



ОПЕРАТИВНО ОБАВЕШТЕЊЕ

ОАМ

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Наслов:

Програми стручног оспособљавања из области транспорта опасне робе и разлике у Техничким инструкцијама за 2023-2024

ОБЛАСТ ПРИМЕНЕ:

- пошљаоци, укључујући пакере и лица или организације која преузимају обавезе пошљаоца;
- оператери ваздухоплова;
- пружаоци услуга земаљског опслуживања који за потребе оператера ваздухоплова обављају послове прихвата, руковања, утовара, истовара, премештања или другог опслуживања терета или поште;
- пружаоци услуга земаљског опслуживања на аеродрому који за потребе оператера ваздухоплова обављају послове прихвата и отпреме путника;
- пружаоци услуга земаљског опслуживања изван аеродрома који за потребе оператера ваздухоплова обављају послове регистрације путника за лет;
- организатори транспорта;
- оператер аеродрома или правно лице које са њим закључи уговор о обављању прегледа обезбеђивања путника, посаде и њиховог пртљага и/или терета или поште;
- именовани поштански оператери

Поштовани,

Сходно члану 204. ст. 1. Закона о ваздушном саобраћају транспорт опасне робе ваздушним путем обавља се у складу са одредбама закона и међународним стандардима и препорученом праксом садржаним у Анексу 18 Конвенције о међународном цивилном ваздухопловству, као и у складу са **важећим** издањем Документа 9284 Међународне организације цивилног ваздухопловства – **Техничке инструкције за безбедан транспорт опасне робе ваздушним путем.**

Додатно, на основу члана 215. Закона о ваздушном саобраћају, лица која обављају послове у транспорту опасне робе у ваздушном саобраћају морају да буду стручно оспособљена по програму стручног оспособљавања који одобрава Директорат. Програми стручног оспособљавања, сходно члану 215. ст. 3. Закона о ваздушном саобраћају, морају да буду припремљени у складу са Техничким инструкцијама.

Тренутно важећим издањем (2021-2022) Техничких инструкција је дефинисано како треба да изгледа програм стручног оспособљавања који је израђен у складу са новим концептом

(СВТ), али да се 01.01.2023. године завршава прелазни период након кога више неће бити могуће спровођење стручног оспособљавања по категоријама особља.

Ради лакше израде нових програма стручног оспособљавања у прилогу достављамо извод из Техничких инструкција за 2023-2024. годину као и ИСАО Doc 10147 у коме је разрађен поступак израде програма стручног оспособљавања на основу захтеваних компетенција.

Позивају се учесници у транспорту опасне робе у ваздушном саобраћају да се упознају са захтевима у вези програма стручног оспособљавања заснованог на захтеваним компетенцијама. Након упознавања учесници у транспорту опасне робе су дужни да припреме предлог нових програма стручног оспособљавања и исти благовремено доставе Директорату цивилног ваздухопловства Републике Србије ради стицања одобрења.

Стари програми стручног оспособљавања се могу примењивати до 31.12.2022. године када морају да буду замењени новим припремљеним по захтевима из Техничких инструкција за 2023-2024. годину и ИСАО Doc 10147.

Имајући у виду релативно кратко време за припрему нових програма стручног оспособљавања сугеришемо оператерима да што већи број обука обаве закључно са 31.12.2022. године узимајући у обзир чињеницу да се обука може обавити 3 месеца пре истека претходно завршене обуке.

За сва питања Директорат цивилног ваздухопловства Републике Србије је на располагању, а питања можете да поставите на е-пошту dgr@cad.gov.rs.

Додатно. Директорат цивилног ваздухопловства Републике Србије је утврдио разлике у Техничким инструкцијама за 2023-2024. годину у односу на издање које важи за 2021-2022. годину и исте достављамо у прилогу.

С поштовањем,

Директорат цивилног ваздухопловства Републике Србије

Chapter 4

DANGEROUS GOODS TRAINING

Parts of this Chapter are affected by State Variations AE 2, BR 7, CA 11, HK 1, OM 2, VE 5, VE 6; see Table A-1

4.1 ESTABLISHMENT OF DANGEROUS GOODS TRAINING PROGRAMMES

Note.— A training programme includes elements such as design methodology, assessment, initial and recurrent training, instructor qualifications and competencies, training records and evaluation of the effectiveness of training.

4.1.1 The employer of personnel that perform functions aimed at ensuring that dangerous goods are transported in accordance with these Instructions must establish and maintain a dangerous goods training programme.

Note 1.— An approach to ensuring personnel are competent to perform any function for which they are responsible is provided in Guidance on a Competency-based Approach to Dangerous Goods Training and Assessment (Doc 10147).

Note 2.— Security personnel who are involved with the screening of passengers and crew and their baggage and cargo or mail are required to be trained irrespective of whether the operator on which the passenger or cargo is to be transported carries dangerous goods as cargo.

4.1.2 All operators must establish a dangerous goods training programme regardless of whether or not they are approved to transport dangerous goods as cargo.

4.1.3 Training courses may be developed and delivered by or for the employer.

4.2 OBJECTIVE OF DANGEROUS GOODS TRAINING

4.2.1 The employer must ensure that personnel are competent to perform any function for which they are responsible prior to performing any of these functions. This must be achieved through training and assessment commensurate with the functions for which they are responsible. Such training must include:

- a) general awareness/familiarization training — Personnel must be trained to be familiar with the general provisions;
- b) function-specific training — Personnel must be trained to perform competently any function for which they are responsible; and
- c) safety training — Personnel must be trained on how to recognize the hazards presented by dangerous goods, on the safe handling of dangerous goods, and on emergency response procedures.

Note.— General information on the provisions for dangerous goods carried by passengers and crew (see Part 8) should be included in training courses, as appropriate.

4.2.2 Personnel who have received training but who are assigned to new functions must be assessed to determine their competence in respect of their new function. If competency is not demonstrated, appropriate additional training must be provided.

4.2.3 Personnel must be trained to recognize the hazards presented by dangerous goods, to safely handle them and to apply appropriate emergency response procedures.

4.3 RECURRENT TRAINING AND ASSESSMENT

Personnel must receive recurrent training and assessment within 24 months of previous training and assessment to ensure that competency has been maintained. However, if recurrent training and assessment is completed within the final three months of validity of the previous training and assessment, the period of validity extends from the month on which the recurrent training and assessment was completed until 24 months from the expiry month of that previous training and assessment.

Note.— An example would be the following: If recurrent training is required by the end of May 2022, then any training occurring between March 2022 and the end of May 2022 will result in a new recurrent training date of May 2024.

4.4 TRAINING AND ASSESSMENT RECORDS

4.4.1 The employer must maintain a record of training and assessment for personnel.

4.4.2 The record of training and assessment must include:

- a) the individual's name;
- b) the month of completion of the most recent training and assessment;
- c) a description, copy or reference to training and assessment materials used to meet the training and assessment requirements;
- d) the name and address of the organization providing the training and assessment; and
- e) evidence which shows that the personnel have been assessed as competent.

4.4.3 Training and assessment records must be retained by the employer for a minimum period of 36 months from the most recent training and assessment completion month and must be made available upon request to personnel or the appropriate national authority.

4.5 APPROVAL OF TRAINING PROGRAMMES

4.5.1 Dangerous goods training programmes for operators must be approved by the appropriate authority of the State of the Operator in accordance with the provisions of Annex 6 --- *Operation of Aircraft*.

4.5.2 Dangerous goods training programmes required for entities other than operators and designated postal operators should be approved as determined by the appropriate national authority.

Note.— See 4.7 for approval of training programmes for designated postal operators.

4.6 INSTRUCTOR QUALIFICATIONS AND COMPETENCIES

4.6.1 Unless otherwise provided for by the appropriate national authority, instructors of initial and recurrent dangerous goods training must demonstrate or be assessed as competent in instruction and the function(s) that they will instruct prior to delivering such training.

4.6.2 Instructors delivering initial and recurrent dangerous goods training must deliver such courses at least every 24 months, or in the absence of this, attend recurrent training.

4.7 DESIGNATED POSTAL OPERATORS

4.7.1 Staff of designated postal operators must be trained commensurate with their responsibilities. The subject matter with which their various categories of staff should be familiar is indicated in Table 1-4.

4.7.2 Dangerous goods training programmes for designated postal operators must be subjected to review and approval by the civil aviation authority of the State where the mail was accepted by the designated postal operator.

Table 1-4. Content of training courses for staff of designated postal operators

<i>Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum</i>	<i>Designated postal operators</i>		
	<i>Categories of staff</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
General philosophy	x	x	x
Limitations	x	x	x
General requirements for shippers	x		
Classification	x		
List of dangerous goods	x		
Packing requirements	x		
Labelling and marking	x	x	x
Dangerous goods transport document and other relevant documentation	x	x	
Acceptance of the dangerous goods listed in 1;2.3.2	x		
Recognition of undeclared dangerous goods	x	x	x
Storage and loading procedures			x
Provisions for passengers and crew	x	x	x
Emergency procedures	x	x	x

CATEGORIES

- A — Staff of designated postal operators involved in accepting mail containing dangerous goods.
 B — Staff of designated postal operators involved in processing mail (other than dangerous goods).
 C — Staff of designated postal operators involved in the handling, storage and loading of mail.

Note.— Guidance on the aspects of training to be covered by staff of designated postal operators can be found in S-1;3.



ICAO

Doc 9284

TECHNICAL INSTRUCTIONS FOR THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR

EDITION 2023-2024 DIFFERENCE

≠	this symbol indicates changed text
+	this symbol indicates new or relocated text
>	this symbol indicates deleted text

Part	Chapter	Symbol	REVISION
1	2.2.1.	+	d) alcohol-based hand sanitizers and cleaning products carried aboard an aircraft by the operator for use on the aircraft during the flight or series of flights for the purposes of passenger and crew hygiene;
1	2.2.3.	≠	Unless otherwise authorized by the State of the Operator, articles and substances intended as replacements for those referred to in 2.2.1 b), c) and d) must be transported in accordance with the provisions of these Instructions.
1	2.2.4.	≠	Unless otherwise authorized by the State of the Operator, battery-powered devices with installed batteries and spare batteries intended as replacements for those referred to in 2.2.1e) must be transported in accordance with the provisions of these Instructions.
1	3.1.1	≠	<i>Aerosol or aerosol dispenser.</i> An article consisting of a non-refillable receptacle meeting the requirements of 6; 5.4 , made of metal, glass or plastics and containing a gas, compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state.
1	3.1.1	≠	<i>Bundle of cylinders.</i> Not permitted for air transport. A pressure receptacle comprising an assembly of cylinders or cylinder shells that are fastened together and which are interconnected by a manifold and transported as a unit.
1	3.1.1	≠	Closed cryogenic receptacle. A thermally insulated pressure receptacle for refrigerated liquefied gases of a water capacity of not more than 1 000 litres
1	3.1.1	≠	<i>Cylinder.</i> A transportable pressure receptacle of a water capacity not exceeding 150 litres.
1	3.1.1	≠	GHS. The ninth revised edition of the Globally Harmonized System of Classification and Labelling of Chemicals, published by the United Nations as document ST/SG/AC.10/30/ Rev.9 .
1	3.1.1	+	<i>IAEA Regulations for the Safe Transport of Radioactive Material.</i>
1	3.1.1	+	<i>Inner vessel.</i> For a closed cryogenic receptacle, the pressure vessel intended to contain the refrigerated liquefied gas.
1	3.1.1	≠	<i>Liquid.</i> A substance classified as dangerous goods which at 50°C has a vapour pressure of not more than 300 kPa (3 bar), which is not completely gaseous at 20°C and at a pressure of 101.3 kPa, and which has a melting point or initial melting point of 20°C or less at a pressure of 101.3 kPa. A viscous substance for which a specific melting point cannot be determined must be subjected to the ASTM D 4359-90 test; or to the test for determining fluidity (penetrometer test) prescribed in section 2.3.4 of Annex A of the Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) (United Nations publication: ECE/TRANS/ 300 (Sales No. E.21.VIII.1).

1	3.1.1	≠	<i>Manual of Tests and Criteria.</i> The seventh revised edition of the United Nations publication bearing this title (ST/SG/AC.10/11/Rev.7 and Amend. 1).
1	3.1.1	≠	<i>Metal hydride storage system.</i> A single complete hydrogen storage system, including a pressure receptacle shell , metal hydride, pressure relief device, shut-off valve, service equipment and internal components used for the transport of hydrogen only.
1	3.1.1	+	<i>Model Regulations.</i> The twenty-second revised edition of the United Nations publication entitled Recommendations on the Transport of Dangerous Goods: Model Regulations (ST/SG/AC.10/1/Rev.22).
1	3.1.1	≠	<i>Pressure drum.</i> (Not permitted for air transport.) A welded transportable pressure receptacle of a water capacity exceeding 150 litres and of not more than 1 000 litres (e.g. cylindrical receptacles equipped with rolling hoops, spheres on skids).
1	3.1.1	≠	<i>Pressure receptacle.</i> A transportable receptacle intended for holding substances under pressure including its closure(s) and other service equipment and a collective term that includes cylinders, tubes, pressure drums, closed cryogenic receptacles, metal hydride storage systems, bundles of cylinders and salvage pressure receptacles.
1	3.1.1	+	<i>Pressure receptacle shell.</i> A cylinder, a tube, a pressure drum or a salvage pressure receptacle without its closures or other service equipment, but including any permanently attached device(s) such as a neck ring or a foot ring.
1	3.1.1	+	<i>Service equipment.</i> For pressure receptacles, includes: a) closure(s); b) manifold(s); c) piping; d) porous, absorbent or adsorbent material; and e) any structural devices such as those used for handling.
1	3.1.1	≠	<i>Tube.</i> (Not permitted for air transport.) A pressure transportable receptacle of seamless or composite construction having a water capacity exceeding 150 litres but not more than 3 000 litres.
1	3.1.1	≠	<i>Working pressure.</i> Either: a) for a compressed gas, the settled pressure at a reference temperature of 15°C in a full pressure receptacle; b) for UN 1001 acetylene, dissolved, the calculated settled pressure at a uniform reference temperature of 15°C in an acetylene cylinder containing the specified solvent content and the maximum acetylene content; or

			c) for UN 3374 acetylene, solvent free, the working pressure which was calculated for the equivalent cylinder for UN 1001 acetylene, dissolved
1	5.4.1.	≠	h) measures to ensure that the distribution of the transport information is limited as far as possible. (Such measures must not preclude provision of the transport documentation required by Part 5, Chapter 4 of these Instructions.)
1	5.5	≠	For radioactive material, the provisions of this Chapter are deemed to be complied with when the provisions of the Convention on Physical Protection of Nuclear Material (INFCIRC/274/Rev.1, IAEA, Vienna (1980)) and the IAEA circular on “Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities” INFCIRC/225/Rev.5, IAEA, Vienna (2011) are applied.
2	1.4.1	≠	Goods of Class 1 are assigned to one of six divisions, depending on the type of hazard they present (see 1.3.1), and to one of thirteen compatibility groups which identify the kinds of explosive substances and articles that are deemed to be compatible. Tables 2-2 and 2-3 show the scheme of classification into compatibility groups, the possible hazard divisions associated with each group, and the consequential classification codes.
2	4.2.3.2.1	≠	Self-reactive substances are classified into seven types according to the degree of danger they present. The types of self-reactive substance range from type A, which is forbidden in any mode of transport, to type G, which is not subject to the provisions for self-reactive substances of Division 4.1. The classification of types B to F is directly related to the maximum quantity allowed in one packaging.
2	4.2.3.2.4	≠	List of currently assigned self-reactive substances in packagings . The following table (Table 2-6) is reproduced from 2.4.2.3.2.3 of the UN Model Regulations , with irrelevant material removed.
2	4.2.3.3	≠	With the exception of self-reactive solids of type B, which are forbidden for transport by air under any circumstance, self-reactive substances which require temperature control during transport are forbidden for transport by air unless exempted (see 1; 1.1.3). Self-reactive substances must be subject to temperature control if their self-accelerating decomposition temperature (SADT) is less than or equal to 55°C. Test methods for determining the SADT are given in the current edition of the UN Manual of Tests and Criteria. The test selected must be conducted in a manner which is representative of the package to be transported both in size and material of construction.
2	5.3.2.2	≠	Organic peroxides are classified into seven types according to the degree of danger they present. The types of organic peroxide range from type A, which is forbidden in any mode of transport, to type

			G, which is not subject to the provisions for organic peroxides of Division 5.2. The classification of types B to F is directly related to the maximum quantity allowed in one packaging.
2	5.3.3.1	≠	An organic peroxide formulation must be regarded as possessing explosive properties when, in laboratory testing, the formulation is liable to detonate, to deflagrate rapidly or to show a violent effect when heated under confinement. With the exception of organic peroxides of type B, which are forbidden for transport by air under any circumstance, organic peroxides requiring temperature control during transport are forbidden for transport by air unless approved or exempted, as applicable (see 1;1.1.2 and 1;1.1.3).
2	5.3.4.2.	≠	b) Diluents type B are organic liquids which are compatible with the organic peroxide and which have a boiling point of less than 150°C but not less than 60°C and a flash point of not less than 5°C. Type B diluents may be used for desensitization of all organic peroxides provided that the boiling point of the liquid is at least 60°C higher than the SADT in a 50 kg package.
2	7.2.3.4.1.	≠	c) If subjected to the test specified in 7.2.3.4.3 , the activity in the water would not exceed 100 A2. In the application of this test, the damaging effects of the tests specified in b) above must be taken into account.
2	7.2.3.4.3	+	A solid material sample representing the entire contents of the package must be immersed for 7 days in water at ambient temperature. The volume of water to be used in the test must be sufficient to ensure that at the end of the 7-day test period, the free volume of the unabsorbed and unreacted water remaining must be at least 10 per cent of the volume of the solid test sample itself. The water must have an initial pH of 6-8 and a maximum conductivity of 1 mS/m at 20°C. The total activity of the free volume of water must be measured following the 7-day immersion of the test sample.
2	7.2.3.4.4	≠	Demonstration of compliance with the performance standards in 7.2.3.4.1, 7.2.3.4.2 and 7.2.3.4.3 must be in accordance with 6;7.11.1 and 6;7.11.2.
2	7.2.4.1.1.2	≠	The dose rate at any point on the external surface of an excepted package must not exceed 5 µSv/h.
2	8.3.2.1	≠	A substance or mixture which is determined not to be corrosive in accordance with OECD Guideline for the Testing of Chemicals No. 404, No. 435, No. 431 or No. 430 or non-classified in accordance with No. 439, In Vitro Skin Irritation: Reconstructed Human Epidermis Test Method, 2015 may be considered not to be corrosive to skin for the purposes of these Instructions without further testing. If the test results indicate that the substance or mixture is corrosive and not assigned to Packing Group I, but the test method does not allow discrimination between Packing Groups II and III, it must be considered to be Packing Group II. If the

			test results indicate that the substance or mixture is corrosive, but the test method does not allow discrimination between packing groups, it must be assigned to Packing Group I if no other test results indicate a different packing group.
2	9.3.	≠	g) except for button cells installed in equipment (including circuit boards), manufacturers and subsequent distributors of cells or batteries manufactured after 30 June 2003 must make available the test summary as specified in the UN Manual of Tests and Criteria, Part III, subsection 38.3, paragraph 38.3.5.
3	1.2.2	≠	Proper shipping names may be used in the singular or plural as appropriate. In addition, when qualifying words are used as part of the proper shipping name, their sequence on documentation or package marks is optional. For instance, “Dimethylamine aqueous solution” may alternatively be shown as “ Aqueous solution of Dimethylamine”. However, the entry in column 1 reflects the preferred sequence. Alternative spelling reflecting common usage around the world is acceptable for words such as “caesium” for “cesium”, “sulfur” for “sulphur”, “aluminum” for “aluminium”, etc. However, the spelling appearing in Table 3-1 is preferred.
3	4.1.2	≠	Packing Groups II and III but excluding UN 2555, UN 2556, UN 2557, UN 2907, polymerizing substances and all self-reactive substances
4	2.3	≠	Each instruction shows, where applicable, the acceptable single and combination packagings. For combination packagings, tables show the acceptable outer packagings and associated inner packagings with the maximum net quantity permitted in each inner packaging. Where provisions for particular articles or substances apply, a table shows the inner packagings with associated quantity limitations, the permitted quantity per package and, where applicable, an indication if single packagings are permitted. Where appropriate, additional packing requirements are also indicated at the end of a packing instruction. These additional packing requirements may impose a higher standard of packaging than would normally apply to the packing group, or may require specific packaging considerations. Where packagings which need not meet the requirements of 1.1.2 (e.g. crates, pallets, etc.) are authorized in a packing instruction or the special provisions named in the dangerous goods list, these packages are not subject to the mass or volume limits generally applicable to packagings conforming to the requirements of Part 6, unless otherwise indicated in the relevant packing instruction or special provision.
4	4.1.1.6		Cylinders and closed cryogenic receptacles must be filled according to the working pressures, filling ratios and provisions specified in the appropriate packing instruction for the specific substance and taking into

		≠	account the lowest pressure rating of any component. Service equipment having a pressure rating lower than other components must nevertheless comply with 6;5.1.3.1. Reactive gases and gas mixtures must be filled to a pressure such that if complete decomposition of the gas occurs, the working pressure of the cylinder must not be exceeded.
4	4.1.1.8	≠	For cylinders and closed cryogenic receptacles with valves as described in b) and c), the requirements of ISO 11117:1998, ISO 11117:2008 + Cor 1:2009 or ISO 11117:2019 must be met; for valves with inherent protection, the requirements of Annex A of ISO 10297:2006, Annex A of ISO 10297:2014 or Annex A of ISO 10297 + A1:2017 must be met. For cylinders and closed cryogenic receptacles with self-closing valves with inherent protection, the requirements of Annex A of ISO 17879:2017 must be met. For metal hydride storage systems, the valve protection requirements specified in ISO 16111:2008 or ISO 16111:2018 must be met.
4	4.1.1.10	≠	Refillable cylinders, other than closed cryogenic receptacles, must be periodically inspected according to the provisions of 6;5.1.6 and Packing Instruction 200, 214, 218 or 219 . Cylinders and closed cryogenic receptacles must not be filled after they become due for periodic inspection but may be transported after the expiry of the time limit.
5	2.4.16.1	≠	Packages containing lithium cells or batteries prepared in accordance with Section II of Packing Instructions 966, 967, 969 or 970 and Section IB of Packing Instructions 965 and 968 must be marked as shown in Figure 5-3.
5	2.4.16.2	>	b) a telephone number for additional information.
5	4.1.4.3	+	<i>Molten substances</i> : When a substance, which is solid in accordance with the definition in 1;3.1, is offered for transport in the molten state, the qualifying word “Molten” must be added as part of the proper shipping name, unless it is already part of the proper shipping name (see 3;1.2.4);
5	4.1.4.3	+	<i>Stabilized substances</i> : Unless already part of the proper shipping name, the word “Stabilized” must be added to the proper shipping name if stabilization is used.
5	4.1.5.2	≠	For dangerous goods transported in salvage packagings in accordance with 4;1.4 , the words “Salvage packaging” must be included.
5	4.1.5.8.1	≠	when applicable, reference to Special Provision A1, A2, A4, A5, A51, A88, A99, A176 , A190, A191, A201, A202, A211, A212, A224 or A225 ;

5	4.1.5.8.1	+	g) for individual radionuclides or for mixtures of radionuclides for which relevant data are not available or which are not listed in Table 2-12 and where Table 2-13 was used to determine the maximum allowed activity, the use of Table 2-13 must be referenced as well as the radioactive contents as specified in the first column of Table 2-13. For example: “Table 2-13 used. Only beta- or gamma-emitting nuclides are known to be present”.
5	4.1.5.10	+	<i>Application of special provisions</i> Where, in accordance with a special provision in Table 3-2, additional information is necessary, this additional information must be included on the dangerous goods transport document.
6	1.1.2	≠	The requirements for packagings in Chapter 3 are based on packagings currently used. In order to take into account progress in science and technology, there is no objection to the use of packagings having specifications different from those in Chapter 3, provided they are equally effective, acceptable to the appropriate authority and able to successfully fulfil the requirements described in 4;1.1.18 and Chapter 4. Methods of testing other than those described in these Instructions are acceptable, provided they are equivalent.
6	1.1.3	+	Packagings must be manufactured and tested under a quality assurance programme that satisfies the appropriate national authority in order to ensure that each packaging meets the requirements of Chapters 1 to 4.
6	3.2.7	>	Metal receptacles (aerosols), non-refillable (IP.7, IP.7A, IP.7B)
6	3.2.8	>	Plastic receptacles (aerosols) non-refillable (IP.7C)
6	5.1.1.4	≠	For welded cylinders and closed cryogenic receptacles, only metals of weldable quality must be welded .
6	5.1.1.5	≠	The test pressure of cylinder shells must be in accordance with Packing Instruction 200 or, for a chemical under pressure, with Packing Instruction 218. The test pressure for closed cryogenic receptacles must be in accordance with Packing Instruction 202. The test pressure of a metal hydride storage system must be in accordance with Packing Instruction 214. The test pressure of a cylinder shell for an adsorbed gas must be in accordance with Packing Instruction 219.
6	5.1.1.8.2	≠	The closed cryogenic receptacles must be thermally insulated. The thermal insulation must be protected against impact by means of a jacket. If the space between the inner vessel and the jacket is evacuated of air (vacuum-insulation), the jacket must be designed to withstand without permanent deformation an external pressure of at least 100 kPa (1 bar) calculated in accordance with a recognized technical code or

			a calculated critical collapsing pressure of not less than 200 kPa (2 bar) gauge pressure. If the jacket is so closed as to be gas-tight (e.g. in the case of vacuum-insulation), a device must be provided to prevent any dangerous pressure from developing in the insulating layer in the event of inadequate gas-tightness of the inner vessel or its service equipment . The device must prevent moisture from penetrating into the insulation.
6	5.1.1.9	≠	Additional requirements for the construction of acetylene cylinders .
6	5.1.3.1	≠	Service equipment subjected to pressure, excluding: a) porous, absorbent or adsorbent material; b) pressure relief devices; c) pressure gauges; or d) indicators; must be designed and constructed so that the burst pressure is at least 1.5 times the test pressure of the cylinders and closed cryogenic receptacles.
6	5.1.3.2	≠	Service equipment must be configured or designed to prevent damage and unintended opening that could result in the release of the cylinder and closed cryogenic receptacle contents during normal conditions of handling and transport. All closures must be protected in the same manner as is required for valves in 4;4.1.1.8.
6	5.1.3.3	≠	Cylinders and closed cryogenic receptacles that are not capable of being handled manually or rolled must be fitted with handling devices (skids, rings, straps) ensuring that they can be safely handled by mechanical means and arranged so as not to impair the strength of, nor cause undue stresses in, the cylinder and closed cryogenic receptacle.
6	5.1.4.1	≠	The conformity of cylinders and closed cryogenic receptacles must be assessed at the time of manufacture as required by the appropriate national authority. Cylinders and closed cryogenic receptacles must be inspected, tested and approved by an inspection body. The technical documentation must include full specifications on design and construction, and full documentation on the manufacturing and testing.
6	5.1.4.3	+	Cylinder shells and the inner vessels of closed cryogenic receptacles must be inspected, tested and approved by an inspection body.
6	5.1.4.4	+	For refillable cylinders, the conformity assessment of the shell and the closure(s) may be carried out separately. In these cases, an additional assessment of the final assembly is not required.

6	5.1.4.4.1	+	For closed cryogenic receptacles, the inner vessels and the closures may be assessed separately, but an additional assessment of the complete assembly is required.
6	5.1.4.4.2	+	For acetylene cylinders, conformity assessment must comprise either: a) one assessment of conformity covering both the cylinder shell and the contained porous material; or b) a separate assessment of conformity for the empty cylinder shell and an additional assessment of conformity covering the cylinder shell with the contained porous material.
6	5.1.5.1	≠	New cylinders, other than closed cryogenic receptacles and metal hydride storage systems, must be subjected to inspection and testing during and after manufacture in accordance with the applicable design standards or recognized technical codes including the following: On an adequate sample of cylinder shells : a) testing of the mechanical characteristics of the material of construction; b) verification of the minimum wall thickness; c) verification of the homogeneity of the material for each manufacturing batch; d) inspection of the external and internal conditions; e) inspection of the threads used to fit closures ; f) verification of the conformance with the design standard; For all cylinder shells : g) a hydraulic pressure test. Cylinder shells must meet the acceptance criteria specified in the design and construction technical standard or technical code; h) inspection and assessment of manufacturing defects and either repairing them or rendering the cylinder shells unserviceable. In the case of welded cylinder shells , particular attention must be paid to the quality of the welds; i) an inspection of the marks on the cylinder shells ; j) in addition, cylinder shells intended for the transport of UN 1001 — Acetylene, dissolved, and UN 3374 — Acetylene, solvent free, must be inspected to ensure proper installation and condition of the porous material and, if applicable, the quantity of solvent.
6	5.1.5.1		On an adequate sample of closures: k) verification of materials; l) verification of dimensions;

		+	<p>m) verification of cleanliness;</p> <p>n) inspection of completed assembly;</p> <p>o) verification of the presence of marks;</p> <p>For all closures:</p> <p>p) testing for leakproofness;</p>
6	5.1.5.2	≠	<p>Closed cryogenic receptacles must be subjected to testing and inspection during and after manufacture in accordance with the applicable design standards or recognized technical codes, including the following:</p>
6	5.1.5.2	+	<p>On an adequate sample of inner vessels:</p> <p>a) testing of the mechanical characteristics of the material of construction;</p> <p>b) verification of the minimum wall thickness;</p> <p>c) inspection of the external and internal conditions;</p> <p>d) verification of the conformance with the design standard or technical code;</p> <p>e) inspection of welds by radiographic, ultrasonic or other suitable non-destructive test method according to the applicable design and construction standard or technical code;</p>
6	5.1.5.2	+	<p>For all inner vessels:</p> <p>f) a hydraulic pressure test. The inner vessel must meet the acceptance criteria specified in the design and construction technical standard or technical code;</p> <p>Note.— With the agreement of the competent authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.</p> <p>g) inspection and assessment of manufacturing defects and either repairing them or rendering the inner vessel unserviceable;</p> <p>h) an inspection of the marks;</p>
6	5.1.5.2	+	<p>On an adequate sample of closures:</p> <p>i) verification of materials;</p> <p>j) verification of dimensions;</p> <p>k) verification of cleanliness;</p> <p>l) inspection of completed assembly;</p> <p>m) verification of the presence of marks.</p>
6	5.1.5.2	+	<p>For all closures:</p> <p>n) testing for leakproofness.</p>

6	5.1.5.2	+	On an adequate sample of completed closed cryogenic receptacles: o) testing the satisfactory operation of service equipment; p) verification of the conformance with the design standard or technical code.
6	5.1.5.2	+	For all completed closed cryogenic pressure receptacles: q) testing for leakproofness.
6	5.1.5.3	≠	For metal hydride storage systems, it must be verified that the inspections and tests specified in 5.1.5.1 a), b), c), d), e) if applicable, f), g), h) and i) have been performed on an adequate sample of the pressure receptacle shells used in the metal hydride storage system. In addition, on an adequate sample of metal hydride storage systems, the inspections and tests specified in 5.1.5.1 c) and f) must be performed, as well as 5.1.5.1 e) if applicable, and inspection of the external conditions of the metal hydride storage system. Additionally, all metal hydride storage systems must undergo the initial inspections and tests specified in 5.1.5.1 h) and i), as well as a leakproofness test and a test of the satisfactory operation of the service equipment.
6	5.1.6.1	≠	c) check of the threads either: i) if there is evidence of corrosion; or ii) if the closures or other service equipment are removed;
6	5.1.6.1	≠	d) a hydraulic pressure test of the cylinder shell and, if necessary, verification of the characteristics of the material by suitable tests;
6	5.1.6.1	≠	e) check of service equipment if to be reintroduced into service. This check may be carried out separately from the inspection of the cylinder shell.
6	5.1.7.2	≠	A proficiency test of the manufacturers of cylinder shells and the inner vessels of closed cryogenic receptacle must in all instances be carried out by an inspection body approved by the competent authority of the country of approval. Proficiency testing of manufacturers of closures must be carried out if the competent authority requires it. This test must be carried out either during design type approval or during production inspection and certification.
6	5.2.1.9	+	The following standards apply for the design, construction and initial inspection and test of non-refillable UN cylinders except that the inspection requirements related to the conformity assessment system and approval must be in accordance with 6;5.2.5.
6	5.2.2	≠	In addition to the material requirements specified in the design and construction standards , and any restrictions specified in the applicable Packing Instruction for the gas(es) to be transported (e.g. Packing Instruction 200, Packing Instruction 202 or Packing Instruction 214), the following standards apply to material compatibility:

6	5.2.5.1.2	+	<p>The requirements of 5.2.5 must be used for the conformity assessments of cylinders and closed cryogenic receptacles. Paragraph 5.1.4.4 gives details of which parts of cylinders and closed cryogenic receptacles may be conformity assessed separately. However, the requirements of 5.2.5 may be replaced by requirements specified by the competent authority in the following cases:</p> <p>a) conformity assessment of closures; b) Not used; and c) conformity assessment of the complete assembly of closed cryogenic receptacles provided the inner vessel has been conformity assessed in accordance with the requirements of 5.2.5.</p>
6	5.2.5.4.9.1	≠	<p>c) as required by the cylinder and closed cryogenic receptacle standard or technical code, carry out or supervise the tests of pressure receptacles as required for design type approval;</p>
6	5.2.5.4.9.2	≠	<p>After prototype testing has been carried out with satisfactory results and all applicable requirements of 5.2.5.4 have been satisfied, a Design Type Approval Certificate must be issued which must include the name and address of the manufacturer, results and conclusions of the examination, and the necessary data for identification of the design type. If it was not possible to evaluate exhaustively the compatibility of the materials of construction with the contents of the cylinder or closed cryogenic receptacle when the certificate was issued, a statement that compatibility assessment was not completed must be included in the design type approval certificate.</p>
6	5.2.7.2	≠	<p>b) The technical standard (e.g. ISO 9809-1) used for the design, construction and testing and, for acetylene cylinders, the standard ISO 3807.</p>
6	5.2.7.3	≠	<p>g) The mass of the empty cylinder and closed cryogenic receptacle including all permanently attached integral parts (e.g. neck ring, foot ring, etc.) in kilograms, followed by the letters “KG”. This mass must not include the mass of closure(s), valve protection cap or valve guard, any coating, or porous mass for acetylene. The mass must be expressed to three significant figures rounded up to the last digit. For cylinders and closed cryogenic receptacles of less than 1 kg, the mass must be expressed to two significant figures rounded up to the last digit. In the case of cylinders for UN 1001 Acetylene, dissolved and UN 3374 Acetylene, solvent free, at least one decimal must be shown after the decimal point and two digits for cylinders of less than 1 kg;</p>

6	5.2.7.3	≠	j) In the case of cylinders for liquefied gases and dissolved gases and closed cryogenic receptacles, the water capacity in litres expressed to three significant figures rounded down to the last digit, followed by the letter “L”. If the value of the minimum or nominal water capacity is an integer, the digits after the decimal point may be neglected;
6	5.2.7.3	≠	k) In the case of cylinders for UN 1001 Acetylene, dissolved: i) the tare in kilograms consisting of the total of the mass of the empty cylinder shell, the service equipment (including porous material) not removed during filling, any coating, the solvent and the saturation gas expressed to three significant figures rounded down to the last digit followed by the letters “KG”. At least one decimal must be shown after the decimal point. For cylinders of less than 1 kg, the mass must be expressed to two significant figures rounded down to the last digit; ii) the identity of the porous material (e.g. name or trademark); and iii) the total mass of the filled acetylene cylinder in kilograms followed by the letters “KG”;
6	5.2.7.3	≠	l) In the case of cylinders for UN 3374 Acetylene, solvent free: i) the tare in kilograms consisting of the total of the mass of the empty cylinder shell, the service equipment (including porous material) not removed during filling and any coating expressed to three significant figures rounded down to the last digit followed by the letters “KG”. At least one decimal must be shown after the decimal point. For cylinders of less than 1 kg, the mass must be expressed to two significant figures rounded down to the last digit; ii) the identity of the porous material; and iii) the total mass of the filled acetylene cylinder in kilograms followed by the letters “KG”.
6	5.2.7.8	≠	The marks in accordance with 5.2.7.7 may be engraved on a metallic ring affixed to the cylinder when the valve is installed and which is removable only by disconnecting the valve from the cylinder.
6	5.2.8.1	≠	Non-refillable UN cylinders must be marked clearly and legibly with certification and gas or cylinder specific marks. These marks must be permanently affixed (e.g. stencilled, stamped, engraved or etched) on the cylinder. Except when stencilled, the marks must be on the shoulder, top end or neck of the cylinder shell or on a permanently affixed component of the cylinder (e.g. welded collar). Except for the “UN” mark and the “DO NOT REFILL” mark, the minimum size of the marks must be 5 mm for cylinders with a diameter greater than or equal to 140 mm and 2.5 mm and for cylinders with a diameter less than 140 mm. The minimum size of the “UN” mark must be 10 mm for cylinders with a diameter greater than or

			equal to 140 mm and 5 mm for cylinders with a diameter less than 140 mm. The minimum size of the “DO NOT REFILL” mark must be 5 mm.
6	5.2.11	+	Marking of closures for refillable UN cylinders and closed cryogenic receptacles
6	5.2.11.1	+	For closures, the following permanent marks must be applied clearly and legibly (e.g. stamped, engraved or etched): a) manufacturer’s identification mark; b) design standard or design standard designation; c) date of manufacture (year and month or year and week); and d) the identity mark of the inspection body responsible for the initial inspection and test, if applicable.
6	5.2.11.2	+	The valve test pressure must be marked when it is less than the test pressure which is indicated by the rating of the valve filling connection.
6	5.4.1	+	The internal pressure of aerosol dispensers at 50°C must not exceed 1.2 MPa (12 bar) when using flammable liquefied gases, 1.32 MPa (13.2 bar) when using non-flammable liquefied gases, and 1.5 MPa (15 bar) when using non-flammable compressed or dissolved gases. In case of a mixture of several gases, the stricter limit applies.
6	5.4.2	+	For aerosol dispensers, the liquid content must not completely fill the closed receptacle at 55°C.
6	5.4.3	+	The capacity of metal receptacles must not exceed 1 000 mL; plastics receptacles must not exceed 500 mL.
6	5.4.4	+	Each model of receptacles (aerosol dispensers or cartridges) must, before being put into service, satisfy a hydraulic pressure test.
6	5.4.4.1	+	The internal pressure to be applied (test pressure) must be 1.5 times the internal pressure at 50°C, with a minimum pressure of 1 MPa (10 bar).
6	5.4.4.2	+	The hydraulic pressure tests must be carried out on at least five empty receptacles of each model: a) until the prescribed test pressure is reached, by which time no leakage or visible permanent deformation must have occurred; and b) until leakage or bursting occurs; the dished end, if any, must yield first and the receptacle must not leak or burst until a pressure 1.2 times the test pressure has been reached or passed.
6	5.4.5	≠	Each filled aerosol dispenser or gas cartridge or fuel cell cartridge must be subjected to a test in a hot water bath in accordance with 5.4.5.1 or an approved water bath alternative in accordance with 5.4.5.2.

6	5.4.5.2	≠	With the approval of the appropriate national authority, alternative methods which provide an equivalent level of safety may be used provided that the requirements of 5.4.2.5.1 and, as appropriate, 5.4.2.5.2 or 5.4.2.5.3 are met.
6	5.4.5.3	≠	With the approval of the appropriate national authority, aerosols and receptacles, small, are not subject to 5.4. 5.1 and 5.4.5.2 if they are required to be sterile, but may be adversely affected by water bath testing, provided:
6	6.2.1	≠	The requirements for packagings in this section are based on packagings, as specified in Chapter 2, currently used. In order to take into account progress in science and technology, there is no objection to the use of packagings having specifications different from those in this chapter provided that they are equally effective, acceptable to the competent authority and able to successfully fulfil the requirements described in 6.5. Methods of testing other than those described in these Instructions are acceptable provided they are equivalent.
6	6.5.3.2.2	≠	Where the samples are in the shape of a drum or a jerrican , three must be dropped, one in each of the following orientations: a) diagonally on the top edge , with the centre of gravity directly above the point of impact; b) diagonally on the base edge ; c) flat on the body or side.
6	7.11.1	≠	Demonstration of compliance with the performance standards required in 2;7.2.3.3.1, 2;7.2.3.3.2, 2;7.2.3.4.1, 2;7.2.3.4.2, 2;7.2.3.4.3 and 6;7.1 to 6;7.10 must be accomplished by any of the methods listed below or by a combination thereof:
6	7.11.2	≠	After the specimen, prototype or sample has been subjected to the tests, appropriate methods of assessment must be used to assure that the requirements for the test procedures have been fulfilled in compliance with the performance and acceptance standards prescribed in 2;7.2.3.3.1, 2;7.2.3.3.2, 2;7.2.3.4.1, 2;7.2.3.4.2, 2;7.2.3.4.3 and 6;7.1 to 6;7.10.
6	7.24.1	≠	Packages not requiring competent authority approval of design under the 1985, 1985 (As Amended 1990),1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 and 2012 editions of the IAEA Regulations for the Safe Transport of Radioactive Material
6	7.24.2	≠	Package designs approved under the 1985, 1985 (As amended 1990), 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 and 2012 Editions of the IAEA Regulations for the Safe Transport of Radioactive Material

6	7.24.2.2	≠	No new manufacture of packagings to a package design meeting the provisions of the 1985 and 1985 (As Amended 1990) Editions of the IAEA Regulations for the Safe Transport of Radioactive Material is permitted to commence.
6	7.24.2.3	≠	No new manufacture of packagings of a package design meeting the provisions of the 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 or 2012 Editions of the IAEA Regulations for the Safe Transport of Radioactive Material is permitted to commence after 31 December 2028.
6	7.24.3	≠	Special form radioactive material approved under the 1985, 1985 (As amended 1990), 1996, 1996 (revised), 1996 (as amended 2003), 2005, 2009 and 2012 Editions of the IAEA Regulations for the Safe Transport of Radioactive Material
7	2.7	≠	REPLACEMENT OF MARKS AND LABELS When an operator discovers that any of the marks required by 5;2.4.9, 5;2.4.11, 5;2.4.12 or 5;2.4.16 or labels for packages of dangerous goods have become lost, detached or illegible the operator must replace them with appropriate marks or labels in accordance with the information provided on the dangerous goods transport document or other transport document, such as an air waybill, when applicable.
7	2.13.3.2	≠	An operator must verify that: a) the battery terminals are protected from short circuits (e.g. by being enclosed within a battery container); b) the battery(ies) is either: 1) adequately protected against damage by the design of the mobility aid and securely attached to the mobility aid. The electrical circuits must be isolated following the manufacturer's instructions; or 2) removed from the mobility aid, following the manufacturer's instructions; and c) each removed battery does not exceed 300 Wh. A maximum of one spare battery not exceeding 300 Wh or two spare batteries each not exceeding 160 Wh may be carried.