the placement of different studs in a tyre:  |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Load index < 90 | 90 ≤ Load index ≤ 100  | Load index > 100  | C2 |
| Valmistajan määrittämä nastojen tavoiteulkonemaTarget stud protrusion value set by the manufacturer  | **-** | **-** | **-** | - |
| Nastojen lukumäärä / renkaan vierintäkehän metriThe number of studs per one metre of tyre rolling circumference | **-** | **-** | **-** | - |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  | Renkaan merkki ja malli, jossa nastaa saadaan käyttää  |  |  |
|  | Make and model of tyre, on which the stud is allowed to be used |  |
|  |  |  |  |
|  | Kantavuusluku |  |  |
|  | Load index |  |
|  |  |  |  |
|  | Liitteet |  | Renkaiden nastoituspaikatThe plants in which the tyres are studdedRengas-nasta -yhdistelmän tai nastan tyyppihyväksyntään tulevien muutosten kuvaus, mikäli kyseessä on tyyppihyväksynnän laajennusDescription of intended changes to the type-approval of tyre– stud combination or stud, in case of extension to type-approvalTestiraportti yliajotestistä, jos tarpeenTest report of over-run test, if needed |
|  | Attachments  |  |

Renkaiden nastoituspaikat

The plants in which the tyres are studded

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  | Renkaan nastoituspaikan nimi ja osoite |  |  |
|  | Name and address of the plant(s) in which the tyres are studded |  |
|  |  |  |  |