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Bản dịch tiếng Anh QCVN 78:2014/BGTVT về vành hợp kim nhẹ dùng cho xe ô tô

NATIONAL TECHNICAL REGULATION ON LIGHT ALLOY WHEELS FOR AUTOMOBILES

NATIONAL TECHNICAL REGULATION ON LIGHT ALLOY WHEELS FOR AUTOMOBILES

1. GENERAL PROVISIONS

1.1. Scope of adjustment

This Regulation prescribes the technical requirements and technical safety quality inspection for aluminum alloy wheels and magnesium alloy wheels (referred to as light alloy wheels) used for the purpose mounted on a vehicle or as a replacement wheel for a motor vehicle in categories of cars (M1), categories of trucks with a total mass not exceed 3,5 tons (N1).

This Regulation does not apply to the type of light alloy wheels mounted on the vehicles used for security, defense.

1.2. Subject of application

This Regulation applies for:

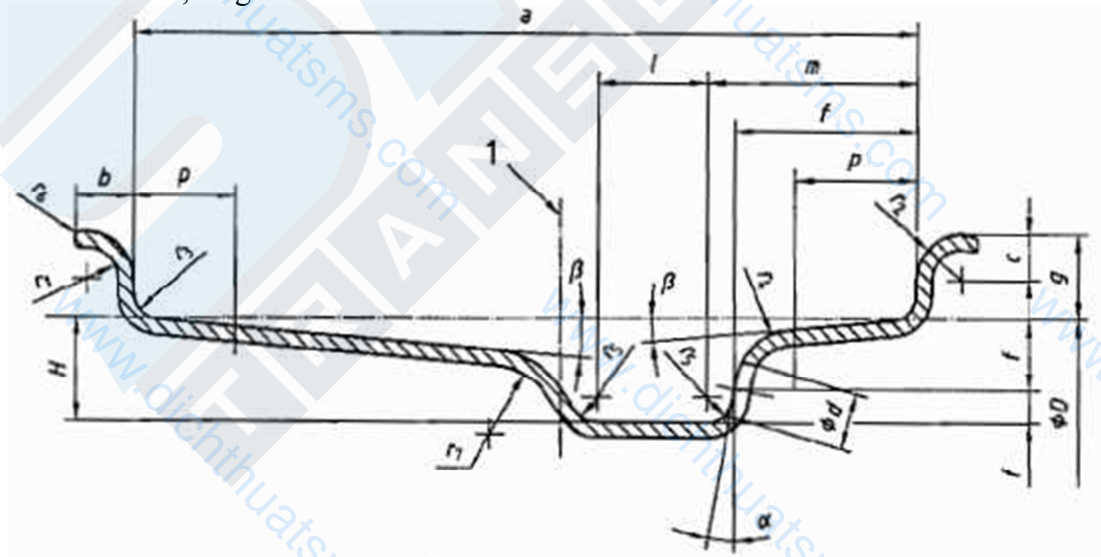
- The organizations and individuals producing, assembling, importing, distributing the light alloy wheels
- The organizations and individuals producing, assembling, importing, distributing the vehicle that using light alloy wheels
- The agencies, organizations and individuals involved in the testing, inspecting the Quality Certification of technical safety and environmental protection.

1.3. Interpretation of terms

The terms below are used in this Regulation:

1.3.1. Wheel

This means a rotating load-carrying member between the tire and the axle. It usually consists of two major parts: the rim and the wheel disc (or spoke), may be attached or detachable. The wheel can be cast, forged or bonded.



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NATIONAL TECHNICAL REGULATION ON LIGHT ALLOY WHEELS FOR AUTOMOBILES

<i>a</i>	Nominal width of the rim	r_1	Flange curved radius
<i>b</i>	Flange width	r_2	Flange radius
<i>c</i>	Location of the flange radius	r_3	Bead seat edge radius
<i>D</i>	Nominal diameter of the rim	r_4	Radius of the borehole top - the edge of tire fitting
<i>d</i>	Diameter of the valve hole	r_5	Rim well edge radius
<i>f</i>	Location of the valve hole	r_6	The sharp radius of the flange
<i>g</i>	Flange height	r_7	Radius of the borehole top - the edge without tire
<i>H</i>	Rim well depth	α	Rim well angle
<i>l</i>	Rim well width	β	Bead seat angle
<i>m</i>	Location of the rim well	1	Median plane of the rim
<i>p</i>	Bead seat width		

Figure 1 - Cross section of the rim

1.3.2. Rim

This means that part of the wheel where the tire is mounted and supported.

1.3.3. Tire bead seat

This part of the wheel forms a radial bead face for the tire.

1.3.4. Wheel disc (or spoke)

Wheel disc (or spoke) means that part of the wheel which is between the rim and hub.

1.3.5. Median plane of the vehicle rim

This means that the plane is perpendicular to the axis of the wheel and equally divides the rim flange.

1.3.6. Offset

The offset, denoted by d , means the distance between the median plane of the rim and the mounting surface of the wheel and axis. The offset is divided into:

- Positive offset: This means the offset when the median plane of the rim is inward (the side of vehicle body) compared to the mounting surface of the wheel and axis.
- Negative offset: This means the offset when the median plane of the rim is outward compared to the mounting surface of the wheel and axis.
- Zero offset: This means the offset when the median plane of the rim is even with the mounting surface of the wheel and axis.

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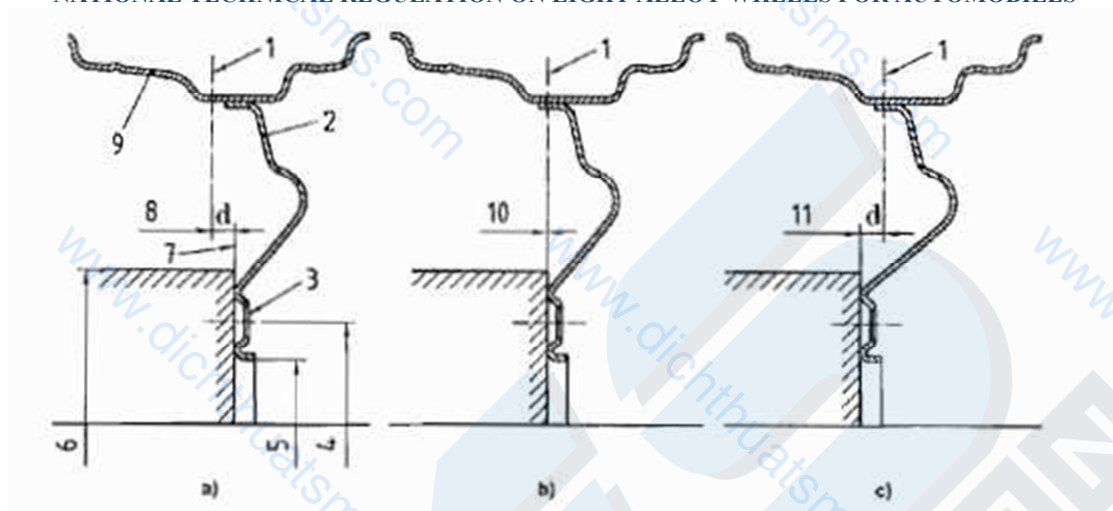
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- | | | | |
|---|---------------------------|----|--------------------------------------|
| 1 | Median plane of the rim | 7 | mounting plane of the wheel and axis |
| 2 | Wheel disc | 8 | Positive offset ($d > 0$) |
| 3 | Bolt mounting platform | 9 | Rim |
| 4 | Pitch circle diameter | 10 | Zero offset ($d = 0$) |
| 5 | Center hole diameter | 11 | Negative offset ($d < 0$) |
| 6 | Mounting surface diameter | | |

Figure 2: The offset of light alloy wheel

DỊCH THUẬT SMS

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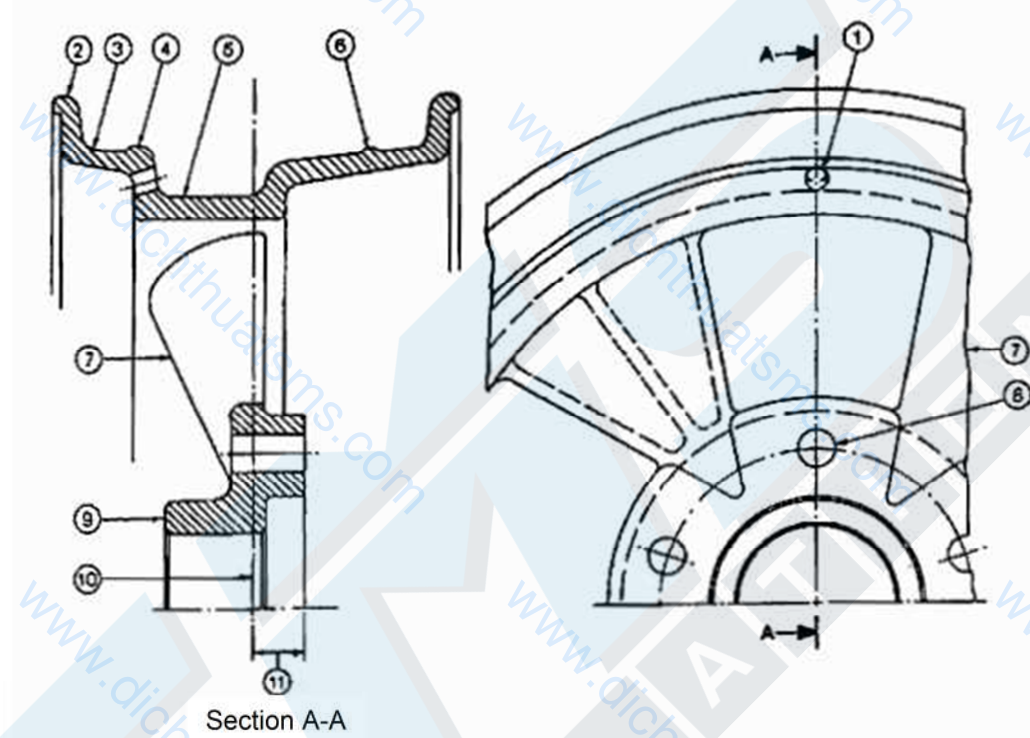
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1.3.7. Casting wheel

This means the wheel that rim and the spoke or wheel disc are manufactured as a part.



- | | |
|-------------------|---|
| 1. Valve hole | 7. Spoke |
| 2. Outside flange | 8. Bolt mounting holes |
| 3. Tire head seat | 9. Hub |
| 4. Outboard hump | 10. Median plane of the rim |
| 5. Rim trough | 11. Distance from median plane of the rim to mounting surface |
| 6. Inboard hump | |

Figure 3: Casting wheel

1.3.8. Welding Wheel

This means the wheel that the rim and the spoke (or wheel disc) are manufactured separately, and via welding to form a wheel.

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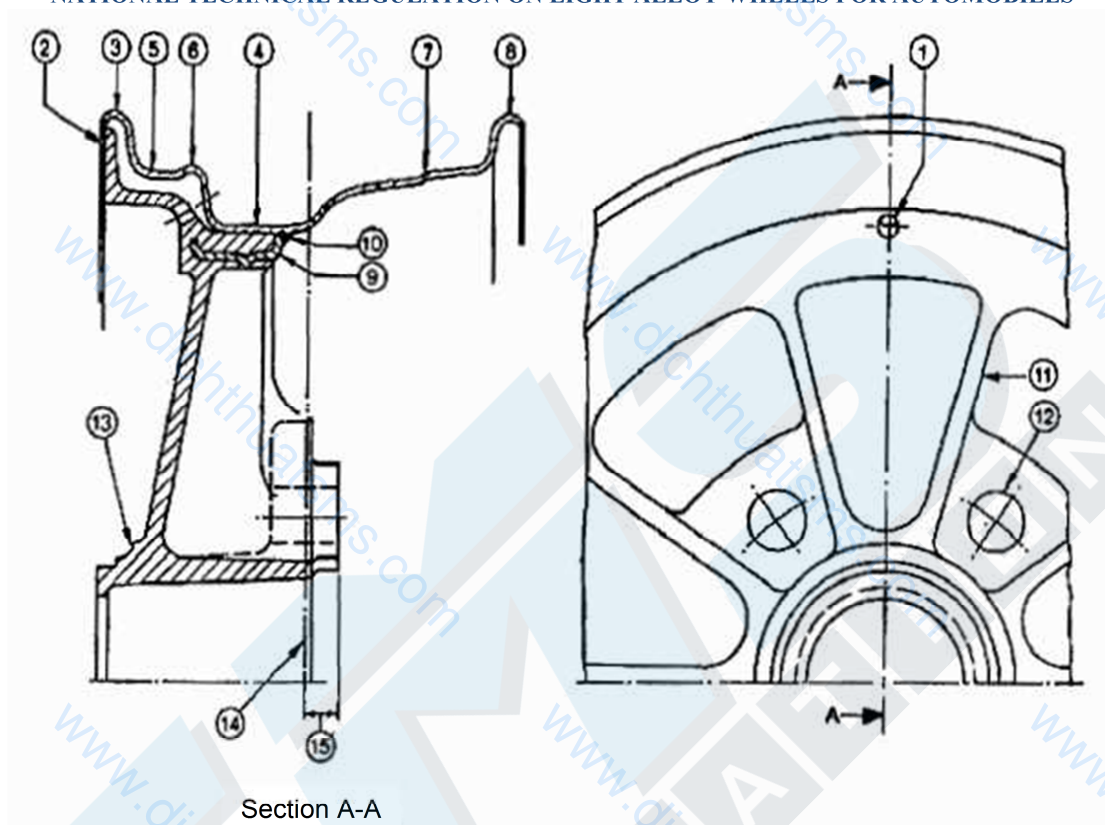
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NATIONAL TECHNICAL REGULATION ON LIGHT ALLOY WHEELS FOR AUTOMOBILES



DỊCH THUẬT SMS

[Dịch thuật tiếng Anh](#) | [Dịch thuật tiếng Hoa](#) | [Dịch thuật tiếng Nhật](#)
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NATIONAL TECHNICAL REGULATION ON LIGHT ALLOY WHEELS FOR AUTOMOBILES

- | | |
|---------------------------|--|
| 1. Valve hole | 9. seem |
| 2. rim | 10. weld |
| 3. Outside flange | 11. Spoke |
| 4. Rim well | 12. Bolt mounting holes |
| 5. Tire mounting platform | 13. Hub |
| 6. Outboard hump | 14. Median plane of the rim |
| 7. Inboard hump | 15. Distance from medium plane of the rim to mounting surface. |
| 8. Inside flange | |

Figure 4: Welding Wheel

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NATIONAL TECHNICAL REGULATION ON LIGHT ALLOY WHEELS FOR AUTOMOBILES

1.3.9. Cracked wheel

This means a damage form of the wheel, is a non-uniform stain forming two independent surfaces visible on the material, cracks appeared from the beginning or generated during the test.

1.3.10. Broken wheel

This means a damage form of the wheel, is crack(s) extend through the entire width of the wheel.

1.3.11. Maximum static load allowed to the wheel

This means the maximum vertical static load that allowed to any wheel specified by the vehicle manufacturer for individual applications, or is the allowed maximum load standard for the tire and wheel dimension of its according to Standard manual.

1.3.12. Radial static load of the tire (R)

This means the tire's radial measured by distance from the wheel axis center to the packing plane when the wheel is standing idle under the unload condition.

2. TECHNICAL PROVISIONS

2.1. Requirements for light alloy wheels

2.1.1. General requirements

2.1.1.1. The wheel type must match its technical documents

2.1.1.2. The dimensions of the wheel profile and the valve hole's dimension must be in accordance with the technical documentation of the tested wheel.

2.1.1.3. The light alloy wheels that appear the structural damage during manufacture must not repaired in any way but must be eliminated.

2.1.1.4. The wheel dimension error must not more than 1.2mm from the nominal diameter.

2.1.1.5. Wheel surface

The wheel surface must be meets the following requirements:

a) The wheel surface after the finishing must not have cracks, splits and other defects can be seen;

b) The wheel surface roughness at the position contacted to the tire must not exceeded 3.2 μm , surface treatment before mounting the tire to the rim is required. The inboard and outboard angles of the flange must not have sharp edge. The valve hole edge must be not sharp, too. The wheel surface at the position mounted the tire and at valve hole walls must have the structures or surfaces must not badly affect to the feature of tires, tubes and valves.

2.1.2. Requirement for tests

2.1.2.1. Requirement for air tightness

The wheels which use the tubeless tires must not leaked air through the flange when inflated to the test pressure according to Appendix A for a minimum period of 2 minutes.

2.1.2.2. Flexural Fatigue

When tested according to Appendix B, the wheel rim must withstand 100,000 test cycles without damaged. The following problems are considered damage:

a) Fracture(s) appear in any part of the wheel rim;

b) One or more nuts of the wheel self-loosening to the moment less than 60% of the original moment, or there is a significant deformation or any abnormal loosening at the joints of the wheel has been reinforced.

2.1.2.3 Radial Fatigue

When tested according to Appendix C, the wheel rim must withstand 500,000 test cycles without damaged. The following problems are considered damage:

DỊCH THUẬT SMS

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NATIONAL TECHNICAL REGULATION ON LIGHT ALLOY WHEELS FOR AUTOMOBILES

- a) The flange is no longer able to hold the tire;
- b) Fracture(s) appear in any part of the wheel rim;
- c) One or more bolts of nuts of the mounted wheel self-loosening to the moment less than 60% of the original moment, there is a significant deformation or any abnormal loosening at the joints of the wheel has been reinforced.
- d) The air pressure was not maintained, due to the leak in the wheel.

2.1.2.4. Durability under the effect of impact load

When tested according to Appendix D, the wheel rim must withstand an impact load at the specified force without damaged. The wheel is considered to have failed the test if any of the following signs:

- a) Fracture(s) appear crossing through a section of the center member of the wheel assembly;
 - b) Spokes are separated from the rim;
 - c) The inner pressure of the tire is reduced to the outside air pressure within 1 minute.
- If the wheel is deformed or cracked at the position where the flange in contact with the impact surface of the impact load, it is not considered to be damaged.

2.2. Tests

- a) The wheel which uses a tubeless tire tested in accordance with Appendix A;
- b) All wheel types must be tested in accordance with Appendix B, C, and D.

2.3. Criteria of evaluation

2.3.1. The tested wheel is considered satisfactory when they meet the requirements of section 2.1.1 and 2.1.2

2.3.2. The product type is considered satisfactory when all samples are passed.

3. MANAGEMENT PROVISIONS

3.1. Testing, inspecting method

The wheel must be inspected, tested in accordance with regulations of the Minister of Communications and Transport: *"Regulations on the environment protection and technical safety quality inspection in motor vehicle production and assembly"*;

3.2. Technical documents and samples

When there is a need for testing, facilities producing, assembling vehicles, facilities producing, importing wheels must provide testing establishments with technical documents and samples as required in section 3.2.1 and 3.2.2.

3.2.1. Technical document requirements

The technical document of the wheel must contain the following information:

- Technical drawings of the wheel;
- The technical specifications register represents the following information:
 - + The name or trade mark of the wheel;
 - + Code of wheel size;
 - + Using tube tires or tubeless tires;
 - + The largest tire size code can be fitted to the test alloy rim;
 - + Tire pressure;
 - + Position on the vehicle (front wheel, rear wheel);
 - + Nominal load capacity of the wheel;
 - + Categories of the motor vehicle (M1, N1).

3.2.2. Requirement for the samples

The samples for each type of the light alloy rim to be tested include:

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NATIONAL TECHNICAL REGULATION ON LIGHT ALLOY WHEELS FOR AUTOMOBILES

- 01 sample for the bending fatigue test of wheel;
- 01 sample for the radial fatigue test of wheel;
- 02 sample for the impact test;

Do not use a wheel for more than one test content.

3.3. Test reports

The test establishment must prepare a test result report containing the items at least including the provisions specified in this Regulation corresponding to each wheel type and vehicle categories is intended.

3.4. Apply provisions

In cases documents and literatures referred by this Regulation are changed, amended or replaced, the provisions of the new document shall be applied.

3.5. For the wheel types that have been tested, inspected according to provisions in section 3.1 and have had a suitable application file, must be issued a Test report according to section 3.3 above.

4. IMPLEMENTATION ORGANIZATION

4.1. Implementation schedule

This Regulation takes effect on June 1, 2015 and applied to the following schedule:

- After 2 years, since this Regulation taken effect for the wheel types are intended to mounting on the new vehicle which tested and issued the Type Approval Certificate for the first time.
- After 4 years, since this Regulation taken effect for the wheel types are intended to mounting on the vehicle which had been issued the Type Approval Certificate before the effective date of the Regulation and for the replacement wheel types.

4.2. Responsibilities of Vietnam Register

The Vietnam Register is responsible for implementing and guiding the implementation of this Regulation in quality and technical safety inspections for manufactured, assembled and imported vehicles and/or wheels.

DỊCH THUẬT SMS

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NATIONAL TECHNICAL REGULATION ON LIGHT ALLOY WHEELS FOR AUTOMOBILES

APPENDIX A

AIR TIGHTNESS TEST

A.1. Purpose

This appendix specifies to evaluate the air tightness of the wheels which use tubeless tires.

A.2. Requirements

The wheel is mounted a tubeless tire according to the manufacturer's provisions. The wheel must not be leaked when testing at the following pressure:

- a) 450 kPa; or
- b) a double amount of the nominal pressure which is specified for the largest pressure tire used to mount the wheel.

A.3. Test method

After inflating the tire to the specified pressure, soak the wheel in water, let the wheel settles in water and then inspect the air leakage from the wheel.

There must be no leakage of air through the wheel presented by air bubbles after the application of the test pressure specified in section A.2 for at least 2 minutes.

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