



**Recognized technical code
(Anerkanntes Technisches Regelwerk, ATR) for
the construction, equipment, test, approval, marking and use
of salvage pressure receptacles
(ATR D 1/10)**

Based on Section 8 No 10 of the Ordinance on the Transport of Dangerous Goods by Road, Rail and Inland Waterways (GGVSEB) of 17 June 2009 (Federal Law Gazette I p. 1389) as amended by Article 1 of the 5th Ordinance of 3 August 2010 amending ordinances on the transport of dangerous goods (Federal Law Gazette I, p. 1139), the Federal Institute for Materials Research and Testing (BAM) in agreement with the Federal Ministry of Transport, Building and Urban Development promulgates, in accordance with section 6.2.5 of RID and ADR¹, the recognized technical code for the construction, equipment, test, approval, marking and use of salvage pressure receptacles (ATR D 1/10) as set out below.

The Federal Institute for Material Research and Testing promulgates this ATR also based on Section 6 paragraph 5 of the Transport of Dangerous Goods by Sea Ordinance in the version promulgated on 22 February 2010 (Federal Law Gazette I, p. 238) as amended by Article 2 of the 5th Ordinance amending ordinances on the transport of dangerous goods in conjunction with section 6.2.3.1 of the IMDG Code².

The present Code may be applied from the date of its publication in the Federal Ministry of Transport Gazette. The Federal Ministry of Transport, Building and Urban Development will submit this Code to the competent OTIF and UNECE³ Secretariats in accordance with section 6.2.5 of RID/ADR.

The present ATR may be applied to the approval of salvage pressure receptacles for carriage by rail, road, inland waterways and sea. This ATR shall not apply to transport by air.

1 RID = Regulations governing the international carriage of dangerous goods by rail

ADR = European Agreement concerning the international carriage of dangerous goods by Road

2 IMDG Code = International Maritime Dangerous Goods Code

3 OTIF = Intergovernmental Organisation for International Carriage by Rail (Bern)

ECE = United Nations Economic Commission for Europe (Geneva)

1 Introduction

- 1.1 With documents ST/SG/AC.10/C.3/2009/9 and ST/SG/AC.10/C.3/2009/16/Rev.1, Germany together with the United Kingdom proposed to the UN Committee of Experts for the Transport of Dangerous Goods that salvage pressure receptacles be included in the UN Model Regulations as a special type of containment for specific purposes and that general requirements be laid down.
- 1.2 Based on the above-mentioned documents, at its session in July 2010, the UN Subcommittee of Experts on the Transport of Dangerous Goods adopted a compromise proposal which was elaborated by an informal working group which met in parallel (see also report in document ST/SG/AC.10/74 and -74/Add.1). After the confirmation of the adopted text by UN SCE TDG at its session in December 2010, the provisions are to be included in the 17th revised version of the UN Model Regulations in 2011. Incorporation into RID/ADR as well as the IMDG Code will be sought by 1 January 2013.
- 1.3 The intention is to lay down a definition and general requirements in the UN Model Regulations but to carry out the approval under section 6.2.3 of the Model Regulations on the basis of a technical code recognized by the competent authority as the various possible designs of salvage pressure receptacles are not standardized and thus there is not nor will be in the foreseeable future an applicable internationally agreed technical code. Section 6.2.3 has been incorporated into the IMDG Code and is therefore applicable to maritime transport.
- 1.4 As regards the incorporation of the provisions into the provisions of RID/ADR as of 1 January 2013, it needs to be taken into account that section 6.2.5 corresponds with section 6.2.3 of the UN Model Regulations; thus, salvage pressure receptacles may be approved within the framework of the regulations and used for transport as from 2013, but as regards technical requirements a technical code under 6.2.5 of RID/ADR or 6.2.3 of the IMDG Code will continue to be necessary after that date.
- 1.5 Moreover, as salvage pressure receptacles are needed already today and before they may be used in accordance with RID/ADR as well as the IMDG Code, the technical code set out below has been elaborated as national implementation of the possibility contained in the already generally applicable section 6.2.5 of RID/ADR or 6.2.3 of the IMDG Code.

- 1.6 In Germany, several different older so-called salvage receptacles of different design types are used already, for example receptacles that were constructed, equipped, tested and approved in accordance with the former German Ordinance on Pressure Vessels. These salvage receptacles are used in companies as well as for the carriage of pressure receptacles on public roads.
- 1.7 However, the number of salvage receptacles still available is not sufficient to meet the imminent transport needs. Therefore, a possibility is to be created to manufacture, approve, place on the market and use for carriage salvage pressure receptacles which reflect the most advanced state of the art.
- 1.8 The older types of salvage receptacles do not comply with the detailed technical requirements of the present ATR. A reassessment is thus not permitted. The continued use of these older salvage receptacles is governed by applicable transitional provisions or exemptions.

2 Scope

- 2.1 The present recognized technical code may be applied to the approval and use of salvage pressure receptacles for carriage by rail, road, inland waterways and sea. This ATR shall not apply to transport by air.
- 2.2 Salvage pressure receptacles under this ATR shall be constructed, equipped, tested, marked, approved, placed on the market and used for transport in accordance with the Ordinance on portable pressure equipment - OrtsDruckV - Article 1 of the Ordinance of 17 December 2004 (Federal Law Gazette I, p. 3711) as amended by Article 3 of the 5th Ordinance of 3 August 2010 (Federal Law Gazette I, p. 1389) amending ordinances on the transport of dangerous goods in conjunction with section 6.2.5 of RID/ADR as well as section 6.2.3 of the IMDG Code.
- 2.3 Of the modules possible under OrtsDruckV in conjunction with Directive 1999/36/EC (TPED), only modules B and D may be used; this applies until the provisions of section 1.8.7 of RID/ADR/ADN become applicable (probably as from 1 July 2011). The first sentence shall also apply to conformity assessment and the approval of salvage pressure receptacles for maritime transport.

- 2.4 A conformity reassessment of salvage receptacles placed on the market before the entry into force of the present ATR is not permitted. However, salvage pressure receptacles approved for maritime transport on the basis of BAM approval No. D/BAM/DG-06-126/S of 14 May 2008 shall be considered equivalent and may be marked and used in accordance with the present ATR.

Note: The use of salvage pressure receptacles under the present ATR for emergency transport in accordance with sub-section 1.1.3.1 (d) and (e) of RID/ADR is left to the discretion of the responsible person.

3 Specification for the materials, design, manufacture and testing of salvage pressure receptacles

3.1 Definitions

For the purposes of present ATR, the definitions and characters (symbols) of section 3 of DIN EN 14208:2004 "Transportable gas cylinders - Specification for welded pressure drums up to 1000 litre water capacity for the transport of gases - Design and construction" as well as the following definitions shall apply:

Salvage pressure receptacle

A steel pressure receptacle specially constructed, equipped, tested, marked and approved for non-conforming pressure receptacles, with an appropriate water capacity and openings of a suitable size to package, close and safely carry a non-conforming pressure receptacle of a water capacity not exceeding 1 000 litres or several non-conforming pressure receptacles of a smaller water capacity up to a total water capacity not exceeding 1 000 litres.

Note 1: To allow for packaging and carriage of non-conforming pressure receptacles with an individual water capacity not exceeding 1 000 l, the usable water capacity of salvage pressure receptacles may exceed 1 000 l to the extent necessary for this purpose. Besides the non-conforming pressure receptacle to be packaged, the salvage pressure receptacle may also contain the equipment of the non-conforming pressure receptacle as well as other articles necessary for safe carriage. This includes for example devices which serve to prevent skidding of the packaged non-conforming pressure receptacle and to protect it against impact.

Note 2: Small tanks with an individual water capacity not exceeding 1 000 litres may also be packed into a salvage pressure receptacle.

Interior installations

The articles or equipment installed or placed in the salvage pressure receptacle, e.g. drilling device(s), holder(s), means for cushioning and securing the non-conforming pressure receptacles.

Nominal water capacity

The geometric volume determined by volumetric measurement of the salvage pressure receptacle taking into account the interior installations.

Pressure volume product

The product of the nominal water capacity (volume) and the test pressure of the salvage pressure receptacle.

Non-conforming pressure receptacle

A pressure receptacle whose conformity e.g. due to an accident, damage or incorrect handling is no longer given, or justifiably questionable, or cannot be verified on site, or cannot or only by unreasonable efforts be restored on site.

3.2 General requirements

Salvage pressure receptacles shall comply with the general requirements of sections 6.2.1, 6.2.3 and 6.2.5 of RID/ADR or 6.2.1 and 6.2.3 of the IMDG Code as regards construction, equipment, testing, marking, approval and use as well as the requirements of standard EN 14208:2004, unless the present ATR provides otherwise.

Salvage pressure receptacles may have special construction features required for its intended use and may be equipped with interior installations, e.g. flat heads, quick opening devices, openings in the cylindrical area, devices for drilling the salvaged pressure receptacles.

Manufacturers and subsequent distributors of salvage pressure receptacles shall provide information regarding procedures to be followed and a description of the types and dimensions of the means of closure (including required gaskets) and of any other

components needed to ensure that packages as presented for carriage are capable of passing the applicable performance tests of this ATR.

Manufacturers and operators of salvage pressure receptacles shall ensure that the personnel involved in packing and closing the receptacles has received detailed training in accordance with section 1.3.1 to 1.3.3 of RID/ADR and the IMDG Code.

3.3 Restriction of use

Salvage pressure receptacles may be approved and used for non-conforming pressure receptacles containing gases compressed, liquefied or dissolved under pressure but not for pressure receptacles or receptacles containing refrigerated liquefied gas (closed or open cryogenic receptacles).

Salvage pressure receptacles may be approved and used for non-conforming pressure receptacles containing acetylene or chemically unstable gases only if it has been established by tests that a possible chemical reaction resulting in a build-up of excessive pressure within the salvage pressure receptacle does not destroy the receptacle nor affect its leakproofness so that even after such a reaction safe carriage to destination is possible. Such tests shall be documented in detail indicating test setup, test procedure and test results. The gases or gas mixtures and their amount for which such tests have been carried out successfully shall be indicated in the type approval certificate of the salvage pressure receptacle.

3.4 Material requirements

In addition to the provisions of sub-section 6.2.5.1 of RID/ADR or 6.2.3.1 of the IMDG Code, the requirements and specifications in section 4 of EN 14208:2004 shall be complied with. Alternatively, for constructions without welds, steels may be used which meet the specifications of EN 10216 for "Seamless steel tubes for pressure purposes - Technical delivery conditions" (Part 1:2004 to Part 2:2004). Materials for salvage pressure receptacles which are to be approved for non-conforming pressure receptacles containing acetylene or chemically unstable gases shall also meet the requirements for heat resistant materials in accordance with EN 10028-3:2009 "Flat products made of steels for pressure purposes - Part 3: Weldable fine grain steels, normalized" or EN 10216-2:2007 „Seamless steel tubes for pressure purposes -

Technical delivery conditions - Part 2: Non alloy and alloy steel tubes with specified elevated temperature properties“.

3.5 Design of salvage pressure receptacles

Unless provided otherwise in the following, the specifications concerning the design of pressure drums in accordance with EN 14208:2004 shall be complied with.

- 3.5.1 For the design of the salvage pressure receptacle the operating conditions and load limits shall be considered; this applies in particular to the components which load changes due to interior pressure may directly or indirectly impinge on (e.g. walls in cylindrical sections, heads, connecting elements) if they are made of different materials, are subject to different levels of prestress or if handling during assembly or closure may result in deformation (plastification of materials).
- 3.5.2 At test pressure, the stress in the material shall not exceed 77 % of the minimum guaranteed yield stress (R_e) at any point of the salvage pressure receptacle including load-sharing mountings.
- 3.5.3 If e.g. improper handling may cause premature deformation (plastification), it shall be established for components which, as a result, may be subject to additional compressive loads that 77 % of the minimum guaranteed yield stress is not exceeded at test pressure; such components shall be designed for resistance to short-time load cycles. Components with deformations (plastification) shall not be used.
- 3.5.4 By derogation from sub-section 5.4.6.1 of EN 14208:2004, salvage pressure receptacles may have openings at its ends of more than 0.5 D_o . The openings shall be compensated and their closure (closure head) shall be protected against damage or displacement e.g. when being put on or lifted. For the design of the closure head system, the requirements of EN 13345-3:2002 (Unfired pressure vessels – part 3: Design) shall be considered.
- 3.5.5 By derogation from sub-section 5.4.1 of EN 14208:2004, connection apertures for fittings shall be permitted in the cylindrical area. They shall be designed for the specific intended use of the salvage pressure receptacle and fitted with devices for protection against damage e.g. being wrenched off.

- 3.5.6 In accordance with the requirements of packing instruction P 200 in chapter 4.1 of RID/ADR and the IMDG Code, the salvage pressure receptacles may be fitted with a pressure controlled pressure relief device (PRD) designed for the specific intended use. The pressure threshold for triggering the relief (triggering pressure) shall be above the maximum gas pressure developing at 65 °C and in the case of gases compressed or liquefied under pressure shall be not less than the test pressure. Neither the upper triggering pressure nor – in the case of closing valves – the blow-down pressure shall exceed 120 % of the test pressure. The minimum volume flow to be ensured during pressure relief shall be designed for the gas type and shall be such that bursting of the salvage pressure receptacle is safely prevented if non-conforming pressure receptacles are placed in the salvage pressure receptacle.
- 3.5.7 Salvage pressure receptacles shall be fitted with attachments which allow lifting the receptacles from above and/or below (e.g. by a crane or materials handling vehicle). These attachments – together with stiffening elements fitted to the receptacle – shall be able to bear without deformation at least 1.5 times the permissible maximum weight of the salvage pressure receptacles and shall not affect the leakproofness and function of the salvage receptacle and its closures.

3.6 Manufacture

- 3.6.1 The applicable requirements and specifications of EN 14208:2004, sections 7 (Welding procedures), 8 (manufacture), 9 (Welded joints), 10 (Surface finish of material), 11 (Assembly), 13 (Check of thickness, out of roundness and straightness) shall be complied with.
- 3.6.2 For welded salvage pressure receptacles, the normative references in section 2 of EN 14208 shall apply additionally insofar as they are applicable to the respective design.
- 3.6.3 For non-welded constructions, the relevant references in the respective applicable parts of EN 10216 shall be considered.
- 3.6.4 The minimum wall thickness shall be calculated in accordance with EN 14208:2004, specified in the drawing and, by derogation from sub-section 13.1 of the standard, checked for every salvage pressure receptacle by means of ultrasonic testing in accordance with EN 1714:2002.

3.7 Testing and examination

The specifications of section 14 of EN 14208:2008 shall apply. If salvage pressure receptacles are fabricated as individual items or in small numbers, destructive tests (e.g. burst test, load cycle test) may be waived with the agreement of the notified body in accordance with OrtsDruckV. In this case, it shall be established by calculation that the salvage pressure receptacle is capable of withstanding the burst pressure and the minimum number of load cycles of 12,000 to test pressure. For this purpose, the elongation on which the calculation is based shall be verified at the most severely stressed points by means of a pressure test to test pressure.

4 Marking

- 4.1 Salvage pressure receptacles shall be marked in accordance with Chapter 6.2 of RID/ADR and the IMDG Code in conjunction with EN ISO 13769:2003 + A 1:2005 and in accordance with OrtsDruckV/TPED. In the marking in accordance with 6.2.3.9.1 in conjunction with 6.2.2.7.1 (b), instead of the mark of the technical standard the present ATR shall be applied as follows: „ATR D 1/10“. Moreover, every salvage pressure receptacle shall be marked with the word „Salvage“; the words “salvage pressure receptacle” or “Bergungsdruckgefäß” may be applied additionally.
- 4.2 If the present ATR allows alternative arrangements, certain marks may be omitted (e.g. identification of the cylinder thread). Unless contrary to applied marks, the marks in accordance with section 16 of EN 14208:2004 shall be applied in addition.
- 4.3 The gases or gas groups which non-conforming pressure are permitted to contain shall be indicated on the approval certificate. In the case of salvage pressure receptacles in which non-conforming pressure receptacles containing acetylene or unstable gases may be packed, these gases and the respective maximum quantity allowed shall be indicated.
- 4.4 The particulars under 4.3 above shall be marked on the salvage pressure receptacle. The operator shall ensure that this information is available where and when the packaging is affected.
- 4.5 The marking shall be applied so that it is visible during packaging of non-conforming pressure receptacles also when the head of the salvage pressure receptacle is open or has been taken off.

- 4.6 Heads which may be taken off for the purposes of packing or unpacking shall additionally be marked so that they are unambiguously assigned to the salvage pressure receptacle and their intended position for their reattachment is clearly identifiable.
- 4.7 The permitted sling gear of the lifting attachments shall be clearly marked. Any restrictions as regards lifting (e.g. do not lift by crane) shall be indicated.

5 Documentation

- 5.1 In addition to the provisions of RID/ADR and the IMDG Code and, until 30 June 2011, of Directive 1999/36/EC on transportable pressure equipment (TPED), the requirements of section 17 of EN 14208:2004 shall be complied with.
- 5.2 A copy of the type approval certificate shall be available during carriage of the salvage pressure receptacles. If this copy is not applied to the salvage pressure receptacle or fitted to it in a protected container, the operator shall ensure that it is available on site for any use in accordance with the present ATR.

6 Periodic test and inspection and exceptional checks

Salvage pressure receptacles shall be subjected to periodic tests and inspections and exceptional checks in accordance with RID/ADR and the IMDG Code in conjunction with the present ATR. The inspection period shall be the respective shortest period applicable for the gases which, being contained in non-conforming pressure receptacles, may be packed in the salvage pressure receptacle.

7 Provisions concerning use

- 7.1 Non-conforming pressure receptacles containing compressed gases may be packed and carried in salvage pressure receptacles only if the pressure volume product of the salvage pressure receptacle is at least 1.2 times the pressure volume product of the non-conforming pressure receptacle(s) to be packed.

Note: As guide value, the nominal water capacity displaced by a closed pressure receptacle made of steel can be assumed to be approx. 120% of the respective water capacity. This value depends on the material and design and might be higher by the use of aluminium-alloy or composites.

- 7.2 Non-conforming pressure receptacles containing gases liquefied under pressure may be packed and carried in salvage pressure receptacles only if the test pressure of the salvage pressure receptacles is not lower than the test pressure stipulated for the respective gas in packing instruction P 200 in section 4.1 of RID/ADR and the IMDG Code.
- 7.3 Salvage pressure receptacles may be used for non-conforming pressure receptacles which contain gases and for the carriage of which no pressure-relief device is permitted only if the pressure volume product of the salvage pressure receptacle is at least 2.2 times the pressure volume product of the non-conforming pressure receptacle(s) to be packed. This also applies if the pressure-relief devices have been demounted or sealed.
- 7.4 More than one non-conforming pressure receptacle may be packed in the same salvage pressure receptacle only if the contents of the pressure receptacles are known and their marking concerning contents is fully legible. In case the non-conforming pressure receptacles contain different gases, they may be packed in the same salvage pressure receptacles only if the gases cannot react dangerously with each other in the event of leakage.
- 7.5 If removable interior installations are used e.g. for cushioning or securing the non-conforming pressure receptacles, the material of these installations shall neither react with the gas nor absorb it. The volume of the material introduced into the receptacle shall be estimated and deducted from the nominal water capacity or the pressure volume product.
- 7.6 If, in addition, inert gas is to be introduced or if chemically unstable gases are liable to react, the quantity of relevant inert or reaction gases and the possibly developing pressure shall be considered in selecting the appropriate salvage pressure receptacle.

7.7 Salvage pressure receptacles containing non-conforming pressure receptacles which are filled with chemically unstable gas in a porous mass should be carried individually in a vehicle/wagon by road or rail in order to prevent the possible heat generation within the salvage pressure receptacle from having adverse effects on the surroundings. For carriage by inland waterways or sea, stowage at a sufficient distance to other goods as well as in an adequately ventilated and exposed position shall be ensured.

7.8 Before packing, the salvage pressure receptacles shall be inspected for internal or external damage and internal contamination and shall be cleaned, if necessary.

8 Provisions concerning use and carriage

8.1 Salvage pressure receptacles may be used for pressure receptacles whose contents are unknown only if the contained gas is assigned to UN No. 3305 n.a.g. for compressed gases, or to UN No. 3309 n.a.g. for liquefied gas under pressure, and the salvage pressure receptacles is approved for these gases and permitted for their use.

8.2 Non-conforming pressure receptacles containing gases assigned to UN Nos. 3305, 3309, or other UN Nos. which are n.a.g. entries may only be packed individually into a salvage pressure receptacle.

8.3 The operator shall ensure that

- (a) empty salvage pressure receptacles are protected from corrosion and other impacts which might affect their safety;
- (b) salvage pressure receptacles are inspected for damage, corrosion and dirt or moisture and cleaned, if necessary, after every use; the results of the inspection as well as aspects of possible hydrogen embrittlement shall be considered, documented and, at the latest at the next periodic inspection, assessed in consultation with the notified body;
- (c) salvage pressure receptacles are subjected to an exceptional check without delay if, after the failure of a non-conforming pressure receptacle packed and carried therein, material or structural defects cannot be ruled out (e.g. in case of visible internal damage to the salvage pressure receptacle and its interior installations);
- (d) in the event that the pressure-relief device is triggered or gas is leaking from the closed salvage pressure receptacle, inspections are carried out immediately to

- identify the cause and, in the case of malfunction, the affected components including gaskets are replaced;
- (e) after the replacement of components in accordance with (d), the salvage pressure receptacle is checked for gas-tightness at test pressure;
 - (f) the salvage pressure receptacle is subjected to an exceptional check in the event that the triggering in accordance with (d) was caused by excessive internal pressure above the test pressure or there is other evidence for inadmissible internal pressure;
 - (g) the condition and functioning of the valves and other installations such as drilling devices, threads of flange screws are checked after each use; screws may only be replaced by the same or equivalent screws.

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