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Legal basis:
Vehicles Act (82/2021), section 16, subsection 7; section 44, subsection 5; section 48, subsection 5; section 49, subsection 3; and section 66, subsection 8.

Implemented EU legislation:
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Provisions on sanctions for operations violating this Regulation are laid down in:
Vehicles Act (82/2021) chapters 10-11

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. 29.1.2024 corrected in the English version, paragraph 3 in section 5.1 phase A+ limit values for the maximum mass of the stud. 14.3.2024 in section 5.1 of EN version deleted inconsistent requirement on individual stud protrusion 20 % limit.

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

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1 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 monitoring 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 of studs used in the tyres of category M and N vehicles and their trailers as well as the national type-approval of studded tyres used in the aforementioned vehicle categories - afterwards referred to as type-approval. The Regulation also applies to ensuring the conformity of production of the studs and studded tyres in question. 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 automatic goods transporter, bicycle or its trailer, 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 statement 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.

2 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 7503:2022: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;

4) *tyre rolling circumference* means the distance (m) travelled by a new, loaded tyre in one revolution as defined in the 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:

- a) name of tyre manufacturer;
- b) tyre class (C1 or C2);
- c) tyre structure, if the difference affects the wear of the road surface unfavourably;
- d) model of the pattern of the tread of the tyre;
- e) the model name of studs;
- f) stud fabrication materials;
- g) the main dimensions and masses of the studs;
- h) maximum number of studs per one metre of tyre rolling circumference in the tyre sizes covered by the type of tyre-stud combination;
- i) target protrusion for stud installation;

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

- a) model name;
- b) name of manufacturer;
- c) materials used;
- d) dimensions;
- e) mass;

3 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 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.

4 Type-approval of studded tyres

4.1 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 additionally, for ensuring the conformity of the production, the requirements of Table 2 for stud protrusions.

The holder of the type-approval must ensure that all variations of and the quality of the studding used in the tyre-stud combination, the studs used in them and the quality of the studding of said type that it manufactures meet the requirements of this Regulation. When made available on the market, the tyre-stud combination must also meet the requirements of Table 2 regarding the stud protrusion.

Table 1 Permissible maximum road wear in different phases of implementation (reference corrected mean value of test stone wear per row):

Tyre load capacity	phase A (200 over-runs)	phase A+ (200 over-runs)
Load rating under 600 kg	0.9 g	Least favourable tyre: Limit value [g] = (0,0152 * LI) - 0,4848
Load index category 600-800 kg	1.1 g	
Load index category over 800 kg	1.4 g	
Class C2 tyre	1.8 g	Least favourable tyre: Limit value [g] = (0,0076 * LI) + 0,7

Table 2 The requirements for the stud protrusion regarding the tyre-stud combination when making it available on the market and during production conformity control:

a) Maximum permissible deviation of the average stud protrusion of the tyre from the target protrusion (%)	+/- 15 %, however, not more than +/- 0,20 mm
b) By way of derogation from point a, 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)	+/- 0,15 mm, however, not more than +/- 50 %

The average of the stud protrusions is determined as described in the standard SFS 7503:2022 for 20 consecutive studs of the tyre, or alternatively, all studs of the tyre are measured with another similar measuring arrangement. A stud protrusion measurement arrangement other than that required in the standard can only be used if, for each measurement location, it has been sufficiently demonstrated to the approval authority that the measurement arrangement provides comparable and repeatable stud protrusion results regardless of the characteristics of the tyre and stud.

The primary requirement is that the results of the road wear test shall be at least 10 per cent below the permissible maximum limit value for road wear set out 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. When testing tires for Phase A approval, the pressure of the test tyres must comply with Table 1 of the original version of the standard SFS 7503.

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.

4.2 The markings of type-approval on the tyre and extension of approval

Before a type-approved tyre–stud combination is made available 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.

4.3 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 (EU) 2018/858 and its Annex IV for cars and their trailers, 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, the manufacturer may, with the consent of the approval authority, 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 shall cover at least 0.02 per cent of the annual production volume of each tyre size

being manufactured in each tyre–stud combination. However, measurements shall be carried out annually on at least two tyres per each tyre size being manufactured. The results of quality assurance measurements and tests must be reported to the type-approval authority annually and additionally, 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 this case, all necessary measures must be taken to ensure that the production process conforms to the approved type and to prevent non-compliant products from entering the market.

5 Type-approval of studs

5.1 Requirements of a type-approved stud and the number of studs

The studded tyre referenced in this Regulation section 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 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 1.0 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 making a tyre with a type-approved stud available on the market, 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 tyres.

For the type-approval purposes 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.

5.2 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: 175/65R14 or 185/60R15.

The tyre with a load capacity of over 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 recommended for the 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 used in the measurement must be manufactured at least 2 weeks before they are studded.

The measurement is performed under established conditions under the following conditions:

- a.1. stud protrusion shall be measured before measuring stud force; the protrusion shall be 1.2 ± 0.1 mm;
- a.2. the tyre inflation pressure shall be $2.0 \text{ bar} \pm 0.1 \text{ bar}$;
- a.3. the technical service or recognised expert shall perform or supervise the installation of the studs to be measured;
- a.4. the measurements shall be taken at the earliest one week and at the latest two weeks after the studs have been installed on the tyres;
- a.5. the temperature in the measurement facility shall be 20 ± 2 °C;
- a.6. 20 consecutive studs shall be measured on the entire width of the tyre tread, unless there is a specific reason to measure a more extensive area.

The measurements shall be taken as follows:

- b.1. the wheel is subjected to a load that is equal to 70 ± 1 per cent of the tyre's load capacity;
- b.2. the load shall be applied parallel to the tyre radius travelling through the stud and perpendicular to a level surface representing the road surface;
- b.3. the measurements shall be taken statically with the stud point sunk to the tyre tread level, parallel to the load.

The stud force of studs in the tyre is considered to be the average of the forces measured in this way. The protrusion shall be the average value of the measured stud protrusions. If the protrusion does not comply with the value laid down in section 5.1, the stud force (N) shall be defined as follows:

$F = F_m * u_s / u_m$, where

F_m = average value of measured stud forces

u_s = permissible average value of protrusion

u_m = 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.

5.3 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 measurement is performed under established conditions under the following conditions:

- 1) stud protrusion shall be measured before measuring stud force; the protrusion shall 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.

5.4 Type-approval markings on tyres and extending an approval

Before making available 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.

5.5 Ensuring the conformity of production

The procedures for ensuring the conformity of the production of a type-approved stud must be those laid down in the Framework Regulation (EU) 2018/858 and its Annex IV for cars and their trailers, 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, the manufacturer may, with the consent of the approval authority, alternatively demonstrate that the conditions of the initial assessment are satisfied based on a written report or some other appropriate account.

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

The type-approval application must specify the following:

- 1) name and address of the stud manufacturer, when concerning a stud type-approval application, or the name and address of the tyre manufacturer and corresponding information about the stud manufacturer, when concerning a tyre-stud combination type-approval application;
- 2) the name and address of the manufacturer's representative of the product that is to be type-approved, 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) type-approval certificate in accordance with UN Regulation 30 or 54 for the tested tyre sizes, when it comes to the type-approval application for a tyre-stud combination;
- 6) a drawing of the tread pattern of the tyre, 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 according to the application – at least 10 for each stud type or model.

7 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 binding 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 was granted in accordance with requirements applicable before when the previous regulation came into force or a corresponding later regulation was in force 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 new type-approved tyre-stud combinations 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.

Jarkko Saarimäki

Director-General

Kimmo Pylväs

Deputy Director-General

Annex 1 Detailed requirements for road wear measurement

Test tyres

The unused test tyres shall be mounted on the test vehicle in accordance with their designed rotation direction so that they are the front left and back left tyres on the vehicle. Test tyres shall not be 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 index category 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 tyres on the front axle + average stud protrusion of the test tyres 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.

Annex 2 Type-approval markings on a studded tyre

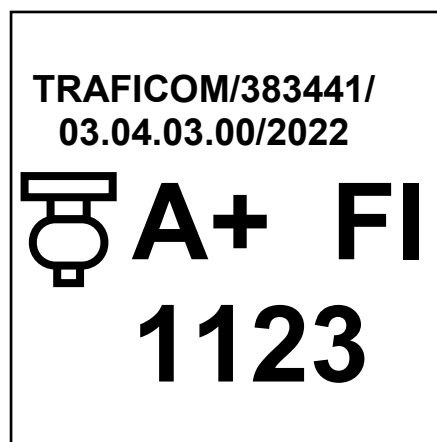
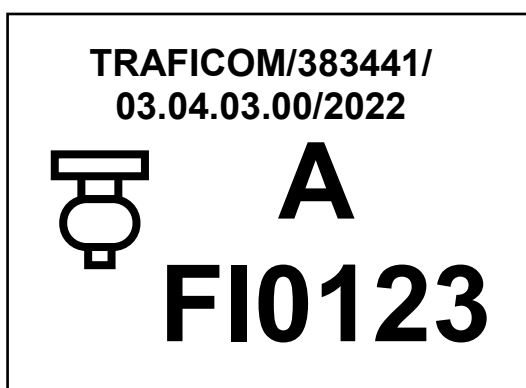
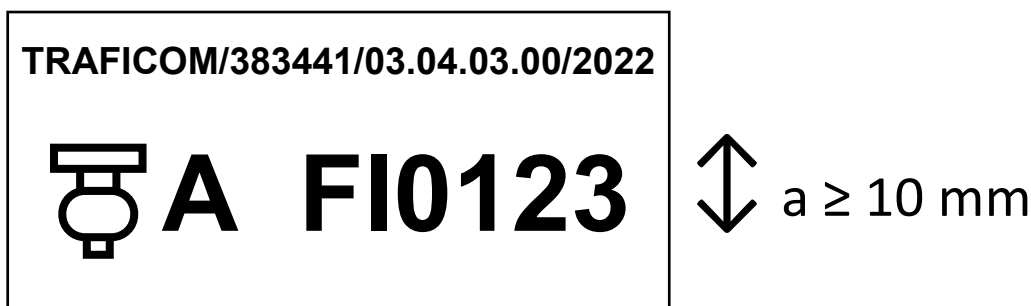
A rectangular sticker of at least 35 cm² must be affixed on the outer side of the tyre to its side or tread, and the sticker must contain a clearly legible type-approval mark that meets the following requirements:

- 1) 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 marks used on stickers:



Annex 3 Model test report

TEST REPORT No.:		The mark of a recognised expert:	
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Information about the test

tyre		
Size, LI code, speed category		
Approval markings (UN ECE R30 or R54)		
Approval markings (UN ECE R117 or R164)		
Manufacturing week	Front tyre [week no]	Rear tyre [week no]
Number of studs on the tyre	Front tyre [number]	Rear tyre [number]
Number of studs / in the length of 1 m of rolling	Front tyre [number/m]	Rear tyre [number/m]

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

Length [mm]		Stud forces [N]	Minimum	Maximum	Average
Measure of the bottom flange [mm]		Front tyre			
Stud tip protrusion from body [mm]		Rear tyre			
Mass in grams [g]					
Stud core material					

Measured stud protrusions [mm] of new test tyres and variation related to target protrusion

Protrusions as new [mm]	Minimum	Maximum	Average	Target protrusion [mm]	
Front tyre				Protrusion variation	For each of the 2 tyres
Rear tyre				Variation average	-
Both - average				Variation average [%]	+/- 10%

Variation with individual stud protrusion [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 [%]		+ 30%
Minimum vs. average if target protrusion is under 0.5 mm [mm]		- 0.1 mm	Maximum vs. average if target protrusion is under 0.5 mm [mm]		+ 0.1mm

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

Protrusion after the test	Minimum	Maximum	Average	Change during the test [%]	Limit value
Front tyre					-
Rear tyre					-
Both - average					+/- 25%

Test vehicle load by axle

Load by tyre	Mass[kg]	Mass [%]	Load limits	Allowed difference	relative differ-	Limit
Front tyre left			60–80%	Front axle; left/right		< 5 %
Front tyre right			60–80%	Rear axle; left/right		< 5 %
Rear tyre left			60–80%	Front axle / rear axle		< 5 %
Rear axle right			60–80%			
All tyres total			65–75%			

Test conditions and background information

Test site and date				Weather : sunny / cloudy / rainy	
Test car make and model				Driving axle(s): front / rear / 4-wheel	
Ambient temp [°C]	start:	middle:	end:	limitation +2 ... +20	
Test track temp [°C]	start:	middle:	end:	permitted +2 ... +25	

Results

Measured wear in test stone rows 1 / 2 / 3 [mm]	Row 1	Row 2	Row 3
Row specific wear without reference correction [g]			
Row specific wear with reference correction [g]			
Confidence interval and ref. correction of results	Calculated %		Limit value
95 % confidence interval [%]			Max. 15 %
Change in mass of reference stones [%], average			Max. 0.025 %
Summary of results (average row wear) [g]		<u>Row wear limit value [g]:</u>	
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, the necessary measurements to determine the average stud protrusion are made before the stud force measurements. The protrusion of an individual stud must not deviate by more than $\pm 30\%$ from the average of the measured stud protrusions. The average value of stud protrusion for each test tyre must not differ more than $\pm 10\%$ 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 $\pm 25\%$ from the average protrusion measured prior to the test.

Compiling the test report

A cover page must be drawn up for the test report, which must present 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), $90 \leq \text{LI} \leq 100$ (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 aforementioned, the appendices of the report must include:

- 1) photos 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.

Appendices must be marked either with the number of the test report or with consecutive page numbering so that they can be easily identified as part of the report.

Annex 4 Information document for type-approval

Information document No.

concerning:

NEW TYPE-APPROVAL

EXTENSION OF A TYPE-APPROVAL

PRODUCTION DEFINITELY DISCONTINUED

concerning a stud

tyre-stud combination

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

Type-approval number (if applicable)	<input type="text"/>
Name and address of tyre manufacturer	<input type="text"/>
Manufacturer(s) of the stud	<input type="text"/>
Name and address of the manufacturing plant of the stud	<input type="text"/>
If applicable, name and address of the representative of the type-approval applicant	<input type="text"/>

Information on the stud

Make (trade name of manufacturer)	
Model	
Material	
Length	
Dimensions (flange)	
Weight	
In case more than one (different) stud types 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
Target stud protrusion value set by the manufacturer	-	-	-	-
The number of studs per one metre of tyre rolling circumference	-	-	-	-

Make and model of tyre, on which the stud is allowed to be used

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Load index

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Attachments

<p>The facilities in which the tyres are studded</p> <p>Description of intended changes to the type-approval of tyre-stud combination or stud, in case of extension to type-approval</p> <p>Test report of over-run test, if needed</p>

The facilities in which the tyres are studded

Name and address of the facility in which the tyres are studded

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