Issued:	Enters into force:	Validity:
15 January 2024	15 March 2024	until further notice

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

Sanctions for non-compliance with this Regulation are laid down in the following:
Vehicles Act (82/2021), chapters 10-11

Implemented EU legislation:
-

Amendment details:
Repeals the Regulation of the Finnish Transport and Communications Agency of 10 February 2021 on technical requirements for and type-approval of studded tyres vehicles (TRAFICOM/220809/03.04.03.00/2019).

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

LIST OF TABLES

LIST OF ANNEXES

1 Scope

With this Regulation, the Finnish Transport and Communications Agency issues, pursuant to the Vehicles Act (82/2021), the provisions on the technical requirements for studs and studded tyres permitted for use on the road and on the technical methods used to demonstrate the compliance of studs.

Unless otherwise provided in this Regulation, control of the conformity of production of studs and tyre-stud combinations shall be subject to separate provisions.

In addition, this Regulation lays down more detailed provisions on the reports provided by the approved expert and on the content of the test certificate.

This Regulation applies to the national type-approval of studs for the tyres of vehicles of category M and N and their trailers and to the national type-approval of studded tyres for these vehicle categories – hereafter type-approval. In addition, this Regulation is applied when ensuring the conformity of the 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 the tyre-stud combination has been separately type-approved in accordance with this Regulation. However, the requirements of this Regulation do not apply if the studs or studded tyres are intended for use on light autonomous vehicles for goods transport, a bicycle or its trailer, on a tractor with a maximum design speed not exceeding 40 km/h, on a machine, or on a tractor or work machine trailer.

The granting of the type-approval is subject to the condition that the applicant for approval presents a report drafted by an approved 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) *a stud* is a piece of equipment designed to be used on a vehicle tyre that may be fitted to the tread of the tyre either when the tyre is manufactured or after that, the purpose of which is to improve the traction of the tyre on icy surfaces;

(2) *a studded tyre* is 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 in accordance with a testing method meeting national criteria equivalent to the criteria of said standard and laid down in an EEA country;

(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 Annex 6, Appendix 4 of 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 the studded tyres;

(9) *passenger car tyre* means a class C1 tyre as defined in the 02 series of amendments to UN Regulation 117;

(10) *commercial vehicle tyre* refers to class C2 or C3 tyres defined 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 studded 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 would have an unfavourable effect on road surface wear
d) tread pattern model
e) stud model name;
f) stud fabrication materials
g) 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* refers to studs that do not differ in the following essential characteristics:

a) model name
b) name of manufacturer
c) fabrication materials
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 apply unless type-approval is required for studs or tyre-stud combinations.

A studded tyre may include a maximum of 50 studs per one metre of tyre rolling circumference. However, a tyre designed for an L-category vehicle or a light electric vehicle or a trailer of such vehicles may not exceed 100 studs per metre of rolling circumference of the tyre.

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 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 a tyre-stud combination for C1 tyres for passenger cars and C2 tyres for commercial vehicles is based on a road wear test carried out in accordance with the SFS 7503:2022:en standard or a national measurement method compliant with that standard and laid down in a EEA country, unless otherwise specified below or in Annex 1. The measurement results are reported in accordance with the reporting template set out in the Annex 3 and the conditions relating to it.

The type-approval of a tyre-stud combination requires that, based on the test report by an approved expert who has been appointed for the tests in question, it can be determined that the tyre-stud combination complies with the requirements specified in this Regulation. The type-approval process for tyre-stud combinations is subject to the applicable road wear test limit values, set out in Table 1, for the tyre load capacity (LI category) in question, and also to the requirements of Table 2 on stud protrusion when ensuring the conformity of production.

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

Table 1 Maximum permissible road wear during the different phases of the implementation of the Regulation (reference corrected average wear per line of test stones):

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

Table 2 Requirements concerning stud protrusion in respect of a tyre-stud combination when making available on the market and when ensuring the conformity of production:

a) The maximum permissible deviation for average stud protrusion relative to the target protrusion must not exceed (%)	± 15 %, but not exceeding ± 0.20 mm
b) By way of derogation from point (a), if the manufacturer has specified a target protrusion of less than 0.5 mm, the maximum permissible deviation of the average protrusion of the studs of the tyre from the target protrusion shall not exceed (mm)	± 0.15 mm, but not exceeding ± 50 %

The average stud protrusion shall be determined as described in standard SFS 7503:2022:en on the basis of 20 consecutive studs of the tyre or, alternatively, all the studs of the tyre shall be measured using a corresponding measurement method. A stud protrusion measurement method other than the one required by the standard may be used only if it has been adequately demonstrated to the approval authority at each measurement site that the measurement method provides comparable and reproducible results on stud protrusion regardless of tyre and stud characteristics.

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 force of the tyres to be tested are measured before the road wear test and after the protrusion test of the studs. The measuring conditions and procedures must be the same as in paragraphs a.5., a.6., and b.1. to b.3. of section 5.2. When measuring stud forces, the tyre pressure must be in accordance with Table 1 of standard SFS 7503:2022:en.

Phase A requirement compliance and limit values:

For the type-approval that is 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, will be tested for each load capacity range covered by the studded tyre in question. When testing tyres for phase A approval, the pressure of the test tyres shall be in accordance with Table 1 of the original version of 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 vehicle used in the test may only be powered by its front axle. However, when testing C2 tyres of a commercial vehicle, a test vehicle with only the rear axle coupled to the drive may also be used as a test vehicle.

For type-approval according to the A+ limit values for the implementation of the Regulation, at least one type of tyre-stud combination must be tested (one that is considered to be the most unfavourable for 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 option for the road wear test is, primarily, the tyre from the same category with the highest number of studs per metre of tyre rolling circumference, unless the other tyre is considered less favourable by the approved expert or the type-approval authority. In the event that tyres from two or more tyre sizes of the same tyre category should be selected for testing on the basis of the above number of studs, the tyre with the largest number of studded tyres in use in winter traffic in Finland at the time of type-approval is selected for testing.

4.2 Type-approval label on tyres and extending an approval

Before a type-approved tyre-stud combination is made available on the market, a type-approval label compliant with the template in Annex 2 must be affixed on the side or tread of the tyre, and said label must contain the markings for the type-approval in question. Misleading and unjustified type-approval markings are prohibited. The sticker may be removed when the tyre-stud combination is installed on the rim.

In accordance with section 51, subsection 1 of the Vehicles Act, the holder of the type-approval shall notify the approval authority of any changes to a type-approved vehicle, system, component, separate technical unit, part or equipment. The type-approval of a tyre-stud combination may be extended on the basis of a separate application, provided that the type of tyre-stud combination does not change as a result of the extension.

4.3 Ensuring the conformity of production

The Framework Regulation (EU) 2018/858 on motor vehicles and their trailers and Annex IV thereto, and the provisions of the Regulation on control of the conformity of production of a vehicle, system, component, separate technical unit, part and equipment, shall be applied as the procedures for ensuring the conformity of production of a type-approved tyre-stud combination, unless otherwise provided by law.

Alternatively, with the agreement of the approval authority, the manufacturer may, for a justified reason, demonstrate compliance with the conditions of the initial assessment on the basis of a written report or other appropriate report.

The holder of the type-approval certificate shall ensure that for each type of tyre-stud combination, at least stud protrusion verification measurements are carried out by production in order to ensure the quality of production. 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, and additionally within two weeks if any non-compliances are detected in the measurements or tests.

In addition, the holder of the type-approval certificate shall ensure that, whenever samples or test pieces have proved non-compliant for the type of test in question, new sampling and testing are carried out. In such cases, all necessary measures shall be taken to ensure that the production process is brought into conformity with the approved type and to prevent the entry of non-compliant products on the market.

5 Type-approval of studs

5.1 Type-approved stud requirements and number of studs

A studded tyre within the meaning of this 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 issued to a stud requires that, for passenger car tyres, 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 passenger car tyres, 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 available on the market a tyre equipped with a type-approved stud, the average protrusion of all the studs fitted on it must not exceed 1.4 mm for Class C1 and C2 tyres and must not exceed 1.8 mm for Class C3 tyres.

For type-approval, stud masses, forces and protrusions must be measured by an approved expert who has adequate and appropriate measuring equipment and is qualified 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 on the winter tyres of two passenger car winter tyres which are designed for studs of the size being measured. An approved 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 maximum load capacity exceeding 600 kg will be selected from the following sizes: 195/65R15 or 205/55R16.

The tyres are delivered to an approved expert together with the rims recommended for that tyre size in the relevant publication of the European Tyre Standards Organisation referred to in Appendix 4 to Annex 6 to UN Regulation 117. The tyres that will be used in the measurements must have been manufactured at least 2 weeks before being studded.

The measurements are taken in standardised conditions that are subject to the following prerequisites:

a.1. stud protrusion is measured before the measurement of stud force the protrusion must be 1.2 ± 0.1 mm

a.2. the pressure of the tyre must be 2.0 bar ± 0.1 bar

a.3. the technical service or approved expert will perform or supervise the installation of the studs that are to be measured

a.4. the measurements must take place one week at the earliest and two weeks at the latest after studding

a.5. the temperature in the measurement facility must be 20 ± 2 °C

a.6. 20 consecutive studs are 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 conducted in the following manner:

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 is applied parallel to the tyre radius travelling through the stud and perpendicular to a level surface representing the road surface;

b.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:

$F = F_m \times u_s / u_m$, where

F_m = average value of measured stud forces

u_s = permissible average value of a 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 using 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. An approved 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 are taken 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 must be 3,0 bar ± 0,1 bar for Class C2 tyres and for Class C3 tires, the test pressure is according to Regulation No. 54, 03 series of amendments

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 approved expert or by the applicant under the supervision of the approved expert.

The measurement conditions for the puncture force must be the same and the measurement and any calculation must be performed on the same principle as specified in section 5.2.

5.4 Type-approval label on tyres and extending an approval

Before being made available on the market, Class C1, C2 or C3 studded tyres studded with type-approved studs may be equipped with a label bearing the relevant type-approval markings and conforming to the template in Annex 2. The label is affixed to the side or the tread of the tyre. Misleading and unjustified type-approval markings on the tyre are prohibited.

In accordance with section 51, subsection 1 of the Vehicles Act, the holder of the type-approval shall notify the approval authority of changes to a type-approved vehicle, system, component, separate technical unit, part or equipment. The type-approval of a stud may be extended on the basis of a separate application, provided that the extension does not change the stud type.

5.5 Ensuring the conformity of production

The Framework Regulation (EU) 2018/858 on motor vehicles and their trailers and Annex IV thereto, and the provisions of the Regulation on control of the conformity of production of a vehicle, system, component, separate technical unit, part and equipment, shall be applied as the procedures for ensuring the conformity of production of type-approved studs, unless otherwise provided by law.

Alternatively, with the agreement of the approval authority, the manufacturer may, for a justified reason, demonstrate compliance with the conditions of the initial assessment on the basis of a written report or other appropriate report.

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

The application for type-approval must include the following:

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

(2) name and address of the manufacturer's representative for a type-approved product, if needed;

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

(4) a completed notification form according to the template in Annex 4;

5) A type-approval certificate in accordance with UN Regulation 30 or 54 for tested tyre sizes in the case of an application for type-approval of a tyre-stud combination;

(6) drawing of the tyre tread pattern model in the case of an application for type-approval of a tyre-stud combination.

The application must be appended with at least the following documents and samples:

(1) an approved test report prepared by an approved expert that includes a technical drawing of the stud that also contains material data and the design weight;

(2) for tyre-stud combinations, the list of companies that perform the studding and the locations and contact details of their studding operations

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

7 Transitional provisions and the provision of providing information concerning the standard

The road wear test limit values and the maximum stud mass permitted for type-approval in accordance with phase A of the implementation of the Regulation 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 requirements for phase A+ road wear test limits and maximum permissible stud mass for type-approval apply to passenger car Class C1 tyres manufactured on or after 1 January 2027 and to commercial vehicle Class C2 and C3 tyres manufactured on or after 1 January 2029.

The phase A+ road wear test limit values or the requirement for an equivalent maximum permissible mass for the type-approved stud are mandatory for a new type of tyre-stud combination or for a new type of stud when applying for type-approval for Class C1 passenger car tyres on or after 1 January 2025 or when applying for type-approval for commercial vehicle Class C2 or C3 tyres on or after 1 January 2027.

The requirements of section 4.3, paragraphs 3 and 4 must be met if the type-approval of a tyre-stud combination is requested for a new type on or after 1 January 2025.

Tyre-stud combinations and studs type-approved in accordance with the provisions in force at the time the preceding Regulation entered into force, or corresponding subsequent regulation, may continue to be placed on the market if the Class C1 tyre used in the studded tyre was manufactured before 1 January 2027 or, if the used class C2 or C3 tyre was manufactured before 1 January 2029. If a tyre of category other than C1, C2 or C3 was manufactured before 1 January 2022, the studded tyre may continue to be placed on the market provided that the stud and the studded tyre meet the requirements of the provisions and regulations in force at the time of manufacture of the tyre or later.

By way of derogation from the above, the type-approval marking in accordance with section 4.2 is required for all new type-approved tyre-stud combinations if the tyre is manufactured on or after 1 January 2025. In addition, if in the type-approval of tyre-stud combinations or studs the requirements for ensuring the conformity of production have not been demonstrated, the placing on the market of such studded tyres is permitted only if the tyre has been manufactured before 1 January 2027.

An application regarding the area of competence of an approved 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 in Finnish and Swedish on the English standard referred to in this Regulation, which has not been published in Finnish or Swedish.

Jarkko Saarimäki

Director-General

Kimmo Pylväs

Deputy Director-General

Annex 1 Detailed requirements for road wear tests

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 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 shows the tyre size used for the first measurement in the sequence and the alternative tyre sizes used for the sequence measurement if 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) and 255/50R19

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

If, at the time of testing, the above tyre sizes are not available, the closest equivalent representative tyre size from the load capacity class concerned may be tested.

Changes in test tyre stud protrusions during road wear tests

The average stud protrusion of the test tyres after the measurement 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. The test stones in each road wear test must be of the same sorting lot in height and may not deviate from each other by more than 0.5 mm in height.

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.

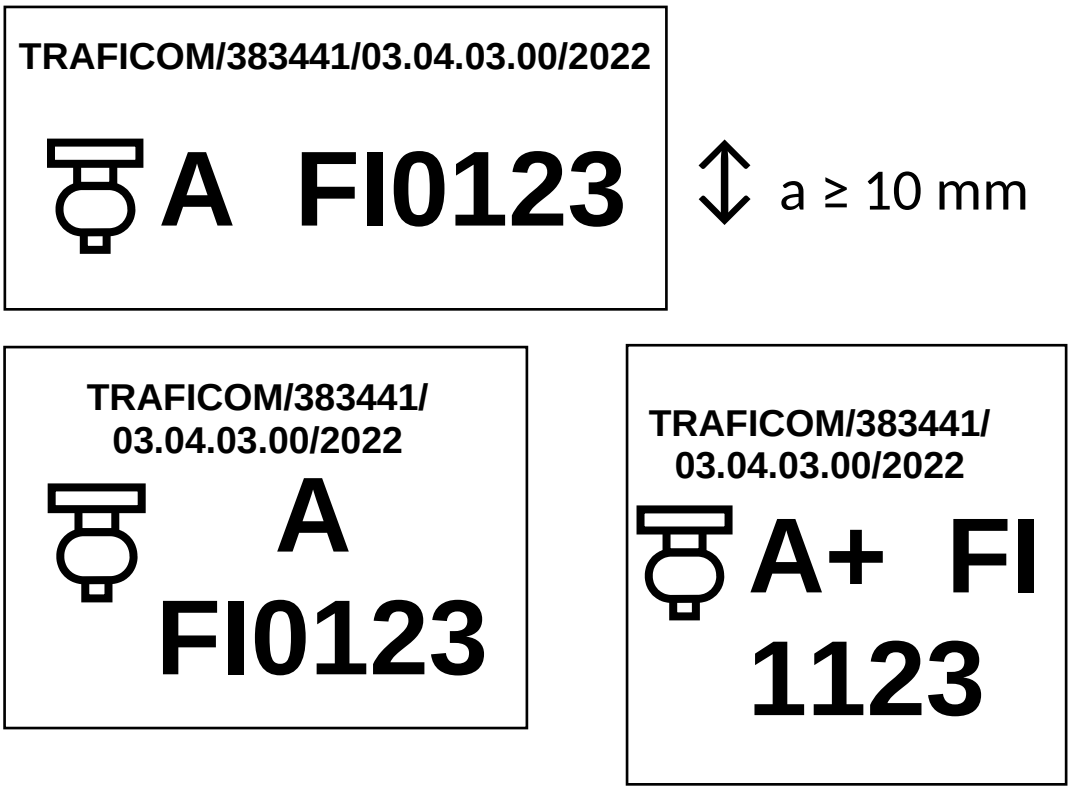
Annex 2 Type-approval markings on a studded tyre

A rectangular label of at least 35 cm^2 must be affixed on the outer side of the tyre to its side or tread, and the label 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) the stud drawing and the national identifier of the type-approval granted to the tyre-stud combination (black characters);
3) the four-digit sequential number of the type-approval (black characters);
4) the background colour of the sticker is white and the label is marked with the phase identifier ‘A’ or ‘A+’, according to the requirements of the implementation phase that the tyres and studs meet.

The markings specified in sections 2–3 are made with characters that are at least 10 mm in length.
In the case of a type-approval of a stud or the type approval of a tyre-stud combination that was granted before this Regulation entered into force, the markings of sections 2–3 may be replaced with an alternative, applicable type-approval identifier, e.g. FIN-NA-200x-0x. The markings may be placed on the same label as the manufacturer’s other markings, in which case no separate sticker is required.

Examples of the type-approval marks used on labels:



Annex 3 Test report template

TEST REPORT No:		**Identifier of the approved expert:**	

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	Front tyre [week no]	Rear tyre [week no]
Number of studs in tyre	Front tyre [number]	Rear tyre [number]
Number of studs per 1 m of tyre rolling circumfer-	Front tyre [number/m]	Rear tyre [number/m]

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

Length [mm]	
Bottom flange dimension [mm]	
Stud tip protrusion from body [mm]	
Mass in grams [g]	
Stud body material	

Stud forces [N]	Minimum	Maximum	Average
Front tyre			
Rear tyre			

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

Protrusions as new [mm]	Minimum	Maximum	Average
Front tyre			
Rear tyre			
Both – average			

Target protrusion [mm]		
Protrusion variation	From each of 2 tyres	Limit value
Deviations, average		-
Deviations, average [%]		+/-10 %

Variation with individual stud protrusion [mm] and control of protrusions – new test tyres

Difference in minimum and average stud protrusion [mm]		Limit value
Difference [%]		-30 %
Minimum vs. average if target protrusion is under 0.5 mm [mm] [mm]		-0.1 mm

Difference in maximum and average stud protrusion [mm]		Limit value
Difference [%]		+ 30 %
Maximum vs. average if target protrusion is under 0.5 mm [mm]		+0.1mm

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

Protrusion after the test [mm]	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 [%]	Require-
Front tyre left			60–80 %
Front tyre right			60–80 %
Rear tyre left			60–80 %
Rear tyre right			60–80 %
All tyres total			65–75 %

Allowed difference	Relative differ-	Limit
Front axle; left/right		< 5 %
Rear axle; left/right		< 5 %
Front axle / Rear axle		< 5 %

Test conditions and background information

Test site and date.			Weather: sunny/cloud/rain	
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:	limitation +2 ... +25

Results

Measured wear of test stone rows 1 / 2 / 3 [mm]	Row 1	Row 2	Row 3
Row wear without reference correction [g]			
Row 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]		Row wear limit value [g]:	
Row wear ratio to limit value [%]		Measurement must be repeated if row wear ratio differs from limit value by -10 %...0%	

To be considered in connection with the measurement

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 protrusions in 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 crossed over the stone samples in the full test. The average stud protrusion value after the over-run test must not differ more than ±25 % from the average protrusion measured prior to the test.

Compiling the test report

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

1) the record number of the Regulation according to which the test was performed;
2) information on tested tyres (make, manufacturer) and studs (make or type, manufacturer) and test tyre load capacities (LI <90 [less than 600 kg], 90 ≤ LI ≤ 100 [600–800 kg] or LI> 100 [more than 800 kg] or the most unfavourable tire tested LI);
3) information on the applicable regulation phase (A or A+)
4) details of the approved expert who carried out the tests;
5) information on whether the relevant requirements are met;
6) date and signatures;
7) table of contents.

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

1) 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

Attachments must be marked either by the number of the test report or by a sequential page number so that they can be easily identified as part of the report.

Annex 4 Notification form for type-approval

Information document No.
Information document No.

concerning
concerning

NEW TYPE-APPROVAL ☐
NEW TYPE-APPROVAL

EXTENSION OF A TYPE-APPROVAL ☐
EXTENSION OF A TYPE-APPROVAL

PRODUCTION DEFINITELY DISCONTINUED ☐
PRODUCTION DEFINITELY DISCONTINUED

concerning stud ☐
concerning stud

tyre and stud combination ☐
tyre and stud -combination

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

Type-approval number (if applicable) Type-approval number (if applicable)	
Name and address of tyre manufacturer Name and address of tyre manufacturer	
Manufacturer(s) of the stud Manufacturer(s) of the stud	
Name and address of manufacturing plant of the stud Name and address of manufacturing plant of the stud	
If applicable, name and address of the representative of the type-approval applicant If applicable, name and address of the representative of the type-approval applicant	

Information on the stud
Information on the stud

Make (trade name of manufacturer) Make (trade name of manufacturer)	
Type Type	
Material Material	
Length Length	
Dimensions (flange) Dimensions (flange)	
Weight Weight	
If more than one (different) stud model is used, a description of the placement of the different studs in the tyre: 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
Target stud protrusion specified by the manufacturer Target stud protrusion value set by the manufacturer	-	-	-	-
Number of studs per one metre of tyre rolling circumference The number of studs per one metre of tyre rolling circumference	-	-	-	-

	Tyre make and model of the tyre in which the stud may be used Make and model of tyre, on which the stud is allowed to be used		
	Load capacity rating		
	Load index		
	Annexes		Tyre stud installers The plants in which the tyres are studded
	Attachments		Description of changes to the type-approval of a tyre-stud combination or stud in the case of extension of type-approval Description of intended changes to the type-approval of tyre and stud -combination or stud, in case of extension to type-approval Test report of the overrun test, if applicable Test report of over-run test, if needed

Tyre stud installers

The plants in which the tyres are studded

Name and address of tyre stud installer Name and address of the plant(s) in which the tyres are studded	