

**TECHNICAL REGULATION
OF THE CUSTOMS UNION**

**ON SAFETY OF HIGH PRESSURE
EQUIPMENT**

(CU TR 032/2013)

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Preamble

1. This technical regulation of the Customs Union is developed in accordance with the Agreement on common principles and rules of technical regulation in the Republic of Belarus, Kazakhstan and the Russian Federation of November 18, 2010.

2. This technical regulation of the Customs Union is designed in order to establish unified safety requirements for high pressure equipment which are mandatory for implementation and enforcement in the common customs territory of the Customs Union; to ensure free movement of the high pressure equipment put into circulation in the common customs territory of the Customs Union.

3. If there are other technical regulations of the Customs Union adopted in respect of the high pressure equipment which establish the requirements for such equipment, the equipment must meet the requirements of these technical regulations of the Customs Union.

Article 1. Scope

1. This technical regulation of the Customs Union (hereinafter - CU) covers high pressure equipment, its parts and components, safety devices and appliances (hereinafter - the equipment) which is imported, put into circulation in the territory of the Customs Union Member states.

1) This technical regulation of the CU applies to:

a) vessels, bottles, barrels, tanks, including tank containers with a capacity of more than 0.0001 cubic meter for gases, liquefied gases dissolved under pressure, vapors and having:

- a maximum allowable operating pressure of above 0.05 MPa, with a capacity of more than 0,001 cubic meter and the product of the maximum allowable operating pressure multiplied by the value of the capacity of more than 0.0025 MPa per cubic meter;

- a maximum allowable operating pressure exceeding 20.0 MPa, with a capacity of 0.001 cubic meter and less (Table 1 of Annex 1 to this technical regulation);

b) vessels with a capacity of more than 0.0001 cubic meter for gases, liquefied gases dissolved under pressure, vapors, used for working environments of Group 2 having:

- a maximum allowable operating pressure of above 0.05 MPa, with a capacity of more than 0,0001 cubic meter and the product of the maximum allowable operating pressure multiplied by the value of the capacity of more than 0.005 MPa per cubic meter;

- a maximum allowable operating pressure exceeding 100.0 MPa, with a capacity of 0.001 cubic meter and less (Table 2 of Annex 1 to this technical regulation);

c) vessels with a capacity of more than 0.0001 cubic meter, designed for liquids used for working environments of Group 1 having:

- a maximum allowable operating pressure of above 0.05 MPa, with a capacity of more than 0,001 cubic meter and the product of the maximum allowable operating

pressure multiplied by the value of the capacity of more than 0.02 MPa per cubic meter;

- a maximum allowable operating pressure exceeding 50.0 MPa, with a capacity of 0.001 cubic meter and less (Table 3 of Annex 1 to this technical regulation);

d) vessels with a capacity of more than 0.0001 cubic meter, designed for liquids used for the working environments of Group 2 having:

- a maximum allowable operating pressure of above 1.0 MPa, with a capacity of more than 0,01 cubic meter and the product of the maximum allowable operating pressure multiplied by the value of the capacity of more than 1.0 MPa per cubic meter;

- a maximum allowable operating pressure exceeding 100.0 MPa, with a capacity of 0.01 cubic meter and less (Table 4 of Annex 1 to this technical regulation);

e) boilers having a capacity of more than 0,002 cubic meter designed to produce hot water at a temperature above 110 degrees Celsius, or vapor the high pressure of which is above 0.05 MPa, as well as fire-heated vessels having a capacity of more than 0,002 cubic meter (Table 5 of Annex № 1 to this technical regulation);

f) pipelines having the maximum allowable operating pressure of above 0.05 MPa, the nominal diameter of more than 25 for gases and vapors and used for working environments of Group 1 (Table 6 of Annex 1 to this technical regulation);

g) pipelines having the maximum allowable operating pressure of above 0.05 MPa, the nominal diameter of more than 32 and the product of the maximum allowable operating pressure multiplied by the value of the nominal diameter of more than 100.0 MPa for gases and vapors which are used for working environments of Group 2 (Table 7 of Annex 1 to this technical regulation);

h) pipelines having the maximum allowable operating pressure of above 0.05 MPa, the nominal diameter of more than 25 and the product of the maximum allowable operating pressure multiplied by the value of the nominal diameter of more than 200.0 MPa for liquids which are used for working environments of Group 1 (Table 8 of Annex 1 to this technical regulation);

i) pipelines having the maximum allowable operating pressure of above 1.0 MPa, the nominal diameter of more than 200 and the product of the maximum allowable operating pressure multiplied by the value of the nominal diameter of more than 500.0 MPa for liquids which are used for working environments of Group 2 (Table 9 of Annex 1 to this technical regulation);

j) equipment parts (assembly units) and its components designed to be accommodated on the equipment and to withstand the pressure;

k) valves with the nominal diameter of more than 25 for the equipment with working environment of Group 1, the nominal diameter of more than 32 for the equipment used for the gases with the working environment of Group 2, with nominal diameter of more than 200 for pipelines intended for liquids used for working environments of Group 2;

l) indicating and safety devices;

m) low-pressure chambers (except single medical ones);

2) The technical regulation shall not apply to:

The major pipeline transport, intra-field and local distribution pipelines intended for transportation of gas, oil and other products, except for the equipment used on pressure regulating stations or compression stations;

Gas distribution and gas consumption networks;

Equipment specially designed for use in the field of nuclear energy, equipment operating with radioactive environment;

Vessels operating under the pressure built by the explosion inside them, in accordance with technological process or combustion in the mode of self-propagating high temperature synthesis;

Equipment specially designed for use on sea and river vessels and other watercrafts and underwater facilities;

Braking equipment of railway vehicles, motor transport and other vehicles;

Vessels specially designed for use on airplanes and other aircraft;

Defense equipment the details of which are a state secret;

Machine parts which are not separate vessels (pump or turbine housings, steam, hydraulic, internal combustion engine cylinders, air machines and compressors);

Single medical hyperbaric chambers;

Equipment with aerosol sprays;

Housings of high voltage electrical equipment (switchgears, distribution gears, transformers and rotating electrical machines);

High pressure casings and housings, elements of the electric power transmission systems (power cable products and communication cables);

Equipment made of non-metallic flexible (elastic) shells;

Exhaust or gas mufflers;

Containers or siphons for carbonated beverages.

Article 2. Definitions

In this technical regulation the following terms and definitions are used:

safety - absence of unacceptable risks associated with the possibility of injury and (or) damage;

bottle - a vessel having one or two necks to install valves, flanges or fittings designed for transportation, storage and use of compressed, liquefied or dissolved gases;

low-pressure chamber - a vessel which creates a low and/or high blood pressure, equipped with instruments and equipment and designed to arrange people;

barrel - a vessel of cylindrical or other forms which may be rolled over from one place to another and be put on its ends without additional supports designed for transporting and storing liquids and other substances;

standards interrelated with the technical regulation - the standards of the Customs Union Member states which fulfill the technical regulation safety requirements;

putting into service - a documented event taking note of the readiness of the equipment to be used (applied);

capacity - the volume of the interior of the equipment determined by nominal dimensions specified on the drawings;

working environment group - division of the working environments to:

Group 1 includes a working environment consisting of flammable, oxidizing, combustible, explosive, toxic and highly toxic gases, liquids and vapors in a single-phase state, as well as mixtures thereof;

Group 2 includes all other working environments which are not assigned to Group 1;

internal (external) pressure - high pressure applied to the inner (outer) surfaces of the wall of the equipment;

test pressure - high pressure at which the equipment is tested for strength and density;

operating pressure - maximum high pressure which occurs during normal workflow;

allowable pressure - maximum allowable high pressure for the equipment (part) established on the basis of conformity assessment and (or) strength check calculation;

design pressure - the pressure for which the strength calculation of the equipment is performed;

nominal pressure - design pressure at 20°C used in the strength calculation of standard vessels (units, parts, valves);

nominal diameter (nominal bore) - a numeric size designation approximately equal to the rounded internal diameter, which is indicated for all the components of the equipment, apart from the components indicated with outside diameters or by thread dimension. The nominal diameter is specified with a number of millimeters without indicating the dimension;

equipment identification - establishing compliance of the equipment, the scope of this technical regulation and technical documentation of the manufacturer;

manufacturer - a legal person, including foreign ones, or an individual entrepreneur engaged in manufacture and (or) sale of the equipment on his own behalf and responsible for its compliance with safety requirements of this technical regulation of the Customs Union;

waste-heat boiler - steam or water heating boiler without or with a furnace in which hot gases or other process streams are used as the heat source;

power-and-technical boiler - steam or water heating boiler (including soda recovery ones) in the furnace of which process materials are recycled;

electrode boiler - steam or water heating boiler in which the heat generated during the current flow through the water is used;

electric boiler - steam or water heating boiler in which the heat generated by electric heating elements is used;

water heating boiler - a device designed to heat water under the pressure above the atmospheric and used as a heat transfer medium outside the device itself;

steam boiler - a device designed to generate steam at a pressure above the atmospheric which is used outside of the device itself;

person authorized by the manufacturer - a legal or natural person duly registered in the state of a Party specified by the manufacturer under a contract with the aim of performing conformity assessment on his behalf and placing the equipment on the common customs territory of the Customs Union, as well as imposing liability for non-conformity of the equipment to the requirements of technical regulations of the Customs Union;

supplier - a resident of a Customs Union Member state selling the equipment, and responsible for its compliance with safety requirements of this technical regulation, including those who entered a contract for the transfer of equipment with a non-resident of a Customs Union Member state;

intended use - the use of equipment in accordance with its purpose and technical characteristics as indicated in the technical specifications of the manufacturer;

serial production - a type of production characterized by manufacturing similar products in accordance with typical design decisions and (or) using typical technological processes associated with the unchanging types of equipment, including assembly operations, for the production of recurring items of the equipment regardless of the types of further assembly;

design life - service time of the equipment (parts) within which reliability and safety of the equipment (parts) are guaranteed, provided that the service and operating conditions specified in the technical documentation are observed;

risk - a combination of the probability of harm and the consequences of such harm for human life or health, property, environment, life or health of animals and plants;

vessel - a hermetically closed container (fixed or mobile) designed to conduct chemical, thermal and other technological processes, as well as for storing and transporting gases, liquids and other substances;

service life - the operating time in calendar years;

estimated service life - the service life in calendar years set at the design stage and calculated from the date of putting into service;

parties - the Governments of the Member states of the Customs Union;

temperature of the working environment - minimal (min) (maximum) (max) temperature of the environment under normal technological workflow;

estimated wall temperature - the temperature at which the physical and mechanical characteristics, allowable stress of the material are determined and the strength calculation of the equipment parts is carried out;

permissible wall temperature - the maximum (minimum) wall temperature at which the operation of the equipment is permitted;

safety device - a device designed to protect the equipment from damage in excess of permissible values of the pressure or temperature;

life cycle - the time period since the release of the equipment by the manufacturer to its disposal;

tank - a mobile container permanently mounted on the frame of a railway platform, on a vehicle chassis (trailer), or other vehicles, designed for transporting and storing gaseous, liquid and other substances;

operation of the equipment - a stage of the life cycle since putting into service to its disposal;

equipment element - an assembly unit of the equipment designed to perform one of its main functions.

Article 3. Market circulation procedures

1. Equipment is put into circulation on the market upon its compliance with this technical regulation, other technical regulations of the Customs Union which apply to the equipment.

2. Equipment must meet safety requirements throughout its operating life provided that the consumer complies with the requirements established in technical documentation.

3. Consumers of the equipment are provided with full and accurate information given in the accompanying documentation.

Equipment must be completed with documentation in the official language of the Customs Union Member state in whose territory the equipment will be operated and (or) in Russian, as defined by the supply contract, including the equipment imported from other countries.

4. Accompanying documentation must include:
information on the purpose;
main characteristics;
conditions for safe operation (use);
conditions of storage, transportation, conservation and disposal;
address of the manufacturer, his contact information;
name and location of a person authorized by the manufacturer, the importer, their contact information;
manufacturing date and identification number;
a copy of the certificate of conformity of the equipment to this technical regulation;
technical documentation.

5. Equipment, depending on the pressure, capacity, nominal diameter and increasing risk level is classified by hazard categories - I, II, III, IV, in accordance with Annex 1 to this Technical Regulation.

6. Equipment must have an identification mark which is affixed in accordance with the requirements of the Treaties of the Customs Union Member states.

7. Complete equipment and its parts must have clear and indelible identification label:

- the name and (or) indication of the type, brand, model of the equipment;
- its parameters and characteristics which affect safety;
- the manufacturer's trade mark;

- identification (serial) number;
- manufacturing date.

8. Components are marked in accordance with the supply contract.

Marking of the components must provide the opportunity to identify them with the data given in the supplier's documentation.

9. Technical documentation accompanying the equipment and its parts must include:

- equipment certificate;
- safety case;
- general view drawing;
- certificates of safety devices;
- a copy of the certificate or declaration of conformity of the equipment with this technical regulation;
- calculation of throughput capacity of safety devices;
- strength calculation of the equipment;
- the installation and safe operation guide including the following:
short description and scope of the equipment; installation instructions of the equipment and its components; conditions and requirements for safe operation of the equipment; the procedure and frequency of inspection, maintenance, repair and technical inspection of the equipment; conditions and requirements for safe disposal of the equipment; limit state criteria;
- other technical documentation (drawings, schemes, calculations).

10. Certificate of the equipment is the main document for its identification which must comply with the form given in the Annex.

The certificate is necessary in order for the equipment to be put into circulation in the market of the Customs Union Member states. The certificate must contain:

- information on the manufacturer of the equipment;
- manufacturing date of the equipment;
- identification (serial) number of the equipment assigned by the manufacturer;
- basic technical data and specifications sufficient to identify the equipment;
- information on the materials and semi-finished products used;
- information on safety devices;
- service life and (or) equipment life.

The certificate is stamped by manufacturer and contains information on the date of issue.

Article 4. Safety requirements.

1. The equipment must be designed and manufactured in such a way that, if applied as intended and when meeting the requirements for operation and maintenance this equipment could ensure the necessary level of protection of human life and health.

2. The main factors to be considered for determining the risks during the design, manufacture, installation, testing, operation, maintenance stages of the high pressure equipment, are:

- unprotected moving parts;
- vibration;
- flammable and explosive parts;
- inadmissible deviations of the parameters of the design, assembly units and safety devices which affect safety;
 - risks arising from fire, natural and manmade emergency situations.
- risk of overheating;
- excess pressure (operating pressure must not exceed allowable);
- damage caused by the deposition of impurities of the working environment on the inner surfaces of equipment parts);
- corrosion or other types of surface wear of equipment parts;
- failure of safety devices and safety systems;
- fault of auxiliary equipment;
- extinction of the flames in the furnace during chamber combustion;
- absence of voltage in all control and measuring devices, remote and automatic controls;
- reduction of water level in the working environment of the lowest permissible limit;
- increase of water level in the working environment above the highest permissible limit;
- reduction of water flow through the boiler below the minimum acceptable value;
- reduction of the heat transfer medium pressure in the boiler below the permissible limit;
- increase of the heat transfer medium temperature at the outlet of the equipment to the limit value as defined by the manufacturer;
- failure of gauges of the working environment of direct action;

3. Types of hazards shall be established on the basis of risk assessment at the design of the equipment, and are indicated in the safety case.

4. In order to ensure safety the following mandatory requirements must be fulfilled:

1) compliance with fundamental safety requirements set out in Annex 2 to this technical regulation;

2) measures to protect personnel and the general public from injuries as a result of draining/filling the working environment must be provided;

3) devices limiting the value of exceeding the operating parameters during operation of the equipment must be envisaged;

4) work areas for the equipment maintenance must ensure safe performance of maintenance and other technical measures to ensure safety of equipment;

5) safe access of the personnel to safety devices and devices controlling the parameters of the working environment of the equipment must be ensured;

6) measures must be provided for reducing the risk of falling the personnel off the working platform designed for maintenance of the equipment;

7) illumination of service areas must be ensured;
8) measures to ensure electrical safety of the personnel must be provided;
9) the use of materials and semi-finished products ensuring safety of the equipment;

10) identification information and paint are applied to the equipment (equipment parts) in accordance with Annex 3 to this Technical Regulation.

11) When disposing of the equipment operating under pressure the following requirements must be met:

- dismantled equipment not intended for reuse must be disposed;
- equipment disposal must be carried out in accordance with the requirements established in technical documentation for the equipment and the laws of the Customs Union Member states in the field of environmental protection.

5. Ensuring safety of the equipment at all stages of its life cycle after selling the product on the market is carried out in accordance with the laws of the Customs Union Member states.

Article 5. Ensuring compliance with safety requirements.

1. Compliance of the equipment with this technical regulation of the Customs Union is ensured by meeting its safety requirements directly or by meeting the requirements of standards interrelated with this technical regulation of the Customs Union.

Fulfilling the requirements of the abovementioned standards on a voluntary basis ensures compliance with safety requirements of this technical regulation of the Customs Union.

2. The list of standards interrelated with this technical regulation of the Customs Union is approved by the Customs Union Commission (hereinafter - the Commission).

3. The procedure for establishing the List of standards interrelated with this technical regulation of the Customs Union is determined by the Commission.

Article 6. Conformity assessment.

1. Conformity assessment of the equipment with this technical regulation of the Customs Union is carried out by means of declaration or certification of conformity.

2. Certification of the equipment is carried out by certification (assessment (confirmation) of conformity) body (organization) included in the Unified Register of certification bodies and testing laboratories (centers) of the Customs Union (hereinafter - certification body).

3. Conformity assessment of the equipment in the form of declaration of conformity is carried out on the basis of own evidence of the applicant or the evidence obtained with the involvement of a certification body (organization).

4. In order to adopt the declaration of conformity of the equipment with this technical regulation the applicant collects a list of documents including:

- safety case;
 - equipment certificate;
 - the installation and operation guide (instructions);
 - a set of project documentation;
 - the results of the calculations of strength and throughput capacity;
 - technological regulations and information on the technological process (data on the materials used, semi-finished products, components, welding materials, methods and parameters of welding conditions and heat treatment, methods and results of nondestructive testing);
 - information on the tests and measurements carried out;
 - test reports of the equipment from the manufacturer, the person performing the functions of the foreign manufacturer, and (or) certification body (organization);
 - the document which confirms carrying conformity assessment procedures of materials and components;
- quality management system certificate (in cases provided for by certification schemes);
- list of standards interrelated with this technical regulation of the CU, when applied by the manufacturer;
 - documents confirming the competence of specialists and personnel of the manufacturer;
 - other documents directly or indirectly confirming that the equipment complies with this technical regulation.

5. Declaration schemes:

Scheme - 1d - adoption of a declaration of conformity of the equipment by the manufacturer based on their own evidence;

Scheme - 2d - adoption of a declaration of conformity of the equipment by the manufacturer based on their own evidence and quality management system certification of the manufacturer carried out by a certification body (organization);

Scheme - 3d - adoption of a declaration of conformity of the equipment by the manufacturer based on their own evidence with the participation of an expert organization which is accredited (attested) by the authorized body of state control (surveillance) in the field of industrial safety of the Customs Union Member states for the acceptance of equipment (hereinafter - expert organization);

Scheme - 4d - adoption of a declaration of conformity of the equipment by the manufacturer based on their own evidence, test and measurement results of a standard sample obtained with the participation of an accredited testing laboratory (center) or expert organization;

Scheme - 5d - adoption of a declaration of conformity of the equipment by the manufacturer based on their own evidence, test and measurement results of each sample obtained with the participation of an accredited testing laboratory (center) or expert organization;

Scheme - 6d - adoption of a declaration of conformity of the equipment by the manufacturer based on their own evidence and the examination results of the

project carried out by an expert organization, which certify that the project ensures compliance of the equipment with the requirements of this technical regulation;

6. Scheme - 1d is applied to the equipment produced in series and its components of categories I and II under the following conditions:

- the applicant is the manufacturer or the person performing the functions of the foreign manufacturer;
- the applicant has all the evidentiary materials as specified in this technical regulation;
- the applicant ensures production control;

Scheme - 2d is applied to a single piece of equipment of categories I and II if the quality management system certificate of compliance issued by the certification body in the prescribed manner is available at the applicant;

Scheme - 3d is applied to equipment of categories I and II in cases where the applicant does not use (or partially uses) the requirements of the standards interrelated with this technical regulation, including those for product innovation.

For equipment of categories III and IV this scheme of conformity assessment is used in conjunction with Scheme - 7.

Scheme - 4d is applied for conformity assessment of the equipment produced in series of categories I and II which operates under pressure of working environments of Group 2.

Scheme - 5d is applied for conformity assessment of the equipment produced in series of categories III and IV, as well as equipment of classes I and II which operates under pressure of working environments of Group 1.

Scheme - 6d is applied for conformity assessment of single equipment, in cases where the applicant does not use (or partially uses) the requirements of the standards for the evidence of compliance, as well as for conformity assessment of vessels equipped with quick-release lids and for low-pressure chambers.

This conformity scheme is applied together with one of Schemes 1d - 5d.

7. Validity of declaration of conformity shall not exceed 5 years.

8. Control over the equipment, the compliance of which was confirmed by the declaration of conformity, is carried out in accordance with the legislation of the Customs Union Member states.

9. For certification of the equipment of categories III and IV for the requirements of this technical regulation the applicant shall submit the following information:

- Name and address of the applicant;
- Name and address of manufacturer;
- Information allowing to identify the subject of certification;
- Information on the location where the subject of certification is tested;
- Information on interrelated voluntary standards applied for conformity ensurance of the equipment with this technical regulation;
- Certification scheme of the equipment.

10. Certification of the equipment is carried out under one of the schemes listed in the annex to this technical regulation.

11. When certifying serial equipment schemes 1c - 4c shall be applied.

12. Certification schemes 1c - 7c shall be applied in the following cases:

- Scheme - 1c - when certifying a pre-determined sales volume of equipment sold within a short period of time. In separate batches, in the course of its serial production (for foreign manufacturers - a short-term contract, for domestic manufacturers - a limited volume of production);
- Scheme - 2c - for imported equipment under long-term contracts, or for the supply of serial equipment under individual contracts;
- Scheme - 3c - for the equipment which has proven itself to be stable on the world market;
- Scheme - 4c - for the equipment the stability of production of which has to be proven;
- Scheme - 5c - the condition of its application is the availability of a certificate for quality management system at the manufacturer.

This scheme is used to certify the equipment for which the actual volume of production for testing is insufficient for objective conformity assessment of the production equipment, and technological processes are sensitive to external factors; Higher requirements for stability, intended values, service life are set, the lifespan of the equipment is less than the time needed to arrange and conduct tests in the certification body, the production is characterized by frequent change and modification of the equipment, the equipment can be tested only after the installation on site;

- Schemes - 6c - 7c - for one-off production of the equipment (Scheme 6c - for batch production. Scheme - 7c - for the production of single units).

13. the validity of certificates for equipment shall be:

- Under schemes - 1c - 6c - 5 years;
- Under Scheme - 7c - no more than the service life or life span determined by the manufacturer.

14. A copy of the certificate for equipment shall be attached to the equipment certificate.

15. The decision on the extension of the validity of a certificate of compliance, its suspension or termination is taken by a certification body in accordance with regulations of the Customs Union and, in their absence, according to the legislation of the Customs Union Member states.

16. On the territory of the Customs Union Member states a set of documents confirming compliance of the equipment must be kept for:

- equipment - at the manufacturer (manufacturer's authorized representative) for no less than 10 years from the date of termination (phase out) of production of the equipment;
- a batch of equipment - at the manufacturer (supplier) for no less than 10 years from the sale of the last product from the batch.

A set of documents confirming compliance of the equipment must be submitted to the authorized bodies of state control (surveillance) of the Customs Union Member states upon their reasonable demand.

Article 7. Conformity marking of products on the market of the Customs Union Member states.

1. High pressure equipment complying with safety requirements and subject to conformity assessment procedures shall be marked with a conformity marking of products on the market of the CU Member states.

2. Conformity marking of products on the market of the Customs Union Member states shall be affixed prior to placing the equipment on the market.

3. Conformity mark of high pressure equipment shall be affixed to each unit of the equipment and provided to the operational documents on the market of the CU Member States.

4. Marking of high pressure equipment with a conformity mark of products on the market of the CU Member States demonstrates its compliance with the requirements of all CU technical regulations covering equipment and providing for affixing the conformity mark of products on the market of the CU Member States.

Article 8. Safeguard clause

1. CU Member States shall take all measures to restrict, prohibit circulation of high pressure equipment on the territory of the CU Member States, as well as withdraw the equipment posing danger to human life and health, property from the market.

2. The competent body of the the Customs Union Member state shall be liable to notify the Commission as well as competent bodies of other Member states of the Customs Union of the decision taken indicating the reasons for such a decision and providing evidence clarifying the necessity for taking this measure.

3. The following cases can be the ground for disclaiming:
failure to comply with this technical regulation of the CU;
misuse of standards interrelated with this technical regulation in case these standards have been applied;
other reasons for a ban on high pressure equipment for placing on the market.

4. In case the competent bodies of other CU Member states voice a protest against the decision mentioned in paragraph 1 of this Article the Commission shall hold urgent discussions with the competent bodies of all the CU Member states in order to reach a mutually approved decision.

Table 1

Categories of vessels intended for gases
used for working environments of Group 1

Categories of equipment	Group of working environment	Capacity of equipment, m ³	The product of the maximum allowable operating pressure multiplied by the value of capacity, MPa•m ³	Maximum allowable operating pressure MPa
I	Group 1	Over 0.001	Over 0.0025 to 0.005 inclusive	Over 0.05
II		Over 0.001	Over 0.005 to 0.02 inclusive	Over 0.05
III		Over 0.0001 to 0.001 inclusive	Not standardized	Over 20 to 100 inclusive
		Over 0.001	Over 0.02 to 0.1 inclusive	Over 0.05
IV		Over 0.0001 to 0.001 inclusive	Not standardized	Over 100
		Over 0.001	Over 0.1	Over 0.05

Table 2

Categories of vessels intended for gases
used for working environments of Group 2

Categories of equipment	Group of working environment	Capacity of equipment, m ³	The product of the maximum allowable operating pressure multiplied by the value of capacity, MPa•m ³	Maximum allowable operating pressure MPa
I	Group 2	Over 0.001	Over 0.005 to 0.02 inclusive	Over 0.05
II		Over 0.001	Over 0.02 to 0.1 inclusive	Over 0.05
III		Over 0.0001 to 0.001 inclusive	Not standardized	Over 100 to 300 inclusive
		Over 0.001 to 1 inclusive	Over 0.1 to 0.3 inclusive	Over 0.05
IV		Over 1	Not standardized	Over 0.05 to 0.4 inclusive
		Over 0.0001 to 0.001 inclusive	Not standardized	Over 300
		Over 0.001 to 1 inclusive	Over 0.3	Over 0.4
			Over 1	Not standardized

Table 3

Categories of vessels intended for liquids,
used for working environments of Group 1

Categories of equipment	Group of working environment	Capacity of equipment, m ³	The product of the maximum allowable operating pressure multiplied by the value of capacity, MPa•m ³	Maximum allowable operating pressure MPa
I	Group 1	Over 0.01	Over 0.02	Over 0.05 to 1 inclusive
II		Over 0.001	Over 0.02	Over 1 to 50 inclusive
		Over 0.0001 to 0.001 inclusive	Not standardized	Over 50
III		Over 0.001	Not standardized	Over 50

Table 4

Categories of vessels intended for liquids,
used for working environments of Group 2

Categories of equipment	Group of working environment	Capacity of equipment, m ³	The product of the maximum allowable operating pressure multiplied by the value of capacity, MPa•m ³	Maximum allowable operating pressure MPa
I	Group 2	Over 0.01	Over 1	Over 1 to 50 inclusive
		Over 0.0001 to 0.01	Not standardized	Over 100
II		Over 0.01	Over 1	Over 50

Table 5

Categories of steam, hot water boilers and vessels with fire heating

Categories of equipment	Capacity of equipment, m ³	The product of the maximum allowable operating pressure multiplied by the value of capacity, MPa•m ³	Maximum allowable operating pressure MPa
I	Over 0.002 to 0.1 inclusive	Up to 0.005 inclusive	Over 0.05
II	Over 0.002 to 0.4 inclusive	Over 0.005 to 0.02 inclusive	Over 0.05 to 3.2
III	Over 0.002 to 1	Over 0.02 to 0.3 inclusive	Over 0.05 to 3.2 inclusive
	Over 0.002 to 0.01 inclusive	Not standardized	Over 3.2
IV	Over 0.01 to 1 inclusive	Over 0.3	Over 0.3
	Over 1	Not standardized	Over 0.05

Table 6

Categories of pipelines intended for gases,
used for working environments of Group 1

Categories of equipment	Group of working environment	Nominal diameter	The product of the maximum allowable operating pressure multiplied by the value of the nominal diameter, MPa	Maximum allowable operating pressure MPa
I	Group 1	Over 25 to 100 inclusive	Not standardized	Over 0.05 to 1 inclusive
		Over 25 to 100 inclusive	Up to 100 inclusive	Over 1 to 3.5 inclusive
Over 100 to 350		Not standardized	Over 0.05 to 1 inclusive	
Over 25 to 350		Over 100 to 350 inclusive	Over 1 to 3.5 inclusive	
Over 25 to 100		Not standardized	Over 3.5	
Over 350		Not standardized	Over 0.05 to 1 inclusive	
III		Over 100 to 350 inclusive	Over 350	Over 1 to 3.5 inclusive
		Over 100	Not standardized	Over 3.5

Table 7

Categories of pipelines intended for gases,
used for working environments of Group 2

Categories of equipment	Group of working environment	Nominal diameter	The product of the maximum allowable operating pressure multiplied by the value of the nominal diameter, MPa	Maximum allowable operating pressure MPa
I	Group 2	Over 32	Over 100 to 350 inclusive	Over 0.05 to 3.2 inclusive
		Over 32 to 100 inclusive	Not standardized	Over 3.2
II		Over 100	Over 350 to 500 inclusive	Over 0.05 to 3.2 inclusive
		Over 100 to 250 inclusive	Not standardized	Over 3.2
III		Over 250		Over 3.2
		Over 250	Over 500	Over 0.05 to 3.2 inclusive

Table 8

Categories of pipelines intended for liquids,
used for working environments of Group 1

Categories of equipment	Group of working environment	Nominal diameter	The product of the maximum allowable operating pressure multiplied by the value of the nominal diameter, MPa	Maximum allowable operating pressure MPa
I	Group 1	Over 25	Over 200	Over 0.05 to 1 inclusive
II		Over 25	Over 200	Over 1 to 8 inclusive
		Over 25	Over 350	Over 8 to 50 inclusive
III		Over 25	Not standardized	Over 50

Table 9

Categories of pipelines intended for liquids,
used for working environments of Group 2

Categories of equipment	Group of working environment	Nominal diameter	The product of the maximum allowable operating pressure multiplied by the value of the nominal diameter, MPa	Maximum allowable operating pressure MPa
I	Group 2	Over 200	Over 500	Over 1 to 50 inclusive
II		Over 200	Not standardized	Over 50

Requirements for the evaluation of production.

The decision of an accredited certification body is the ground for the evaluation of production. An accredited certification body may request evaluation of production to an organization with a staff consisting of assessors for certification of these products or assessors for certification of production and for quality systems of production. In this case a written reasonable request of an accredited certification body is issued.

1. Evaluation of production includes:

1.1. Review of documentation submitted by the applicant organization accompanying the application for conformity assessment of products.

The applicant provides necessary documents on demand of the certification body:

- Design documentation;
- Technical documentation;
- Test and measurement methods;
- Enterprise standards and instructions covering the manufacturing process and quality control of products;
- Registration documents and records (logs and folders with reports, acts, certificates and other documents which are filled out during the manufacture and control of quality and product safety).

2. control over ensuring safety and quality of the equipment includes checking of:

- organizational structure, the limits of competence and powers of management personnel regarding quality ensurance of the equipment;
- incoming inspection procedures, as well as control and product acceptance;
- incoming inspection of materials and components which limit safety and quality of products in general;
- technological process, methods, control technologies quality assurance, as well as other systematic measures;
- technologies used for permanent connection of elements;
- recordong data on quality and safety of the equipment;
- statistics of equipment failures;
- performing corrective procedures;
- access to the equipment to check compliance of the products with this technical regulation;
- documentation on the management of nonconforming products;
- acceptance of the quality of permanent connection of details:

1) Acceptance control of the equipment.

The equipment shall be subject to final control at which compliance with the requirements of this technical regulation must be established by means of visual inspection and relevant paper work. In this regard tests which were carried out

during manufacture may be taken into consideration. Acceptance control must be conducted internally and externally on every piece of equipment, if needed during manufacture (for example, if visual inspection is not possible during acceptance control).

2) Pressure test.

Acceptance of the equipment must include a strength test for pressure which is usually conducted in the form of hydraulic pressure tests, at which the pressure must correspond to the specified value.

For serial equipment of category I this test can be conducted on statistical basis.

In cases where the hydraulic pressure test is a threat or can not be performed, there may be conducted other tests which are considered equivalent. For non-hydraulic tests additional measures must be applied such as non-destructive tests or other equivalent methods.

3) Inspection of safety devices.

For units and assemblies final acceptance must also include checking of safety devices the purpose of which is to verify full compliance with this technical regulation.

- inspection and tests which are held before, during and after the manufacture;
- documentation ensuring quality and safety, such as test and inspection reports, data on verification and calibration, performance appraisal or admission reports for the staff engaged in this sphere, in particular for personnel responsible for permanent connections;

- means with the help of which the required quality and effective application of quality assurance and safety system can be constantly monitored.

3. Test procedure.

At least one member of the inspection group must have the knowledge and experience in assessing the appropriate equipment.

The decision on the results must be communicated to the manufacturer. Notification on this must include the inspection findings and reasons for the decision taken. An appeal procedure must be envisaged.

The manufacturer must provide access for the inspection group to production, acceptance, testing and storage departments of high pressure equipment, and provide all necessary information, including:

- the category of equipment;
- the results of previous inspection visits;
- required follow-ups of corrective actions;
- quality assurance reports and records such as inspection records, test data, information on verification and calibration, performance appraisal reports of staff involved, checklists, etc.;
- significant changes in organization of production or methods of quality and safety assurance.

Painting and affixing signs on the equipment

1. Painting of bottles

Name of the gas	Painting bottles	Text of the sign	Colour of the sign	Colour of the stripe
Nitrogen	Black	Nitrogen	Yellow	Brown
Ammonia	Yellow	Ammonia	Black	—
Crude Argon	Black	Crude Argon	White	White
Industrial Argon	»	Industrial Argon	Blue	Blue
Pure Argon	Gray	Pure Argon	Green	Green
Acetylene	White	Acetylene	Red	—
Butylene	Red	Butylene	Yellow	Black
Oil & Gas	Gray	Oil & Gas	Red	—
Butane	Red	Butane	White	—
Hydrogen	Dark green	Hydrogen	Red	—
Air	Black	Compressed air	White	—
Helium	Brown	Helium	»	—
Nitrous oxide	Gray	Nitrous oxide	Black	—
Oxygen	Blue	Oxygen	»	—
Medical Oxygen	»	Medical Oxygen	»	—
Hydrogen sulfide	White	Hydrogen sulfide	Red	Red
Sulfur dioxide	Black	Sulfur dioxide	White	Yellow
Carbon dioxide	»	Carbon dioxide	Yellow	—
Phosgene	Protective	—	—	Red
Trichlorofluoromethane (Freon-11)	Aluminium	Trichlorofluoromethane (Freon-11)	Black	Blue
Dichlorodifluoromethane (Freon-12)	»	Dichlorodifluoromethane (Freon-12)	»	—
Chlorotrifluoromethane (Freon-13)	»	Chlorotrifluoromethane (Freon-13)	»	2 red
Chlorodifluoromethane (Freon-22)	»	Chlorodifluoromethane (Freon-22)	»	2 yellow
Chlorine	Protective	—	—	Green
Cyclopropane	Orange	Cyclopropane	Black	—
Ethylene	Purple	Ethylene	Red	—
All other flammable gases	Red	Name of the gas	White	—
All other non-flammable gases	Black	Name of the gas	Yellow	—

Gray or yellow painting of small-volume bottles (up to 12 l) permitted for breathing apparatus and escape breathing apparatus with compressed air.

2. Painting of tank cars for transporting liquefied petroleum gases

The outer surface of tank cars for transporting liquefied petroleum gases is painted light gray. Both sides of the vessel are affixed with a distinctive red stripe with a minimum width of 200 mm with an inscription in black on it, "Propane - Flammable." At the rear end of the vessel the inscription in black "flammable" is applied.

List of certification schemes, which can be used when certifying high pressure equipment

Scheme designation	Testing in accredited test laboratories (centers)	Quality system control or evaluation of production	Inspection control of a certified quality system or evaluation of production
1c	standard sample tests	-	-
2c	standard sample tests	evaluation of production	-
3c	standard sample tests	-	sample tests
4c	standard sample tests	evaluation of production	sample tests, evaluation of production
5c	standard sample tests	certification of quality system	sample tests, control over the certified quality system
6c	batch tests	-	-
7c	each sample tests	-	-