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Working Party on the Transport of Dangerous Goods

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Item 2 of the provisional agenda

Tanks

**Supplementary information from the informal
working group on the inspection and certification of
tanks**

Transmitted by the Government of the United Kingdom

1. On behalf of the informal working group on the inspection and certification of tanks, the United Kingdom wishes to provide the Joint Meeting with some further information. It is supplementary to ECE/TRANS/WP15/AC.1/2017/38.
2. For ease of reference, the principles upon which the informal working group revised Chapter 6.8 are set out in Annex I. These principles were originally listed in paragraph 5 of ECE/TRANS/WP15/AC.1/2017/22.
3. As mentioned in paragraph 7 of ECE/TRANS/WP/AC.1/2017/38, the proposed changes to Chapter 6.8 are shown in context in Annex II. To avoid this annex becoming too long, some lengthy sections are marked {unchanged} where applicable.

Annex I

During the course of discussions certain fundamental principles were agreed by the informal working group:

(a) The term “competent authority” defined in RID/ADR as being *the authority or authorities or any other body or bodies designated as such in each State and in each specific case in accordance with national law* allows a contraction of the term “competent authority or a body designated by that authority” to be replaced by “competent authority” throughout Chapter 6.8;

(b) In developing Chapter 6.8, the text associated with conformity assessments, inspections and checks should be kept separate from the text dealing with the issue of approvals;

(c) For the type examination the manufacturer shall engage a single inspection body recognized by the competent authority of either the country of manufacture or the first country of registration of the first tank of that type manufactured. This competent authority shall be the only one able to issue the type approval certificate;

(d) For the supervision of manufacture and the initial inspection of tanks, the manufacturer shall engage a single inspection body recognized either by the competent authority of the country of registration, or the country of manufacture;

(e) When tanks are assembled from components manufactured in different locations the inspection body responsible for assessing the complete tank shall verify that all its components conform to the requirements of RID/ADR irrespective of where they have been manufactured;

(f) Under certain circumstances, an entry into service inspection that is proportional to the condition of the tank, to ensure that the requirements of RID/ADR are fulfilled, may be required:

(i) When the initial inspection certificate is issued by an inspection body that is not recognized by the competent authority of the country of registration, in which case an entry into service inspection may be required by the competent authority of the country of registration;

(ii) Where the registration of a tank transfers from one contracting party to another, the competent authority of the contracting party to which the tank is transferred may require an entry into service inspection. In that case the owner/operator of the tank shall engage a single inspection body recognized by the competent authority of the country of registration to perform this entry into service inspection;

(g) To encourage the recognition by other contracting states/parties of appointed inspection bodies by a competent authority, a system of notification to, and listing by, the UNECE/OTIF secretariats should be developed that includes the names of inspection bodies and the scope of the work they are allowed to perform.

Annex II

CHAPTER 6.8

REQUIREMENTS FOR THE CONSTRUCTION, EQUIPMENT, TYPE APPROVAL, INSPECTIONS AND TESTS, AND MARKING OF FIXED TANKS (TANK-VEHICLES), DEMOUNTABLE TANKS AND TANK-CONTAINERS AND TANK SWAP BODIES, WITH SHELLS MADE OF METALLIC MATERIALS, AND BATTERY-VEHICLES AND MULTIPLE ELEMENT GAS CONTAINERS (MEGCs)

NOTE 1: *For portable tanks and UN multiple-element gas containers (MEGCs) see Chapter 6.7, for fibre-reinforced plastics tanks see Chapter 6.9, for vacuum operated waste tanks see Chapter 6.10.*

NOTE 2: *For fixed tanks (tank-vehicles) and demountable tanks with additive devices, see special provision 664 of Chapter 3.3.*

6.8.1 **Scope [and general provisions](#)**

6.8.1.1 The requirements across the whole width of the page apply both to fixed tanks (tank-vehicles), to demountable tanks and battery-vehicles, and to tank-containers, tank swap bodies and MEGCs. Those contained in a single column apply only:

- to fixed tanks (tank-vehicles), to demountable tanks and battery-vehicles (left hand column);
- to tank-containers, tank swap bodies and MEGCs (right hand column).

6.8.1.2 These requirements shall apply to

fixed tanks (tank-vehicles), demountable tanks and battery-vehicles	tank-containers, tank swap bodies and MEGCs
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used for the carriage of gaseous, liquid, powdery or granular substances.

6.8.1.3 Section 6.8.2 sets out the requirements applicable to fixed tanks (tank-vehicles), to demountable tanks, tank-containers, tank swap bodies intended for the carriage of substances of all classes and battery-vehicles and MEGCs for gases of Class 2. Sections 6.8.3 to 6.8.5 contain special requirements supplementing or modifying the requirements of section 6.8.2.

6.8.1.4 For provisions concerning use of these tanks, see Chapter 4.3.

6.8.1.5 **[Conformity assessment, type approval and inspections rules](#)**

[The procedures for undertaking a conformity assessment and the inspections described in 1.8.7 shall be performed according to 6.8.1.5.1 to 6.8.1.5.6.](#)

The term “inspection body” in these paragraphs means a body conforming to 1.8.6 and recognized, or accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3).

The competent authority shall transmit to the secretariat of OTIF/UNECE the names of the inspection bodies it has approved and the scope of the work each is accredited to perform.

For the purpose of these paragraphs the term “country of registration” means:

<u>the country of registration of the vehicle on which the tank is mounted.</u>	<u>the country of the RID Contracting State/Contracting Party to ADR where the owner's/operator's comp is registered.</u>
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When a tank is assembled from components manufactured in different locations the inspection body responsible for assessing the complete tank shall verify that all of these components conform to the requirements of RID/ADR, irrespective of where they have been manufactured.

6.8.1.5.1 *Type examination according to 1.8.7.2.1*

(a) For the type examination, the manufacturer of the tank shall engage a single inspection body recognized by the competent authority of either the country of manufacture or the initial country of registration of the first tank manufactured of that type. If the country of manufacture is not a RID Contracting State/Contracting Party to ADR, the manufacturer shall engage a single inspection body approved by the country of registration.

(b) If the type examination of the service equipment is done separately from the tank according to 6.8.2.3.2, the manufacturer of the service equipment shall engage an inspection body recognized by a competent authority of a RID Contracting State/Contracting Party of ADR.

6.8.1.5.2 *Type approval according to 1.8.7.2.2*

The competent authority who approved or recognized the inspection body who performed the type examination has the exclusive right to issue the type approval certificate.

6.8.1.5.3 *Supervision of the manufacture according to 1.8.7.3*

(a) For the supervision of the manufacture, the manufacturer of the tank shall engage a single inspection body recognized either by the competent authority of the country of registration, or the country of manufacture. If the country of manufacture is not a RID Contracting State/Contracting Party to ADR, the manufacturer shall engage a single inspection body recognized by the country of the Contracting Party of registration.

(b) If the type examination of the service equipment is done separately from the tank, the manufacturer shall engage for the supervision of manufacture a single inspection body recognized by a competent authority of a RID Contracting State/Contracting Party of ADR. The manufacturer may use an in-house inspection service according to 1.8.7.6 to perform the procedures of 1.8.7.3.

6.8.1.5.4 *Initial inspection according to 1.8.7.4*

For the initial inspection, the manufacturer of the tank shall engage a single inspection body recognized either by the competent authority of the country of registration, or the country of manufacture. If the country of manufacture is not a RID Contracting State/Contracting Party to ADR, the manufacturer shall engage a single inspection body recognized by the country of the Contracting Party of registration.

6.8.1.5.5 Entry into service inspection according to 1.8.7.5

When the initial inspection certificate of the tank is issued by a single inspection body that is not recognized by the competent authority of the country of registration an entry into service inspection may be required by the competent authority of the country of registration.

When the registration of a tank is transferred from one RID Contracting State/Contracting Party to ADR to another, the competent authority of the RID Contracting State/Contracting Party to ADR where the tank is transferred to may require an entry into service inspection.

In such a case, the owner/operator of the tank shall engage a single inspection body recognized by the competent authority of the country of registration to perform this entry into service inspection.

The entry into service inspection shall be proportional to the condition of the tank and shall ensure that the requirements of RID/ADR are fulfilled.

6.8.1.5.6 Intermediate or periodic inspection or exceptional check according to 1.8.7.6

The intermediate or periodic inspection or the exceptional check shall be performed

(ADR):

in the country of registration by an inspection body recognized by the competent authority of that country.

(RID):

by an inspection body recognized by the country where the inspection takes place or by an inspection body recognized by the country of registration.

(RID/ADR)

by an inspection body recognized by the country where the inspection takes place or

if the country is not a RID Contracting State/Contracting Party to ADR, by an inspection body recognized by the country of registration.

The owner/operator of the tank shall engage a single inspection body for each intermediate or periodic inspection or exceptional check.

6.8.2 **Requirements applicable to all classes**

6.8.2.1 **Construction**

Basic principles

{NB: 6.8.2.1.1 to .15 is unchanged}

- 6.8.2.1.16 For all metals and alloys, the stress σ at the test pressure shall be lower than the smaller of the values given by the following formulae:

$$\sigma \leq 0.75 Re \text{ or } \sigma \leq 0.5 Rm$$

where

Re = apparent yield strength for steels having a clearly-defined yield point; or
guaranteed 0.2% proof strength for steels with no clearly-defined yield point
(1% for austenitic steels)

Rm = tensile strength.

The values of Re and Rm to be used shall be specified minimum values according to material standards. If no material standard exists for the metal or alloy in question, the values of Re and Rm used shall be approved by the competent authority ~~or by a body designated by that authority.~~

When austenitic steels are used, the specified minimum values according to the material standards may be exceeded by up to 15% if these higher values are attested in the inspection certificate. The minimum values shall, however, not be exceeded when the formula given in 6.8.2.1.18 is applied.

Minimum shell thickness

{NB 6.8.2.1.17 to 22 is unchanged}

Welding and inspection of welds

- 6.8.2.1.23 ~~Under 1.8.7.3 and 1.8.7.6, the ability of the manufacturer, or the maintenance or repair shop, to perform welding operations shall be verified and confirmed by either the competent authority or by the body designated by this authority, which issues the type approval.~~ A weld quality assurance system shall be operated by the manufacturer ~~or the maintenance or repair shop.~~ Welding shall be performed by qualified welders using a qualified welding process whose effectiveness (including any heat treatments required) has been demonstrated by tests. Non-destructive tests shall be carried out by radiography or by ultrasound and shall confirm that the quality of the welding is appropriate to the stresses.

The following checks shall be carried out for welds made by each welding process used by the manufacturer in accordance with the value of the coefficient λ used in determining the thickness of the shell in 6.8.2.1.17:

- $\lambda = 0.8$: All weld beads shall so far as possible be inspected visually on both faces and shall be subjected to non-destructive checks. The non-destructive checks shall include all weld "Tee" junctions and all inserts used to avoid welds crossing. The total length of welds to be examined shall not be less than:
- 10% of the length of all the longitudinal welds,
 - 10% of the length of all the circumferential welds,

10% of the length of all the circumferential welds in the tank ends, and
10% of the length of all the radial welds in the tank ends.

$\lambda = 0.9$: All weld beads shall so far as possible be inspected visually on both faces and shall be subjected to non-destructive checks. The non-destructive checks shall include all connections, inserts used to avoid welds crossing, and welds for the assembly of large-diameter items of equipment. The total length of welds to be examined shall not be less than:

100% of the length of all the longitudinal welds,
25% of the length of all the circumferential welds,
25% of the length of all the circumferential welds in the tank ends, and
25% of the length of all the radial welds in the tank ends.

$\lambda = 1$: All weld beads throughout their length shall be subjected to non-destructive checks and shall so far as possible be inspected visually on both faces. A weld test-piece shall be taken.

In the cases of either $\lambda = 0.8$ or $\lambda = 0.9$, when the presence of an unacceptable defect is detected in a portion of a weld, the non-destructive checks shall be extended to a portion of equal length on both sides of the portion that contains the defect. If the non-destructive checks detect an additional defect that is unacceptable, non-destructive checks shall be extended to all remaining welds of the same type of welding process.

Where ~~either the competent authority or a body designated by this authority has there~~ [are](#) doubts regarding the quality of welds, including the welds made to repair any defects revealed by the non-destructive checks, additional checks [of the welds may be required](#).

Other construction requirements

{NB 6.8.2.1.24 to 28 is unchanged}

6.8.2.2 *Items of equipment*

6.8.2.2.1 Suitable non-metallic materials may be used to manufacture service and structural equipment.

The items of equipment shall be so arranged as to be protected against the risk of being wrenched off or damaged during carriage or handling. They shall exhibit a suitable degree of safety comparable to that of the shells themselves, and shall in particular:

- be compatible with the substances carried; and
- meet the requirements of 6.8.2.1.1.

Piping shall be designed, constructed and installed so as to avoid the risk of damage due to thermal expansion and contraction, mechanical shock and vibration.

As many operating parts as possible shall be served by the smallest possible number of openings in the shell. The leakproofness of the service equipment including the closure (cover) of the inspection openings shall be ensured even in the event of overturning of the tank, taking into account the forces generated by an impact (such as acceleration and dynamic pressure). Limited release of the tank contents due to a pressure peak during the impact is however allowed.

The leakproofness of the service equipment shall be ensured even in the event of the overturning of the tank-container.

The gaskets shall be made of a material compatible with the substance carried and shall be replaced as soon as their effectiveness is impaired, for example as a result of ageing.

Gaskets ensuring the leakproofness of fittings requiring manipulation during normal use of tanks shall be so designed and arranged that manipulation of the fittings incorporating them does not damage them.

6.8.2.2.2

Each bottom-filling or bottom-discharge opening in tanks which are referred to, in Column (12) of Table A of Chapter 3.2, with a tank code including the letter "A" in its third part (see 4.3.4.1.1) shall be equipped with at least two mutually independent closures, mounted in series, comprising

- an external stop-valve with piping made of a malleable metal material and
- a closing device at the end of each pipe which may be a screw-threaded plug, a blank flange or an equivalent device. This closing device shall be sufficiently tight so that the substance is contained without loss. Measures shall be taken to enable the safe release of pressure in the discharge pipe before the closing device is completely removed.

Each bottom-filling or bottom-discharge opening in tanks which are referred to, in Column (12) of Table A of Chapter 3.2, with a tank code including the letter "B" in its third part (see 4.3.3.1.1 or 4.3.4.1.1) shall be equipped with at least three mutually independent closures, mounted in series, comprising

- an internal stop-valve, i.e. a stop-valve mounted inside the shell or in a welded flange or companion flange;
- an external stop-valve or an equivalent device⁶

one at the end of each pipe
and

as near as possible to the shell

⁶ In the case of tank-containers of less than 1 m³ capacity, the external stop-valve or other equivalent device may be replaced by a blank flange.

- a closing device at the end of each pipe which may be a screw-threaded plug, a blank flange or an equivalent device. This closing device shall be sufficiently tight so that the substance is contained without loss. Measures shall be taken to enable the safe release of pressure in the discharge pipe before the closing device is completely removed.

However, in the case of tanks intended for the carriage of certain crystallizable or highly viscous substances and shells fitted with an ebonite or thermoplastic coating, the internal stop-valve may be replaced by an external stop-valve provided with additional protection.

The internal stop-valve shall be operable either from above or from below. Its setting - open or closed - shall so far as possible in each case be capable of being verified from the ground. Internal stop-valve control devices shall be so designed as to prevent any unintended opening through impact or an inadvertent act.

The internal shut-off device shall continue to be effective in the event of damage to the external control device.

In order to avoid any loss of contents in the event of damage to the external fittings (pipes, lateral shut-off devices), the internal stop-valve and its seating shall be protected against the danger of being wrenched off by external stresses or shall be so designed as to resist them. The filling and discharge devices (including flanges or threaded plugs) and protective caps (if any) shall be capable of being secured against any unintended opening.

The position and/or direction of closure of shut-off devices shall be clearly apparent.

All openings of tanks which are referred to in Column (12) of Table A of Chapter 3.2, by a tank code including letter "C" or "D" in its third part (see 4.3.3.1.1 and 4.3.4.1.1) shall be situated above the surface level of the liquid. These tanks shall have no pipes or pipe connections below the surface level of the liquid. The cleaning openings (fist-holes) are, however, permitted in the lower part of the shell for tanks referred to by a tank code including letter "C" in its third part. This opening shall be capable of being sealed by a flange so closed as to be leakproof and whose design shall be approved by the competent authority ~~or by a body designated by that authority~~.

- 6.8.2.2.3 Tanks that are not hermetically closed may be fitted with vacuum valves to avoid an unacceptable negative internal pressure; these vacuum-relief valves shall be set to relieve at a vacuum setting not greater than the vacuum pressure for which the tank has been designed (see 6.8.2.1.7). Hermetically closed tanks shall not be fitted with vacuum valves. However, tanks of the tank code SGAH, S4AH or L4BH, fitted with vacuum valves which open at a negative pressure of not less than 21 kPa (0.21 bar) shall be considered as being hermetically closed. For tanks intended for the carriage of solid substances (powdery or granular) of packing groups II or III only, which do not liquefy during transport, the negative pressure may be reduced to not less than 5 kPa (0.05 bar).
- Vacuum valves and breather devices (see 6.8.2.2.6) used on tanks intended for the carriage of substances meeting the flash-point criteria of Class 3, shall prevent the immediate passage of flame into the shell by means of a suitable protective device, or the shell of the tank shall be explosion pressure shock resistant, which means being capable of withstanding without leakage, but allowing deformation, an explosion resulting from the passage of the flame.
- If the protective device consists of a suitable flame trap or flame arrester, it shall be positioned as close as possible to the shell or the shell compartment. For multi-compartment tanks, each compartment shall be protected separately.
- 6.8.2.2.4 The shell or each of its compartments shall be provided with an opening large enough to permit inspection.
- 6.8.2.2.5 *(Reserved)*
- 6.8.2.2.6 Tanks intended for the carriage of liquids having a vapour pressure of not more than 110 kPa (1.1 bar) (absolute) at 50 °C shall have a breather device and a safety device to prevent the contents from spilling out if the tank overturns; otherwise they shall conform to 6.8.2.2.7 or 6.8.2.2.8.
- 6.8.2.2.7 Tanks intended for the carriage of liquids having a vapour pressure of more than 110 kPa (1.1 bar) at 50 °C and a boiling point of more than 35 °C shall have a safety valve set at not less than 150 kPa (1.5 bar) (gauge pressure) and which shall be fully open at a pressure not exceeding the test pressure; otherwise they shall conform to 6.8.2.2.8.
- 6.8.2.2.8 Tanks intended for the carriage of liquids having a boiling point of not more than 35 °C shall have a safety valve set at not less than 300 kPa (3 bar) gauge pressure and which shall be fully open at a pressure not exceeding the test pressure; otherwise they shall be hermetically closed⁷.
- 6.8.2.2.9 Movable parts such as covers, closures, etc., which are liable to come into frictional or percussive contact with aluminium shells intended for the carriage of flammable liquids having a flash-point of not more than 60 °C or for the carriage of flammable gases shall not be made of unprotected corrodible steel.

⁷ For the definition of "hermetically closed tank" see 1.2.1.

6.8.2.2.10 If tanks required to be hermetically closed are equipped with safety valves, these shall be preceded by a bursting disc and the following conditions shall be observed:

The arrangement of the bursting disc and safety valve shall be such as to satisfy the competent authority. A pressure gauge or another suitable indicator shall be provided in the space between the bursting disc and the safety valve, to enable detection of any rupture, perforation or leakage of the disc which may disrupt the action of the safety valve.

6.8.2.3 Type examination and type approval

6.8.2.3.1 Type examination

The provisions of 1.8.7.2.1 shall be applied.

Type approval

6.8.2.3.2

In accordance with 1.8.7.2.2.1, the competent authority ~~or a body designated by that authority~~ shall issue in respect of each new type of tank-vehicle, demountable tank, tank-container, tank swap body, battery-vehicle or MEGC a certificate attesting that the type, including fastenings, which ~~it has~~ been examined-inspected, is suitable for the purpose for which it is intended and meets the construction requirements of 6.8.2.1, the equipment requirements of 6.8.2.2 and the special conditions for the classes of substances carried.

The certificate shall show in addition to 1.8.7.2.2:

~~the results of the test;~~

- [an approval number for the type which shall consist of the distinguishing sign used on vehicles in international road traffic (RID)/(ADR)⁸ of the State in whose territory the approval was granted and a registration number;]
- the tank code in accordance with 4.3.3.1.1 or 4.3.4.1.1;
- the alphanumerical codes of special provisions of construction (TC), equipment (TE) and type approval (TA) of 6.8.4 which are shown in column (13) of Table A of Chapter 3.2 for those substances for the carriage of which the tank has been approved;
- if required, the substances and/or group of substances for the carriage of which the tank has been approved. These shall be shown with their chemical name or the corresponding collective entry (see 2.1.1.2), together with their classification (class, classification code and packing group). With the exception of substances of Class 2 and those listed in 4.3.4.1.3, the listing of approved substances may be dispensed with. In such cases, groups of substances permitted on the basis of the tank code shown in the rationalised approach in 4.3.4.1.2 shall be accepted for carriage taking into account any relevant special provision.

⁸ Distinguishing sign of the State of registration used on motor vehicles and trailers in international road traffic, e.g. in accordance with the Geneva Convention on Road Traffic of 1949 or the Vienna Convention on Road Traffic of 1968.

The substances referred to in the certificate or the groups of substances approved according to the rationalised approach shall, in general, be compatible with the characteristics of the tank. A reservation shall be included in the certificate if it was not possible to investigate this compatibility exhaustively when the type approval was issued.

A copy of the certificate shall be attached to the tank record of each tank, battery-vehicle or MEGC constructed (see 4.3.2.1.7).

~~The competent authority or a body designated by that authority shall~~ At the request of the ~~manufacturer of the service equipment applicant~~ carry out a separate type approval of valves and other service equipment for which a standard is listed in the table in 6.8.2.6.1, ~~shall be carried out~~ in accordance with that standard. This separate type approval shall be taken into account when issuing the certificate for the tank, if the test results are presented and the valves and other service equipment are fit for the intended use.

6.8.2.3.2

If the tanks, battery-vehicles or MEGCs are manufactured in series without modification this approval shall be valid for the tanks, battery-vehicles or MEGCs manufactured in series or according to the prototype.

A type approval may however serve for the approval of tanks with limited variations of the design that either reduce the loads and stresses on the tanks (e.g. reduced pressure, reduced mass, reduced volume) or increase the safety of the structure (e.g. increased shell thickness, more surge-plates, decreased diameter of openings). The limited variations shall be clearly described in the type approval certificate.

6.8.2.3.3

(Deleted)

~~The following requirements apply to tanks for which special provision TA4 of 6.8.4 (and therefore 1.8.7.2.4) does not apply.~~

~~The type approval shall be valid for a maximum of ten years. If within that period the relevant technical requirements of ADR (including referenced standards) have changed so that the approved type is no longer in conformity with them, the competent authority or the body designated by that authority which issued the type approval shall withdraw it and inform the holder of the type approval.~~

~~NOTE: For the ultimate dates for withdrawal of existing type approvals, see column (5) of the tables in 6.8.2.6 or 6.8.3.6 as appropriate.~~

~~If a type approval has expired or has been withdrawn, the manufacture of the tanks, battery vehicles or MEGCs according to that type approval is no longer authorised.~~

~~In such a case, the relevant provisions concerning the use, periodic inspection and intermediate inspection of tanks, battery vehicles or MEGCs contained in the type approval which has expired or has been withdrawn shall continue to apply to these tanks, battery vehicles or MEGCs constructed before the expiry or the withdrawal if they may continue to be used.~~

~~They may continue to be used as long as they remain in conformity with the requirements of ADR. If they are no longer in conformity with the requirements of ADR they may~~

~~continue to be used only if such use is permitted by relevant transitional measures in Chapter 1.6.~~

~~Type approvals may be renewed by a complete review and assessment for conformity with the provisions of ADR applicable at the date of renewal. Renewal is not permitted after a type approval has been withdrawn. Interim amendments of an existing type approval not affecting conformity (see 6.8.2.3.2) do not extend or modify the original validity of the certificate.~~

~~*NOTE: The review and assessment of conformity can be done by a body other than the one which issued the original type approval.*~~

~~The issuing body shall keep all documents for the type approval for the whole period of validity including its renewals if granted.~~

~~If the designation of the issuing body is revoked or restricted, or when the body has ceased activity, the competent authority shall take appropriate steps to ensure that the files are either processed by another body or kept available.~~

6.8.2.3.4 *(Deleted)*

~~In the case of a modification of a tank with a valid, expired or withdrawn type approval, the testing, inspection and approval are limited to the parts of the tank that have been modified. The modification shall meet the provisions of ADR applicable at the time of the modification. For all parts of the tank not affected by the modification, the documentation of the initial type approval remains valid.~~

~~A modification may apply to one or more tanks covered by a type approval.~~

~~A certificate approving the modification shall be issued by the competent authority of any Contracting Party to ADR or by a body designated by this authority and shall be kept as part of the tank record.~~

~~Each application for an approval certificate for a modification shall be lodged with a single competent authority or body designated by this authority.~~

6.8.2.4 *Inspections and tests*

6.8.2.4.1 Shells and their equipment shall either together or separately undergo an initial inspection before being put into service. This inspection shall include:

- a check of conformity to the approved type;
- a check of the design characteristics⁹

⁹ The check of the design characteristics shall also include, for shells requiring a test pressure of 1 MPa (10 bar) or higher, the taking of weld test-pieces (work samples) in accordance with 6.8.2.1.23 and the tests prescribed in 6.8.5.

- an examination of the internal and external conditions;
- a hydraulic pressure test¹⁰ at the test pressure indicated on the plate prescribed in 6.8.2.5.1; and
- a leakproofness test and a check of satisfactory operation of the equipment.

Except in the case of Class 2, the test pressure for the hydraulic pressure test depends on the calculation pressure and shall be at least equal to the pressure indicated below:

Calculation pressure (bar)	Test pressure (bar)
G ¹¹	G ¹¹
1.5	1.5
2.65	2.65
4	4
10	4
15	4
21	10 (4 ¹²)

The minimum test pressures for Class 2 are given in the table of gases and gas mixtures in 4.3.3.2.5.

The hydraulic pressure test shall be carried out on the shell as a whole and separately on each compartment of compartmented shells.

¹⁰ In special cases and with the agreement of [the expert approved by](#) the competent authority, the hydraulic pressure test may be replaced by a pressure test using another liquid or gas, where such an operation does not present any danger.

¹¹ G = minimum calculation pressure according to the general requirements of 6.8.2.1.14 (see 4.3.4.1).

¹² Minimum test pressure for UN No. 1744 bromine or UN No. 1744 bromine solution.

The test shall be carried out on each compartment at a pressure at least equal to:

- 1.3 times the maximum working pressure;
or
- 1.3 times the static pressure of the substance to be carried but not less than 1.3 times the static pressure of water with a minimum of 20 kPa (0.2 bar) for gravity-discharge tanks according to 6.8.2.1.14 (a).

The hydraulic pressure test shall be carried out before the installation of a thermal insulation as may be necessary.

If the shells and their equipment are tested separately, they shall be jointly subjected to a leakproofness test after assembly in accordance with 6.8.2.4.3.

The leakproofness test shall be carried out separately on each compartment of compartmented shells.

6.8.2.4.2 Shells and their equipment shall undergo periodic inspections no later than every

six years.

five years.

These periodic inspections shall include:

- An external and internal examination;
- A leakproofness test in accordance with 6.8.2.4.3 of the shell with its equipment and check of the satisfactory operation of all the equipment;
- As a general rule, a hydraulic pressure test¹⁰ (for the test pressure for the shells and compartments if applicable, see 6.8.2.4.1).

Sheathing for thermal or other insulation shall be removed only to the extent required for reliable appraisal of the characteristics of the shell.

In the case of tanks intended for the carriage of powdery or granular substances, and with the agreement of the ~~expert approved by the competent authority inspection body~~, the periodic hydraulic pressure tests may be omitted and replaced by leakproofness tests in

¹⁰ In special cases and with the agreement of ~~the expert approved by~~ the competent authority, the hydraulic pressure test may be replaced by a pressure test using another liquid or gas, where such an operation does not present any danger.

accordance with 6.8.2.4.3, at an effective internal pressure at least equal to the maximum working pressure.

6.8.2.4.3 Shells and their equipment shall undergo intermediate inspections at least every

three years | two and a half years

after the initial inspection and each periodic inspection. These intermediate inspections may be performed within three months before or after the specified date.

However, the intermediate inspection may be performed at any time before the specified date.

If an intermediate inspection is performed more than three months before the due date, another intermediate inspection shall be performed at the latest

three years | two and a half years

after this date.

These intermediate inspections shall include a leakproofness test of the shell with its equipment and check of the satisfactory operation of all the equipment. For this purpose the tank shall be subjected to an effective internal pressure at least equal to the maximum working pressure. For tanks intended for the carriage of liquids or solids in the granular or powdery state, when a gas is used for the leakproofness test it shall be carried out at a pressure at least equal to 25% of the maximum working pressure. In all cases, it shall not be less than 20 kPa (0.2 bar) (gauge pressure).

For tanks equipped with breather devices and a safety device to prevent the contents spilling out if the tank overturns, the leakproofness test shall be carried out at a pressure at least equal to the static pressure of the densest substance to be carried, the static pressure of water or 20 kPa (0.2 bar) whichever is the highest.

The leakproofness test shall be carried out separately on each compartment of compartmented shells.

6.8.2.4.4 When the safety of the tank or of its equipment may have been impaired as a result of repairs, alterations or accident, an exceptional check shall be carried out. If an exceptional check fulfilling the requirements of 6.8.2.4.2 has been performed, then the exceptional check may be considered to be a periodic inspection. If an exceptional check fulfilling the requirements of 6.8.2.4.3 has been performed then the exceptional check may be considered to be an intermediate inspection.

6.8.2.4.5 ~~The tests, inspections and checks in accordance with 6.8.2.4.1 to 6.8.2.4.4 shall be carried out by the expert approved by the competent authority.~~ Certificates shall be issued showing the results of [the tests, inspections and checks in accordance with 6.8.2.4.1 to 6.8.2.4.4 these operations](#), even in the case of negative results. These certificates shall refer to the list of the substances permitted for carriage in this tank or to the tank code and the alphanumeric codes of special provisions in accordance with 6.8.2.3.2.

A copy of these certificates shall be attached to the tank record of each tank, battery-vehicle or MEGC tested (see 4.3.2.1.7).

6.8.2.5 *Marking*

6.8.2.5.1 Every tank shall be fitted with a corrosion-resistant metal plate permanently attached to the tank in a place readily accessible for inspection. The following particulars at least shall be marked on the plate by stamping or by any other similar method. These particulars may be engraved directly on the walls of the shell itself, if the walls are so reinforced that the strength of the shell is not impaired¹³:

- approval number;
- manufacturer's name or mark;
- manufacturer's serial number;
- year of manufacture;
- test pressure (gauge pressure);
- external design pressure (see 6.8.2.1.7);
- capacity of the shell – in the case of multiple-compartment shells, the capacity of each compartment –, followed by the symbol "S" when the shells or the compartments of more than 7 500 litres are divided by surge plates into sections of not more than 7 500 litres capacity;
- design temperature (only if above +50 °C or below -20 °C);
- date and type of the most recent test: "month, year" followed by a "P" when the test is the initial test or a periodic test in accordance with 6.8.2.4.1 and 6.8.2.4.2, or "month, year" followed by an "L" when the test is an intermediate leakproofness test in accordance with 6.8.2.4.3;
- stamp of the [inspection body](#) ~~expert~~ who carried out the tests;
- material of the shell and reference to materials standards, if available and, where appropriate, the protective lining;
- test pressure on the shell as a whole and test pressure by compartment in MPa or bar (gauge pressure) where the pressure by compartment is less than the pressure on the shell.

¹³ Add the units of measurement after the numerical values.

In addition, the maximum working pressure allowed shall be inscribed on pressure-filled or pressure-discharge tanks.

6.8.2.5.2

The following particulars shall be inscribed on the tank-vehicle (on the tank itself or on plates)¹³:

- name of owner or operator;
- unladen mass of the tank-vehicle; and
- maximum permissible mass of the tank-vehicle.

The following particulars shall be inscribed on a demountable tank (on the tank itself or on plates)¹³:

- name of owner or operator;
- "demountable tank";
- tare of the tank;
- maximum permissible gross mass of the tank;
- for the substances according to 4.3.4.1.3, the proper shipping name of the substance(s) accepted for carriage;
- tank code according to 4.3.4.1.1; and
- for substances other than those according to 4.3.4.1.3, the alphanumeric codes of all special provisions TC and TE which are shown in column (13) of Table A of Chapter 3.2 for the substances to be carried in the tank.

The following particulars shall be inscribed on the tank-container (on the tank itself or on plates)¹³:

- names of owner and of operator;
- capacity of the shell;
- tare;
- maximum permissible gross mass;
- for the substances according to 4.3.4.1.3, the proper shipping name of the substance(s) accepted for carriage;
- tank code according to 4.3.4.1.1; and
- for substances other than those according to 4.3.4.1.3, the alphanumeric codes of all special provisions TC and TE which are shown in column (13) of Table A of Chapter 3.2 for the substances to be carried in the tank.

6.8.2.6 Requirements for tanks which are designed, constructed and tested according to referenced standards

NOTE: Persons or bodies identified in standards as having responsibilities in accordance with ADR shall meet the requirements of ADR.

6.8.2.6.1 *Design and construction*

Type approval certificates shall be issued in accordance with 1.8.7 or 6.8.2.3. The standards referenced in the table below shall be applied for the issue of type approvals as indicated in column (4) to meet the requirements of Chapter 6.8 referred to in column (3). The standards shall be applied in accordance with 1.1.5. Column (5) gives the latest date when existing type approvals shall be withdrawn according to 1.8.7.2.4 or 6.8.2.3.3; if no date is shown the type approval remains valid until it expires.

¹³ Add the units of measurement after the numerical values.

Since 1 January 2009 the use of the referenced standards has been mandatory. Exceptions are dealt with in 6.8.2.7 and 6.8.3.7.

If more than one standard is referenced for the application of the same requirements, only one of them shall be applied, but in full unless otherwise specified in the table below.

The scope of application of each standard is defined in the scope clause of the standard unless otherwise specified in the Table below.

{NB The table of referenced standards is unchanged}

6.8.2.6.2 *Type examination, inspection and test*

The standards referenced in the table below shall be applied for the [type examination and the](#) inspection and test of tanks as indicated in column (4) to meet the requirements of Chapter 6.8 referred to in column (3). The standards shall be applied in accordance with 1.1.5.

The use of a referenced standard is mandatory.

The scope of application of each standard is defined in the scope clause of the standard unless otherwise specified in the Table below.

Reference	Title of document	Applicable sub-sections and paragraphs	Applicable
(1)	(2)	(3)	(4)
EN 12972:2007	Tanks for transport of dangerous goods – Testing, inspection and marking of metallic tanks	6.8.2.4 6.8.3.4	Until further notice
EN 14334:2014	LPG equipment and accessories – Inspection and testing of LPG road tankers	6.8.2.4 (except 6.8.2.4.1), 6.8.3.4.2 and 6.8.3.4.9	Until further notice

6.8.2.7 *Requirements for tanks which are not designed, constructed and tested according to referenced standards*

To reflect scientific and technical progress or where no standard is referenced in 6.8.2.6 or to deal with specific aspects not addressed in a standard referenced in 6.8.2.6, the competent authority may recognize the use of a technical code providing the same level of safety. Tanks shall, however, comply with the minimum requirements of 6.8.2.

The competent authority shall transmit to the secretariat of UNECE a list of the technical codes that it recognises. The list should include the following details: name and date of the code, purpose of the code and details of where it may be obtained. The secretariat shall make this information publicly available on its website.

A standard which has been adopted for reference in a future edition of the ADR may be approved by the competent authority for use without notifying the UNECE secretariat.

For testing, inspection and marking, the applicable standard referenced in 6.8.2.6 may also be used.

6.8.3 Special requirements applicable to Class 2

6.8.3.1 Construction of shells

{NB 6.8.3.1.1 to 5 is unchanged}

6.8.3.2 Items of equipment

{6.8.3.2.1 to 28 is unchanged}

6.8.3.3 Type examination and type approval

No special requirements.

6.8.3.4 Inspections and tests

6.8.3.4.1 The materials of every welded shell with the exception of cylinders, tubes, pressure drums and cylinders as part of bundles of cylinders which are elements of a battery-vehicle or of a MEGC shall be tested according to the method described in 6.8.5.

6.8.3.4.2 The basic requirements for the test pressure are given in 4.3.3.2.1 to 4.3.3.2.4 and the minimum test pressures are given in the table of gases and gas mixtures in 4.3.3.2.5.

6.8.3.4.3 The first hydraulic pressure test shall be carried out before thermal insulation is placed in position. When the shell, its fittings, piping and items of equipment have been tested separately, the tank shall be subjected to a leakproofness test after assembly.

6.8.3.4.4 The capacity of each shell intended for the carriage of compressed gases filled by mass, liquefied gases or dissolved gases shall be determined, under the supervision of an inspection body expert approved by the competent authority, by weighing or volumetric measurement of the quantity of water which fills the shell; the measurement of shell capacity shall be accurate to within 1%. Determination by a calculation based on the dimensions of the shell is not permitted. The maximum filling masses allowed in

accordance with packing instruction P200 or P203 in 4.1.4.1 as well as 4.3.3.2.2 and 4.3.3.2.3 shall be prescribed by an ~~approved expert~~ [inspection body](#).

6.8.3.4.5 Checking of the welds shall be carried out in accordance with the $\lambda=1$ requirements of 6.8.2.1.23.

6.8.3.4.6 By derogation from the requirements of 6.8.2.4.2, the periodic inspections shall take place:

at least after six
years

at least after eight years

of service and thereafter at least every 12 years in the case of tanks intended for the carriage of refrigerated liquefied gases.

The intermediate inspections according to 6.8.2.4.3 shall be carried out at least six years after each periodic inspection.

A leakproofness test or an intermediate inspection according to 6.8.2.4.3 may be performed, at the request of the competent authority, between any two successive periodic inspections.

6.8.3.4.7 In the case of vacuum-insulated tanks, the hydraulic-pressure test and the check of the internal condition may, with the consent of the ~~inspection body approved expert~~, be replaced by a leakproofness test and measurement of the vacuum.

6.8.3.4.8 If, at the time of periodic inspections, openings have been made in shells intended for the carriage of refrigerated liquefied gases, the method by which they are hermetically closed before the shells are returned to service shall be approved by the ~~inspection body approved expert~~ and shall ensure the integrity of the shell.

6.8.3.4.9 Leakproofness tests of tanks intended for the carriage of gases shall be performed at a pressure of not less than:

- For compressed gases, liquefied gases and dissolved gases: 20% of the test pressure;
- For refrigerated liquefied gases: 90% of the maximum working pressure.

Holding times for tank-containers carrying refrigerated liquefied gases

6.8.3.4.10

The reference holding time for tank-containers carrying refrigerated liquefied gases shall be determined on the basis of the following:

- (a) The effectiveness of the insulation system, determined in accordance with 6.8.3.4.11;

- (b) The lowest set pressure of the pressure limiting device(s);
- (c) The initial filling conditions;
- (d) An assumed ambient temperature of 30 °C;
- (e) The physical properties of the individual refrigerated liquefied gas intended to be carried.

6.8.3.4.11

The effectiveness of the insulation system (heat influx in Watts) shall be determined by type testing the tank-containers. This test shall consist of either:

- (a) A constant pressure test (for example at atmospheric pressure) during which the loss of refrigerated liquefied gas is measured over a period of time; or
- (b) A closed system test during which the rise in pressure in the shell is measured over a period of time.

When performing the constant pressure test, variations in atmospheric pressure shall be taken into account. When performing either test corrections shall be made for any variation of the ambient temperature from the assumed ambient temperature reference value of 30 °C.

NOTE: ISO 21014:2006 "Cryogenic vessels — Cryogenic insulation performance" details methods of determining the insulation performance of cryogenic vessels and provides a method of calculating the holding time.

Inspections and tests for battery-vehicles and MEGCs

6.8.3.4.12

The elements and items of equipment of each battery-vehicle or MEGC shall be inspected and tested either together or separately before being put into service for the first time (initial inspection and test). Thereafter battery-vehicles or MEGCs the elements of which are receptacles shall be inspected at not more than five-year intervals. Battery-vehicles and MEGCs the elements of which are tanks shall be inspected according to 6.8.3.4.6. An exceptional inspection and test shall be performed regardless of the last periodic inspection and test when necessary according to 6.8.3.4.16.

6.8.3.4.13

The initial inspection shall include:

- a check of conformity to the approved type;
- a check of the design characteristics;
- an examination of the internal and external conditions;

- a hydraulic pressure test¹⁰ at the test pressure indicated on the plate prescribed in 6.8.3.5.10;
- a leakproofness test at the maximum working pressure; and
- a check of satisfactory operation of the equipment.

When the elements and their fittings have been pressure-tested separately, they shall be subjected together after assembly to a leakproofness test.

6.8.3.4.14 Cylinders, tubes and pressure drums and cylinders as part of bundles of cylinders shall be tested according to packing instruction P200 or P203 in 4.1.4.1.

The test pressure of the manifold of the battery-vehicle or MEGC shall be the same as that of the elements of the battery-vehicle or MEGC. The pressure test of the manifold may be performed as a hydraulic test or by using another liquid or gas with the agreement of the competent authority ~~or its authorised body~~. By derogation from this requirement, the test pressure for the manifold of battery-vehicle or MEGC shall not be less than 300 bar for UN No. 1001 acetylene, dissolved.

6.8.3.4.15 The periodic inspection shall include a leakproofness test at the maximum working pressure and an external examination of the structure, the elements and the service equipment without disassembling. The elements and the piping shall be tested at the periodicity defined in packing instruction P200 of 4.1.4.1 and in accordance with the requirements of 6.2.1.6 and 6.2.3.5 respectively. When the elements and equipment have been pressure-tested separately, they shall be subjected together after assembly to a leakproofness test.

6.8.3.4.16 An exceptional inspection and test is necessary when the battery-vehicle or MEGC shows evidence of damaged or corroded areas, or leakage, or any other conditions, that indicate a deficiency that could affect the integrity of the battery-vehicle or MEGC. The extent of the exceptional inspection and test and, if deemed necessary, the disassembling of elements shall depend on the amount of damage or deterioration of the battery-vehicle or MEGC. It shall include at least the examinations required under 6.8.3.4.17.

6.8.3.4.17 The examinations shall ensure that:

- (a) The elements are inspected externally for pitting, corrosion, or abrasions, dents, distortions, defects in welds or any other conditions, including leakage, that might render the battery-vehicles or MEGCs unsafe for transport;
- (b) The piping, valves, and gaskets are inspected for corroded areas, defects, and other conditions, including leakage, that might render battery-vehicles or MEGCs unsafe for filling, discharge or transport;
- (c) Missing or loose bolts or nuts on any flanged connection or blank flange are replaced or tightened;
- (d) All emergency devices and valves are free from corrosion, distortion and any damage or defect that could prevent their normal operation. Remote closure devices and self-closing stop-valves shall be operated to demonstrate proper operation;
- (e) Required marks on the battery-vehicles or MEGCs are legible and in accordance with the applicable requirements; and

¹⁰ In special cases and with the agreement of ~~the expert approved by~~ the competent authority, the hydraulic pressure test may be replaced by a pressure test using another liquid or gas, where such an operation does not present any danger.

- (f) Any framework, supports and arrangements for lifting the battery-vehicles or MEGCs are in satisfactory condition.

6.8.3.4.18 The tests, inspections and checks in accordance with 6.8.3.4.12 to 6.8.3.4.17 shall be carried out by ~~the expert approved by the competent authority~~ an inspection body. Certificates shall be issued showing the results of these operations, even in the case of negative results.

These certificates shall refer to the list of the substances permitted for carriage in this battery-vehicle or MEGC in accordance with 6.8.2.3.1.

A copy of these certificates shall be attached to the tank record of each tank, battery-vehicle or MEGC tested (see 4.3.2.1.7).

6.8.3.5 **Marking**

6.8.3.5.1 The following additional particulars shall be marked by stamping or by any other similar method on the plate prescribed in 6.8.2.5.1, or directly on the walls of the shell itself if the walls are so reinforced that the strength of the tank is not impaired.

6.8.3.5.2 On tanks intended for the carriage of only one substance:

- the proper shipping name of the gas and, in addition for gases classified under an n.o.s. entry, the technical name¹⁶;

This indication shall be supplemented:

- in the case of tanks intended for the carriage of compressed gases filled by volume (pressure), by an indication of the maximum filling pressure at 15 °C permitted for the tank; and
- in the case of tanks intended for the carriage of compressed gases filled by mass, and of liquefied gases, refrigerated liquefied gases or dissolved gases by an indication of the maximum permissible load mass in kg and of the filling temperature if below -20 °C.

6.8.3.5.3 On multipurpose tanks:

- the proper shipping names of the gases and, in addition for gases classified under an n.o.s. entry, the technical name of the gases ¹⁶ for whose carriage the tank is approved.

These particulars shall be supplemented by an indication of the maximum permissible load mass in kg for each gas.

¹⁶ *Instead of the proper shipping name or, if applicable, of the proper shipping name of the n.o.s. entry followed by the technical name, the use of the following names is permitted:*

- *for UN No. 1078 refrigerant gas, n.o.s.: mixture F1, mixture F2, mixture F3;*
- *for UN No. 1060 methylacetylene and propadiene mixtures, stabilized: mixture P1, mixture P2;*
- *for UN No. 1965 hydrocarbon gas mixture, liquefied, n.o.s.: mixture A, mixture A01, mixture A02, mixture A0, mixture A1, mixture B1, mixture B2, mixture B, mixture C. The names customary in the trade and mentioned in 2.2.2.3, Classification code 2F, UN No. 1965, Note 1 may be used only as a complement;*
- *for UN No. 1010 Butadienes, stabilized: 1,2-Butadiene, stabilized, 1,3-Butadiene, stabilized.*

6.8.3.5.4 On tanks intended for the carriage of refrigerated liquefied gases:

- the maximum working pressure allowed.
- | | |
|---|--|
| - | reference holding time (in days or hours) for each gas ¹³ ; |
| - | the associated initial pressures (in bar gauge or kPa gauge) ¹³ |

6.8.3.5.5 On tanks equipped with thermal insulation:

- the inscription "thermally insulated" or "thermally insulated by vacuum".

6.8.3.5.6 In addition to the particulars prescribed in 6.8.2.5.2, the following shall be inscribed on the tank-vehicle (on the tank itself or on plates) ¹³ :	In addition to the particulars prescribed in 6.8.2.5.2, the following shall be inscribed on the tank-container (on the tank itself or on plates) ¹³ :
--	--

- | | |
|--|--|
| <ul style="list-style-type: none"> (a) - the tank code according to the certificate (see 6.8.2.3.1) with the actual test pressure of the tank; - the inscription: "minimum filling temperature allowed: ..."; (b) where the tank is intended for the carriage of one substance only: <ul style="list-style-type: none"> - the proper shipping name of the gas and, in addition for gases classified under an n.o.s. entry, the technical name¹⁶; - for compressed gases which are filled by mass, and for liquefied gases, refrigerated liquefied gases or dissolved gases, the maximum permissible load mass in kg; (c) where the tank is a multipurpose tank: <ul style="list-style-type: none"> - the proper shipping name of the gas and, for gases classified under an n.o.s. entry, the technical name¹⁶ of all gases to whose carriage the tank is assigned with an indication of the maximum permissible load mass in kg for each of them; (d) where the shell is equipped with thermal insulation: <ul style="list-style-type: none"> - the inscription "thermally insulated" (or "thermally insulated by vacuum"), in an official language of the country of registration and also, if that language is not English, French or German, in English, French or German, unless any agreements concluded between the countries concerned in the transport operation provide otherwise. | |
|--|--|

6.8.3.5.7 *(Reserved)*

6.8.3.5.8 These particulars shall not be required in the case of a vehicle carrying demountable tanks.	
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6.8.3.5.9 *(Reserved)*
Marking of battery-vehicles and MEGCs

¹³ Add the units of measurement after the numerical values.

6.8.3.5.10 Every battery-vehicle and every MEGC shall be fitted with a corrosion-resistant metal plate permanently attached in a place readily accessible for inspection. The following particulars at least shall be marked on the plate by stamping or by any other similar method¹³

- approval number;
- manufacturer's name or mark;
- manufacturer's serial number;
- year of manufacture;
- test pressure (gauge pressure)
- design temperature (only if above +50 °C or below -20 °C);
- date (month and year) of initial test and most recent periodic test in accordance with 6.8.3.4.12 and 6.8.3.4.15;
- stamp of the [expert-inspection body](#) who carried out the tests.

6.8.3.5.11 The following particulars shall be inscribed on the battery-vehicle itself or on a plate¹³:

- names of owner or of operator;
 - number of elements;
 - total capacity of the elements;
- and for battery-vehicles filled by mass:
- unladen mass;
 - maximum permissible mass.

The following particulars shall be inscribed either on the MEGC itself or on a plate¹³:

- names of owner and of operator;
 - number of elements;
 - total capacity of the elements;
 - maximum permissible laden mass;
 - the tank code according to the certificate of approval (see 6.8.2.3.1) with the actual test pressure of the MEGC;
 - the proper shipping name of the gases, and in addition, for gases classified under an n.o.s. entry, the technical name¹⁶ of the gases for whose carriage the MEGC is used;
- and for MEGCs filled by mass:
- tare.

¹³ Add the units of measurement after the numerical values.

¹⁶ *Instead of the proper shipping name or, if applicable, of the proper shipping name of the n.o.s. entry followed by the technical name, the use of the following names is permitted:*

- *for UN No. 1078 refrigerant gas, n.o.s: mixture F1, mixture F2, mixture F3;*
- *for UN No. 1060 methylacetylene and propadiene mixtures, stabilized: mixture P1, mixture P2;*
- *for UN No. 1965 hydrocarbon gas mixture, liquefied, n.o.s: mixture A, mixture A01, mixture A02, mixture A0, mixture A1, mixture B1, mixture B2, mixture B, mixture C. The names customary in the trade and mentioned in 2.2.2.3, Classification code 2F, UN No. 1965, Note 1 may be used only as a complement;*
- *for UN No. 1010 Butadienes, stabilized: 1,2-Butadiene, stabilized, 1,3-Butadiene, stabilized.*

6.8.3.5.12 The frame of a battery-vehicle or MEGC shall bear near the filling point a plate specifying:

- the maximum filling pressure¹³ at 15 °C allowed for elements intended for compressed gases;
- the proper shipping name of the gas in accordance with Chapter 3.2 and, in addition for gases classified under an n.o.s. entry, the technical name¹⁶;

and, in addition, in the case of liquefied gases:

- the permissible maximum load per element¹³.

6.8.3.5.13 Cylinders, tubes and pressure drums, and cylinders as part of bundles of cylinders, shall be marked according to 6.2.2.7. These receptacles need not be labelled individually with the danger labels as required in Chapter 5.2.

Battery-vehicles and MEGCs shall be placarded and marked according to Chapter 5.3.

6.8.3.6 ***Requirements for battery-vehicles and MEGCs which are designed, constructed and tested according to referenced standards***

NOTE: *Persons or bodies identified in standards as having responsibilities in accordance with ADR shall meet the requirements of ADR.*

Type approval certificates shall be issued in accordance with 1.8.7. The standard referenced in the table below shall be applied for the issue of type approvals as indicated in column (4) to meet the requirements of Chapter 6.8 referred to in column (3). The standards shall be applied in accordance with 1.1.5. Column (5) gives the latest date when existing type approvals shall be withdrawn according to 1.8.7.2.4; if no date is shown the type approval remains valid until it expires.

Since 1 January 2009 the use of the referenced standards has been mandatory. Exceptions are dealt with in 6.8.3.7

If more than one standard is referenced for the application of the same requirements, only one of them shall be applied, but in full unless otherwise specified in the table below.

The scope of application of each standard is defined in the scope clause of the standard unless otherwise specified in the Table below.

¹³ Add the units of measurements after the numerical values.

¹⁶ *Instead of the proper shipping name or, if applicable, of the proper shipping name of the n.o.s. entry followed by the technical name, the use of the following names is permitted:*

- for UN No. 1078 refrigerant gas, n.o.s: mixture F1, mixture F2, mixture F3;
- for UN No. 1060 methylacetylene and propadiene mixtures, stabilized: mixture P1, mixture P2;
- for UN No. 1965 hydrocarbon gas mixture, liquefied, n.o.s: mixture A, mixture A01, mixture A02, mixture A0, mixture A1, mixture B1, mixture B2, mixture B, mixture C. The names customary in the trade and mentioned in 2.2.2.3, Classification code 2F, UN No. 1965, Note 1 may be used only as a complement;
- for UN No. 1010 Butadienes, stabilized: 1,2-Butadiene, stabilized, 1,3-Butadiene, stabilized.

Reference	Title of document	Applicable sub-sections and paragraphs	Applicable for new type approvals or for renewals	Latest date for withdrawal of existing type approvals
(1)	(2)	(3)	(4)	(5)
EN 13807:2003	Transportable gas cylinders – Battery vehicles – Design, manufacture, identification and testing <i>NOTE: Where appropriate this standard may also be applied to MEGCs which consist of pressure receptacles.</i>	6.8.3.1.4 and 6.8.3.1.5, 6.8.3.2.18 to 6.8.3.2.26, 6.8.3.4.12 to 6.8.3.4.14 and 6.8.3.5.10 to 6.8.3.5.13	Until further notice	

6.8.3.7 Requirements for battery-vehicles and MEGCs which are not designed, constructed and tested according to referenced standards

To reflect scientific and technical progress or where no standard is referenced in 6.8.3.6 or to deal with specific aspects not addressed in a standard referenced in 6.8.3.6, the competent authority may recognize the use of a technical code providing the same level of safety. Battery-vehicles and MEGCs shall, however, comply with the minimum requirements of 6.8.3.

~~In the type approval the issuing body shall specify~~ The procedure for periodic inspections shall be specified in the type approval if the standards referenced in 6.2.2, 6.2.4 or 6.8.2.6 are not applicable or shall not be applied.

The competent authority shall transmit to the secretariat of UNECE a list of the technical codes that it recognises. The list should include the following details: name and date of the code, purpose of the code and details of where it may be obtained. The secretariat shall make this information publicly available on its website.

A standard which has been adopted for reference in a future edition of the ADR may be approved by the competent authority for use without notifying the UNECE secretariat.

6.8.4 Special provisions

(...)

TA4 *(Deleted)*

~~The conformity assessment procedures of section 1.8.7 shall be applied by the competent authority, its delegate or inspection body conforming to 1.8.6.2, 1.8.6.4, 1.8.6.5 and 1.8.6.8 and accredited to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A.~~

(...)

TT2 The condition of the lining of shells shall be inspected every year by an ~~expert approved by the competent authority~~ inspection body, who shall inspect the inside of the shell.

(...)

TT9 *(Deleted)*

~~For inspections and tests (including supervision of the manufacture) the procedures of section 1.8.7 shall be applied by the competent authority, its delegate or inspection body conforming to 1.8.6.2, 1.8.6.4, 1.8.6.5 and 1.8.6.8 and accredited according to EN ISO/IEC 17020:2012 (except clause 8.1.3) type A.~~

TT10 The periodic inspections according to 6.8.2.4.2 shall take place:
at least every three years. _____ at least every two and a half years.

TT11 For fixed tanks (tank-vehicles) and demountable tanks used exclusively for the carriage of LPG, with carbon steel shells and service equipment, the hydraulic pressure test, may, at the time of the periodic inspection and at the request of the applicant, be replaced by the non-destructive testing (NDT) techniques listed below. These techniques may be used either singularly or in combination as deemed suitable by the competent authority, ~~its delegate~~ or inspection body ~~(see special provision TT9)~~:

(...)

Consequential amendment: Delete TA4 and TT9 in Table A in Chapter 3.2.
