



RID (Appendix C to COTIF) Regulations concerning the International Carriage of Dangerous Goods by Rail

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Head of the RID department

- What are dangerous goods?

Substances or articles that when carried may pose a risk to people, property or the environment, due to their chemical or physical properties.

Examples of dangerous goods

- Explosives substances and articles:
 - TNT, dynamite, fireworks
- Flammable gases:
 - Natural gas compressed (CNG) or liquified (LNG)
 - Liquified Petroleum Gases (LPG) – propane, butane



Examples of dangerous goods

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- Flammable liquids:
 - Gasoline (petrol), kerosene, diesel, acetone

- Toxic substances:
 - Pesticides



- Radioactive substances



Examples of dangerous goods

- Corrosive substances:
 - Acids, alkalis
- Miscellaneous substances:
 - Lithium batteries, asbestos, air-bag inflators, dry ice



Dangerous goods in our daily life

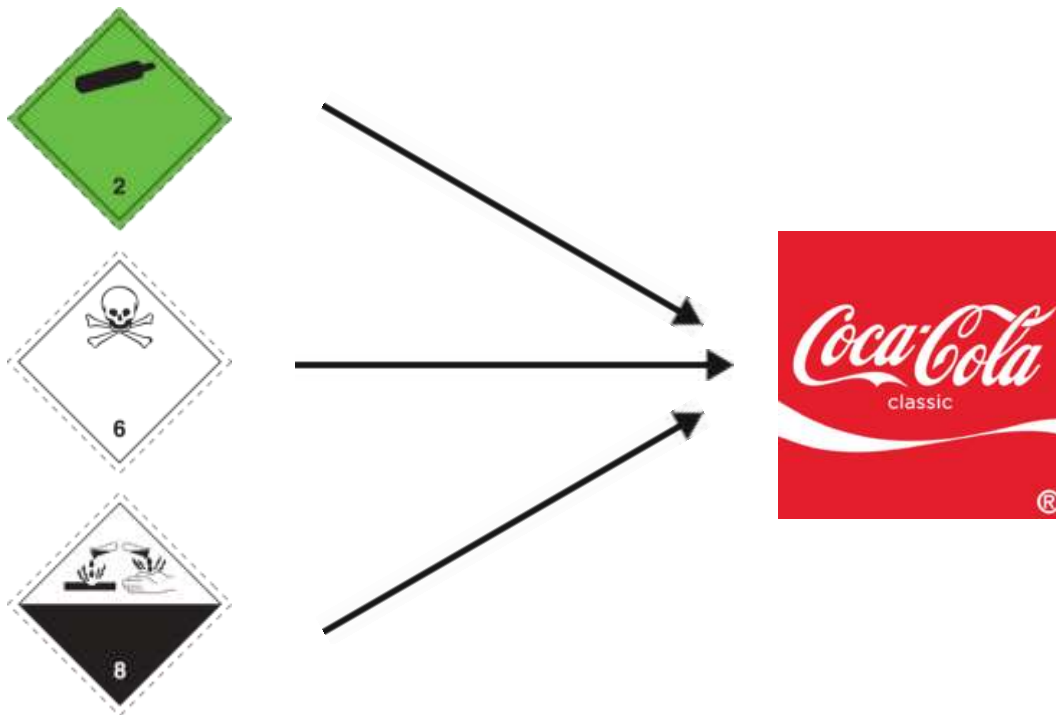


Dangerous goods in our daily life

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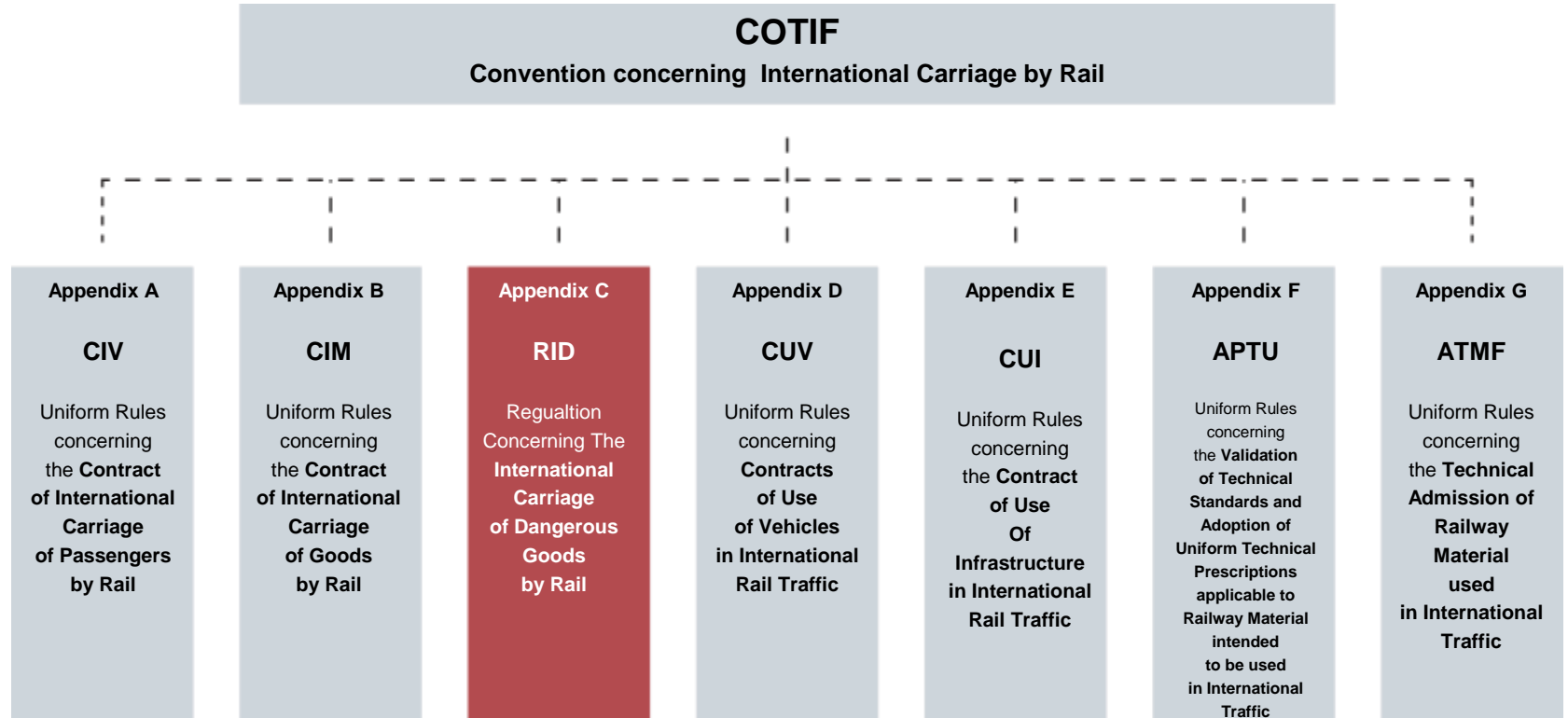


Dangerous goods in our daily life



COTIF 1999

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- Regulations Concerning the International Carriage of Dangerous Goods by Rail
- Appendix C to COTIF 1999
- since 1893
- first restructured edition 1 July 2001
- 44 RID Contracting States (three Contracting States with suspended membership)
- Responsible OTIF Committee: RID Committee of Experts
- revision every two years



Scope of application of RID - Appendix C to COTIF

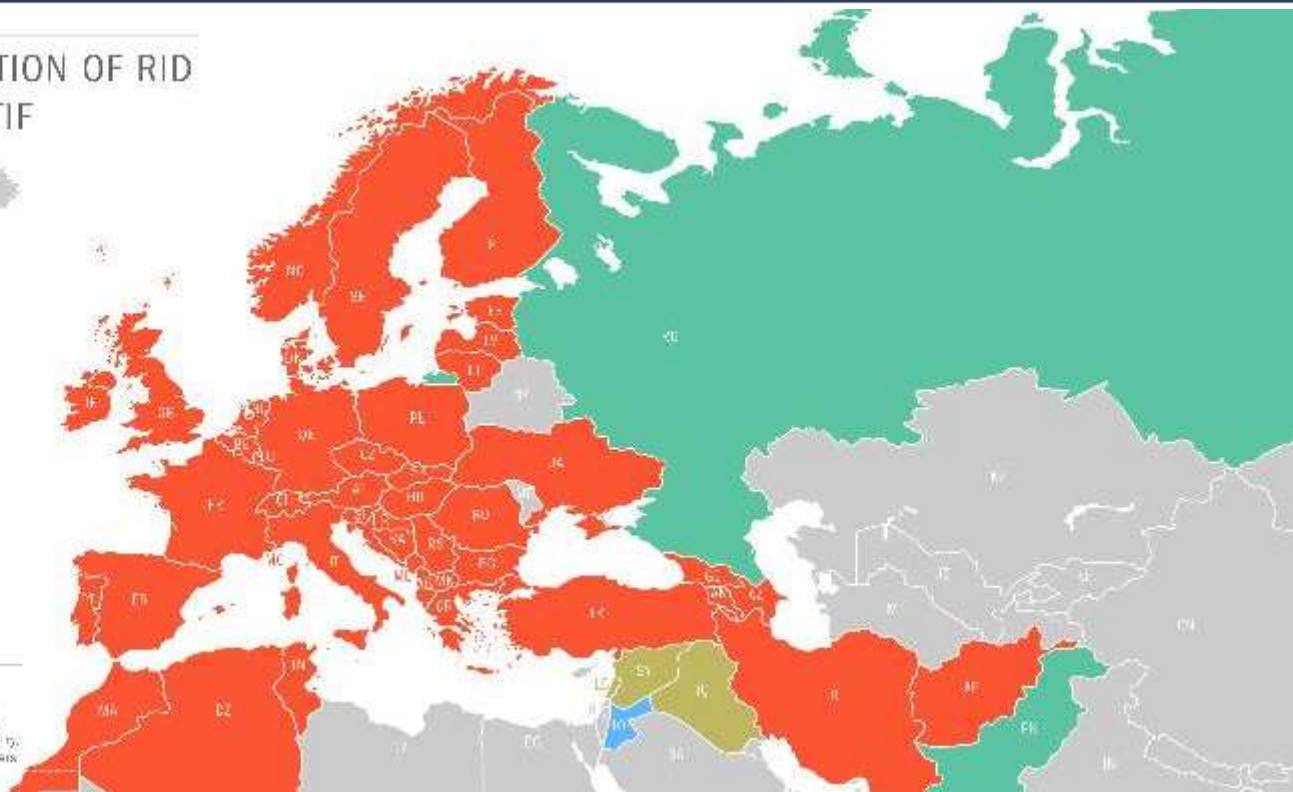
SCOPE OF APPLICATION OF RID APPENDIX C TO COTIF

SITUATION ON
1 MAY 2019

- COTIF - RID
- COTIF without RID
- Associate Members
- Membership suspended

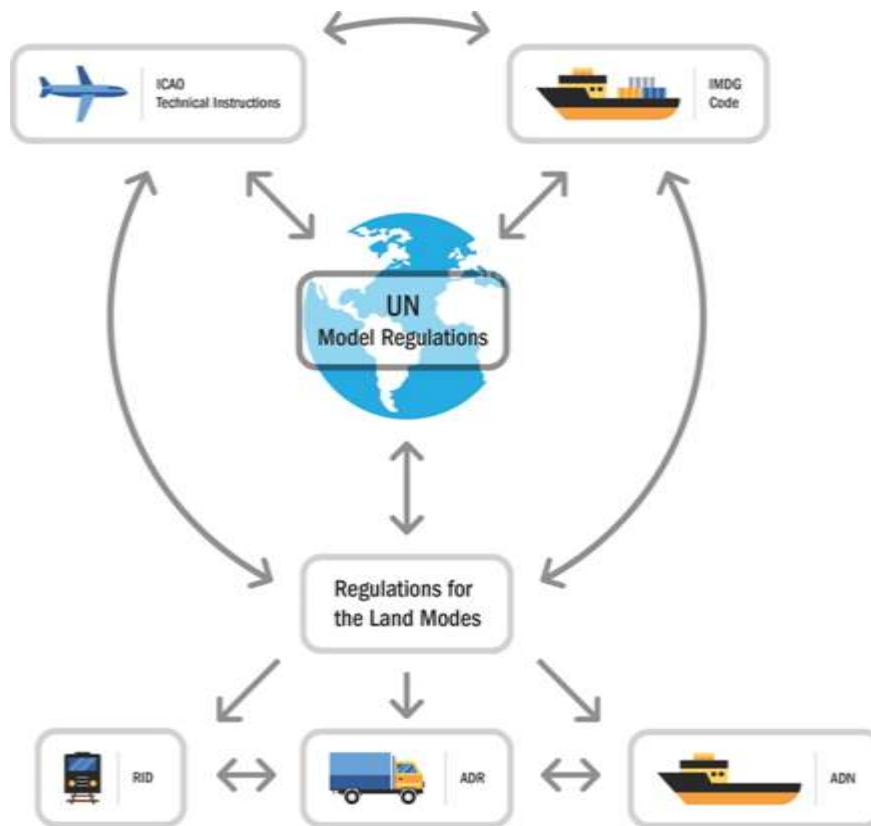
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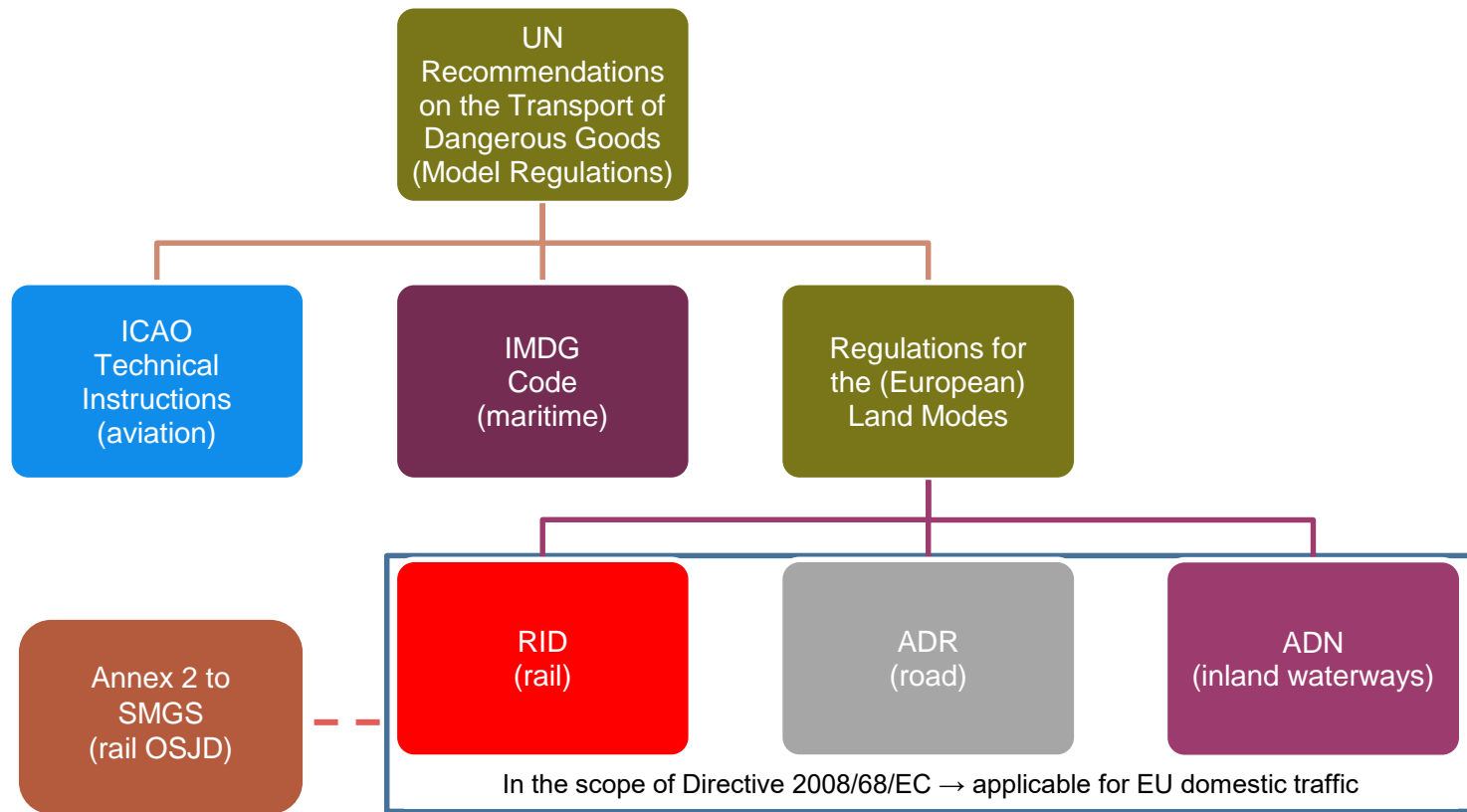
Regulations for the Transport of Dangerous Goods

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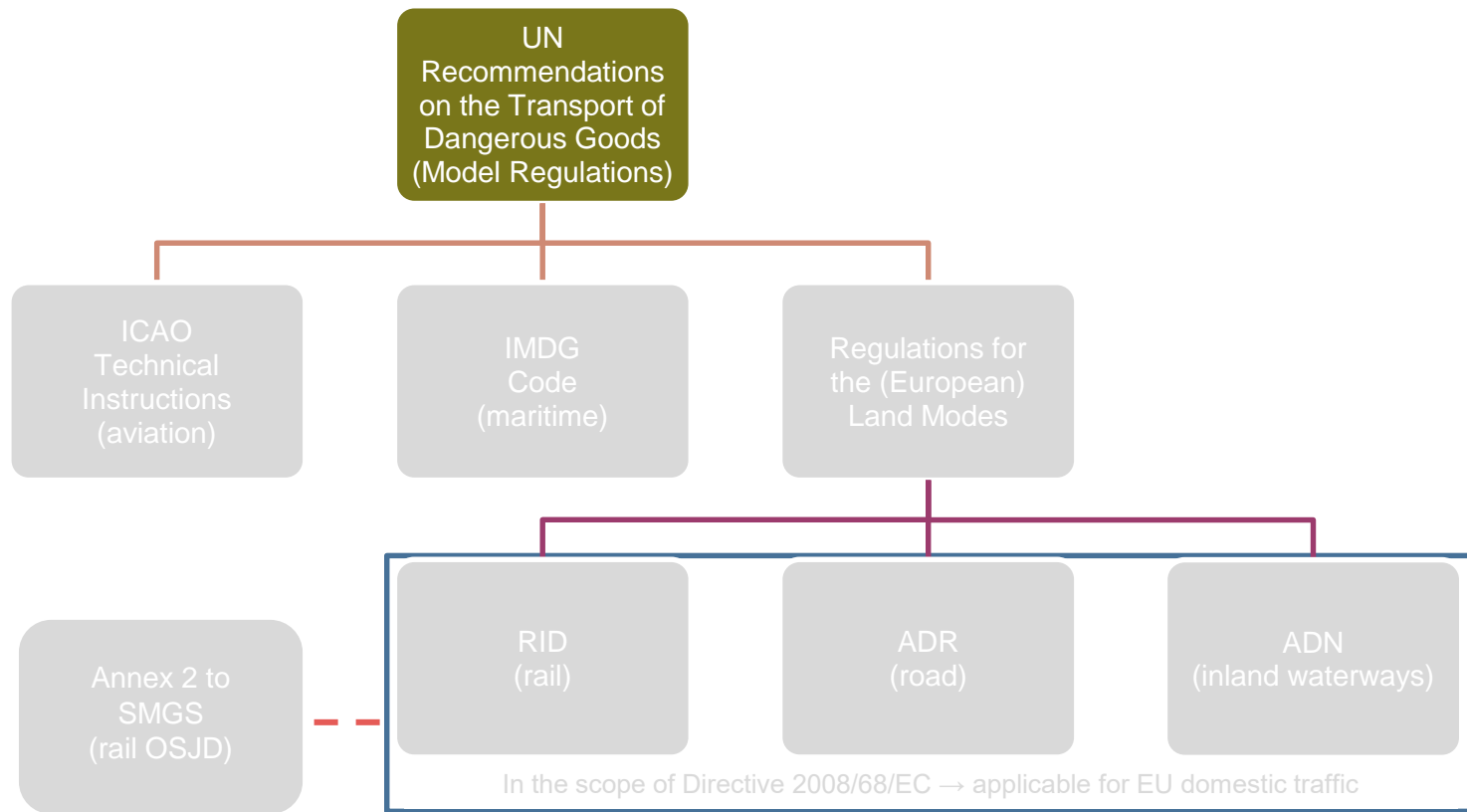


Regulations for the Transport of Dangerous Goods

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Regulations for the Transport of Dangerous Goods



UN Model Regulations

- ECOSOC Committee of experts on the TDG and on the GHS
 - 36 members with voting right
 - Other observer states without voting right
 - International governmental organisations (IMO, ICAO, WHO, ILO, OTIF, ...)
 - International non-governmental organisations (NGOs) (chemical industry, gas industry, packaging industry, carrier, ...)

UN Recommendations on the Transport of Dangerous Goods

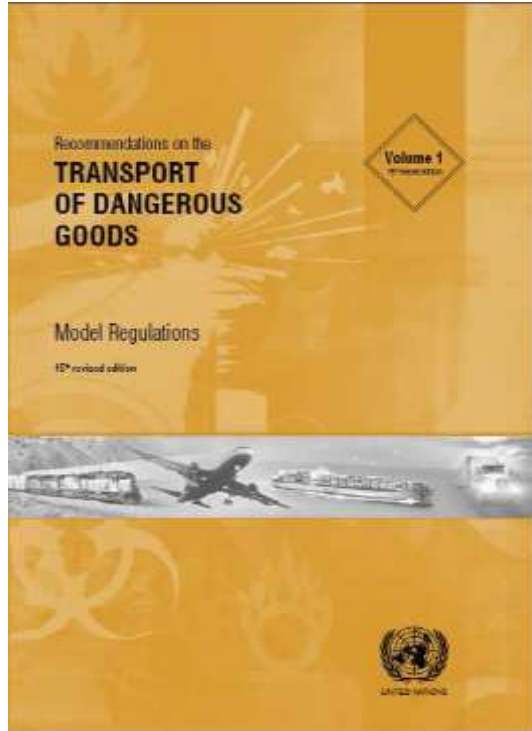
- Two sub-committees
 - UN Sub-Committee on the transport of dangerous goods (27 members)
 - UN Sub-Committee on the globally harmonized system of classification and labelling of chemicals (32 members)
- Twice a year (June and December) UN Sub-Committee of Experts on the Transport of Dangerous Goods
- Tasks: Common provisions for all modes, in particular classification, packing provisions
- At the end of a biennium (pair years) one session of the Committee of Experts on the Transport of Dangerous Goods

Regulations for the Transport of Dangerous Goods

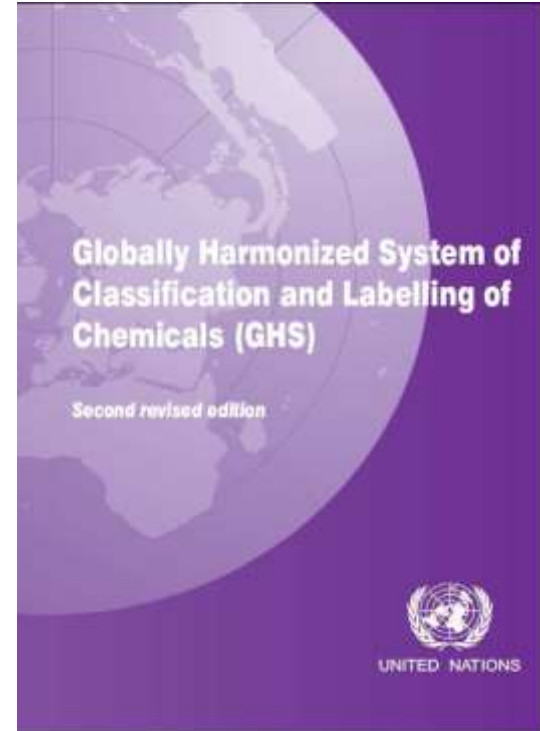
UN Model Regulations

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"Orange Book"

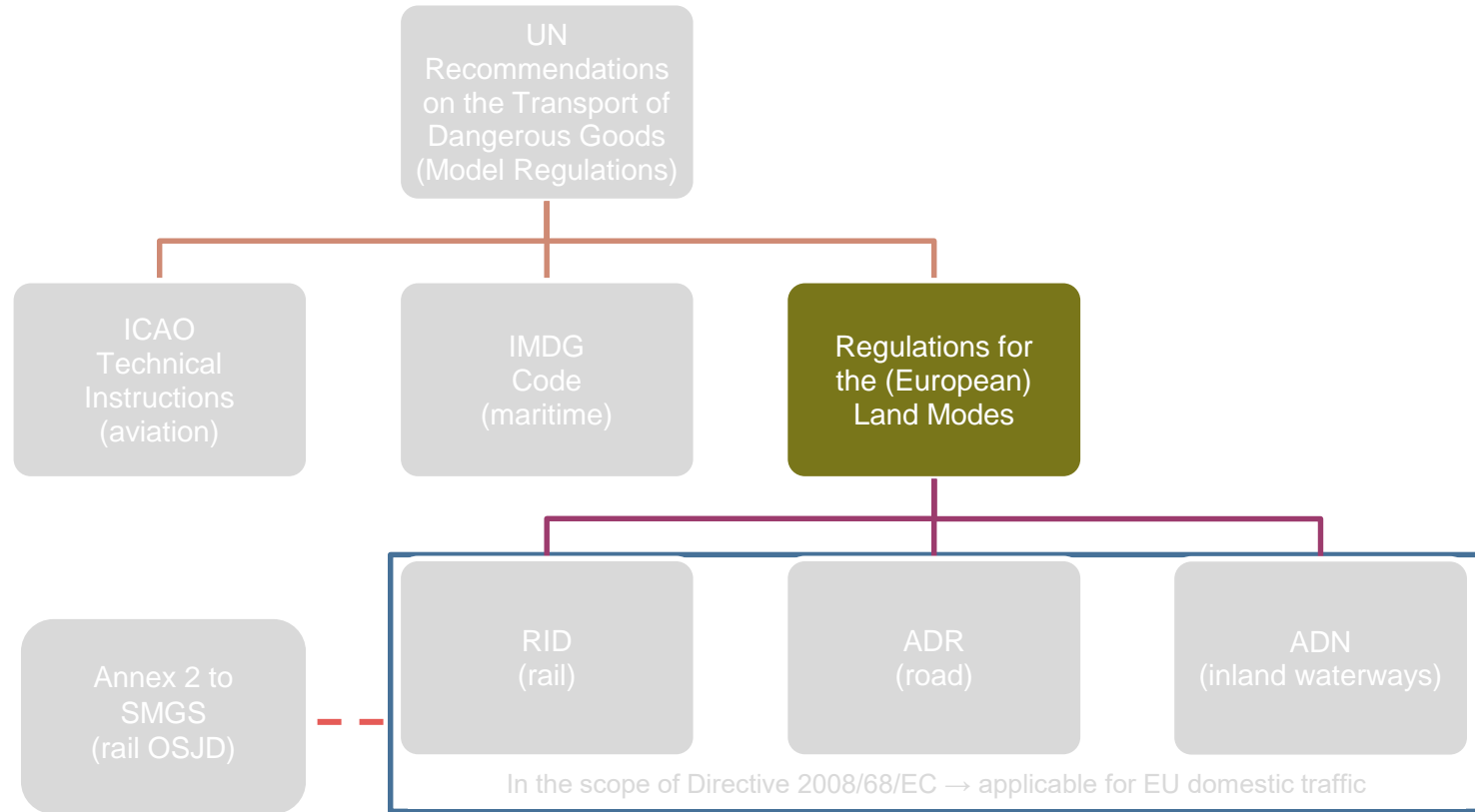


"Purple Book"



Regulations for the Transport of Dangerous Goods

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Organisation of RID/ADR/ADN

- Twice a year (March and September) RID/ADR/ADN Joint Meeting
- Once a year (November) standing working group of the RID Committee of Experts
- Every two years just before the notification of the new amendments RID Committee of Experts meeting
- Every two years, notification of the new amendments to RID/ADR/ADN at least 5 months before entry into force

Tasks of the RID/ADR/ADN Joint Meeting

- Harmonisation with UN Model Regulations
- Common provisions for RID, ADR and ADN
 - RID/ADR tanks
 - Reference to European standards
 - Integration of EU Directives
 - Transport conditions for inland transport

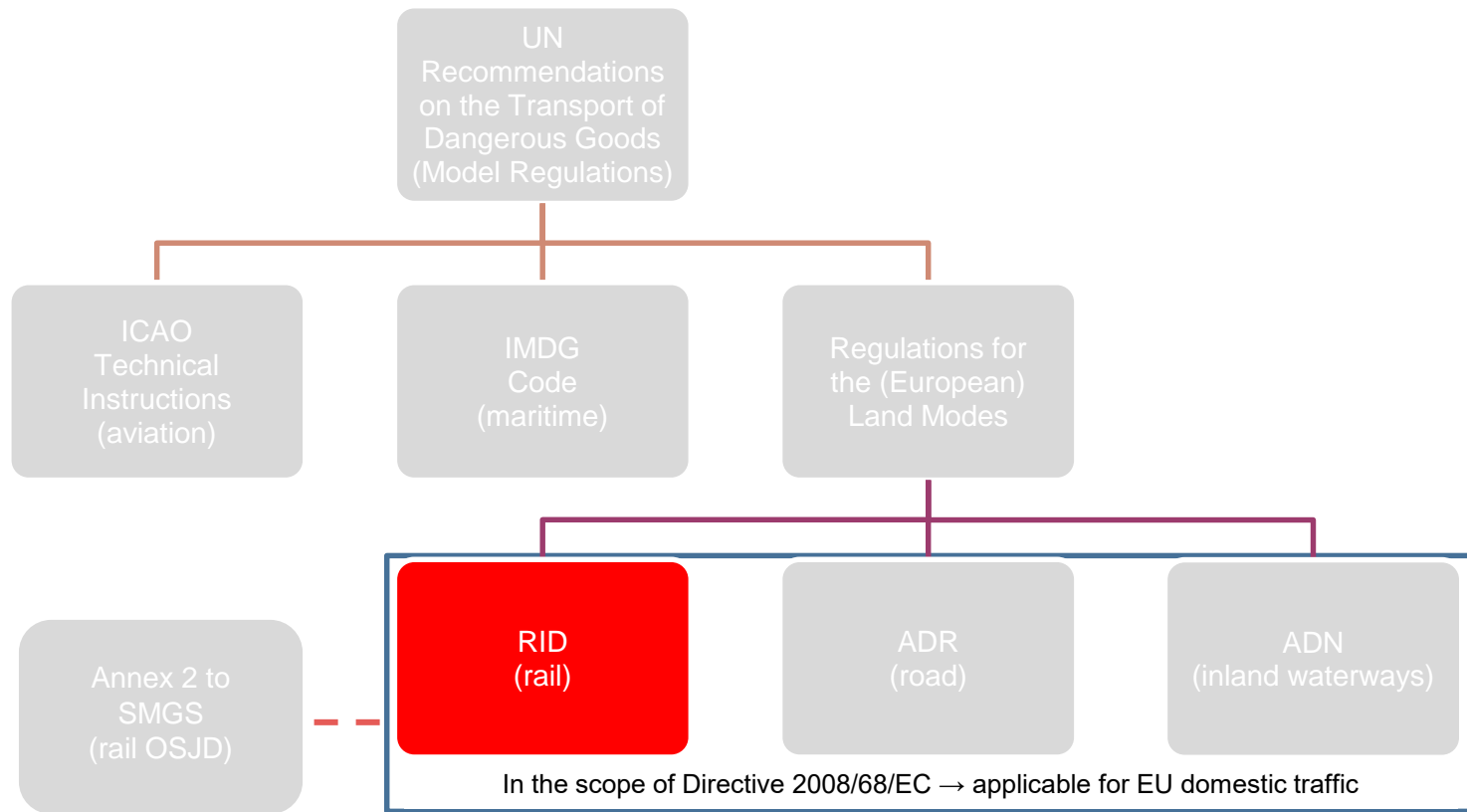
Working groups of the RID/ADR/ADN Joint Meeting

- Permanent working groups on tanks and on standards
- Working group on telematics
- Objectives:
 - Availability of all dangerous goods related information in electronic form (UN number, proper shipping name, class, quantity, ...)
 - Electronic transmission of information between consignor, railway companies, infrastructure manager, ...
 - Facilitation and acceleration of emergency services in case of an accident
 - Localisation of wagons carrying dangerous goods

Common Parts of RID and ADR

- Part 1 (General requirements): 70 % identical
- Part 2 (Classification): 90 % identical
- Part 3 (Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities): 80 % identical
- Part 4 (Use of packagings, intermediate bulk containers (IBCs), large packagings and tanks): 90 % identical
- Part 5 (Consignment procedures): 70 % identical
- Part 6 (Construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks): 90 % identical
- Part 7 (Conditions of carriage, loading, unloading and handling): 60 % identical
- Parts 8 and 9 of ADR do not exist in RID

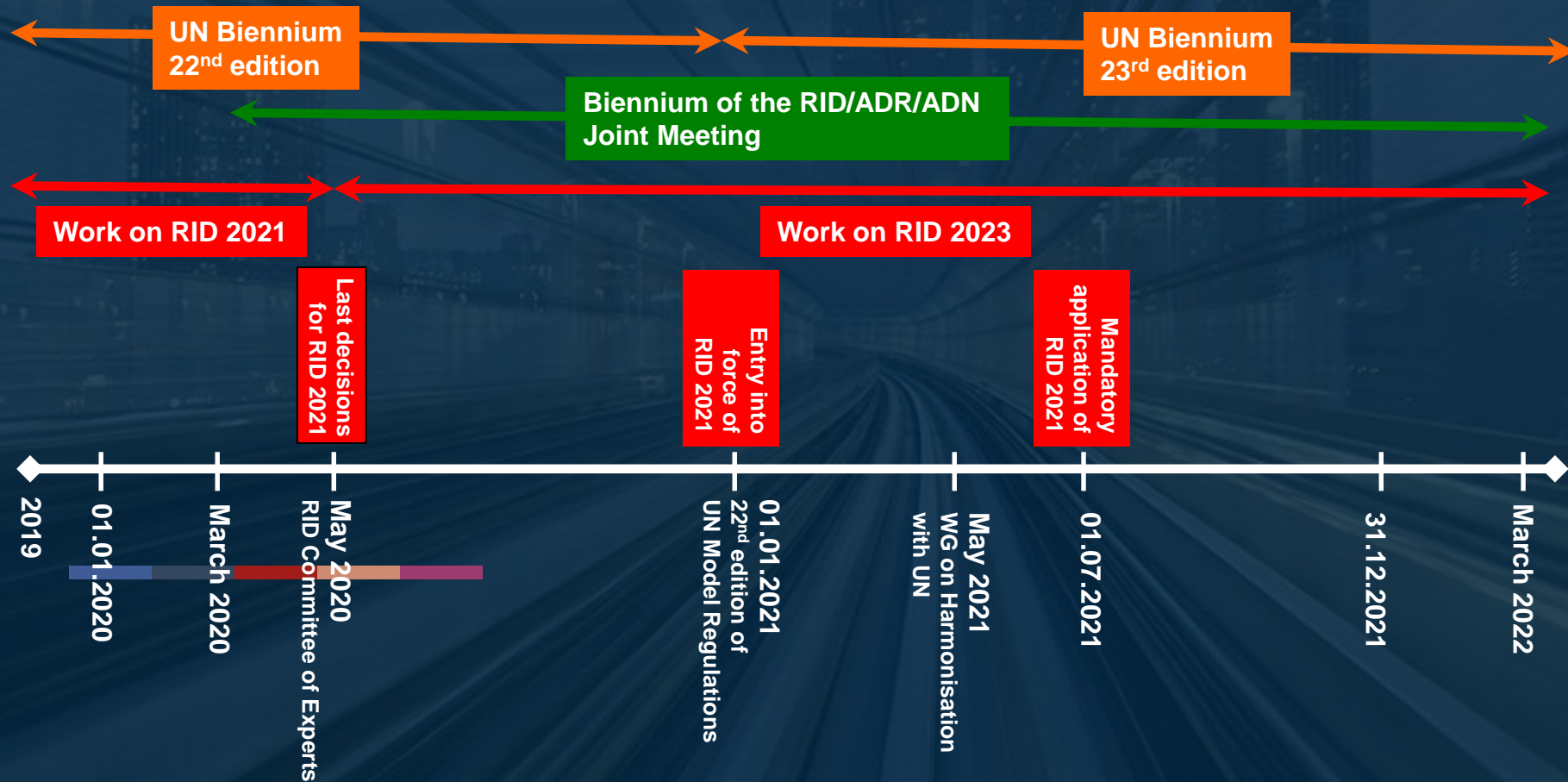
Regulations for the Transport of Dangerous Goods



Tasks of the RID Committee of Experts

- Prepared by the RID Committee of Experts' standing working group (one one-week meeting per year (November))
- Interpretation of RID
- Consideration of the general EU railway law
- Limited provisions on the construction of wagons
- Training provisions
- Operational provisions
- Provisions for hand luggage and registered luggage
- Accident analysis

Time schedule for amendments to RID/ADR/ADN



Languages

- UN Model Regulations:
 - English, French, Russian, Spanish, Arabic, Chinese
- ADR, ADN:
 - English, French, Russian (in addition available in all official languages of the EU Member States)
- RID:
 - English, French, German, (Russian) (in addition available in all official languages of the EU Member States)

RID – Annex 2 to SMGS

- Annex 2 to SMGS contains Regulations concerning the international carriage of dangerous goods by rail in OSJD Member States
- Alignment of Annex 2 to SMGS with the structure of RID 2001
- Quicker incorporation of amended RID provisions into SMGS
- Simplification of traffic between COTIF and SMGS Member States
- Start of wider harmonisation procedure in November 2012



OTIF – OSJD – EU Member States

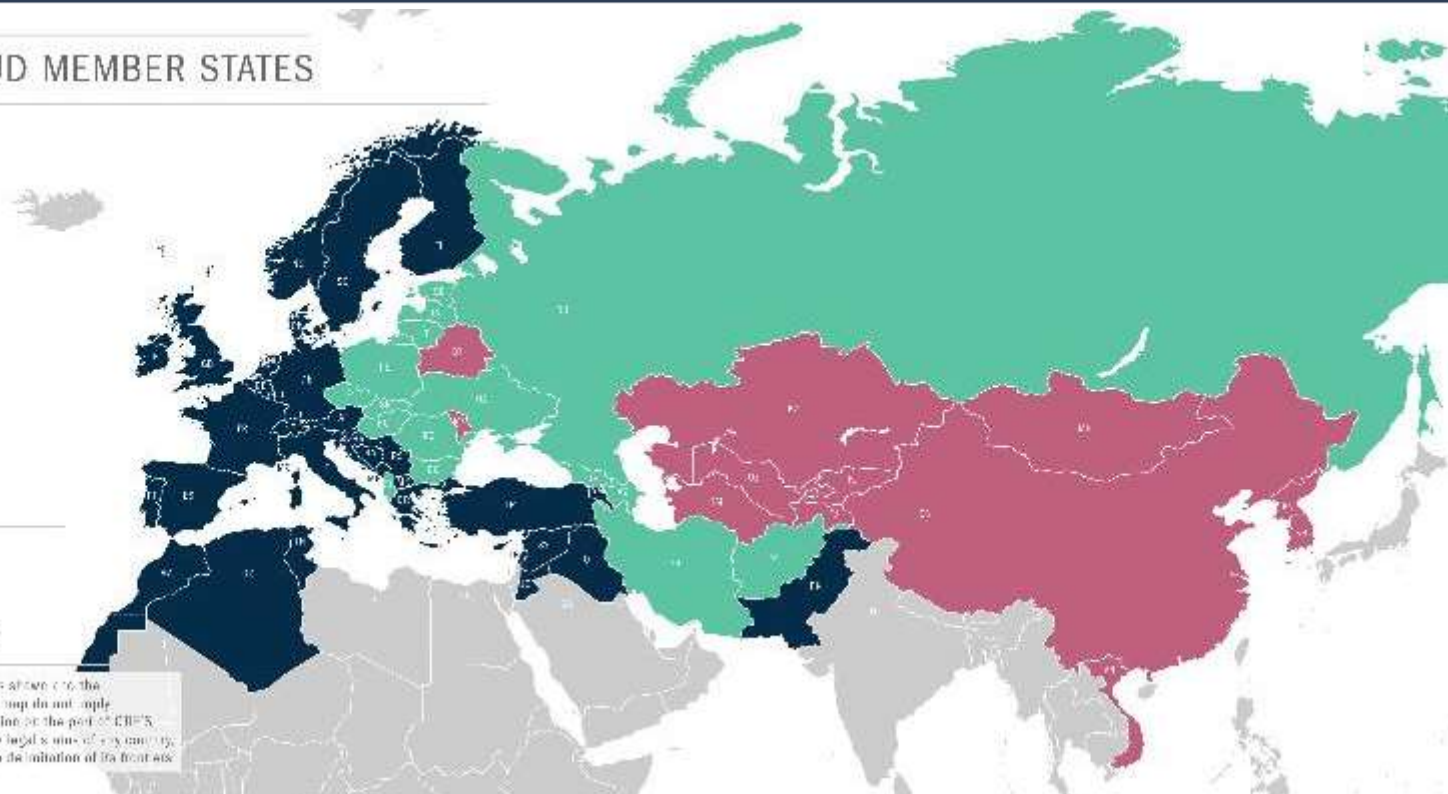
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OTIF - OSJD MEMBER STATES

SITUATION ON
1 MAY 2019

- OTIF
- OSJD
- OTIF & OSJD

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- Actual version: RID 2019
- Applicable since 01.01.2019
- Transitional period until 30.06.2019
- Mandatory application of RID 2019 from 01.07.2019

Current work topics

- Extra-large tank-containers



RID

- Divided in 7 parts
 - **Part 1:** General requirements
 - **Part 2:** Classification
 - **Part 3:** Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities
 - **Part 4:** Packing and tank provisions

RID

- **Part 5:** Consignment procedures
- **Part 6:** Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks
- **Part 7:** Provisions concerning the conditions of carriage, loading, unloading and handling

Part 1 - General requirements

- **Chapter 1.1: Scope and applicability**
 - Structure
 - Scope
 - Exemptions
 - Applicability of other regulations
- **Chapter 1.2: Definitions**
 - Units of measurement
- **Chapter 1.3: Training of persons involved in the carriage of dangerous goods**

Part 1 - General requirements

- **Chapter 1.4: Safety obligations of the participants**
 - Main participants: consignor, carrier, consignee
 - Other participants: loader, packer, filler, tank-container operator, tank-wagon operator, railway infrastructure manager, unloader

Part 1 - General requirements

- **Chapter 1.5: Derogations**
 - Temporary derogations (multilateral special agreement)
- **Chapter 1.6: Transitional measures**
- **Chapter 1.7: General provisions concerning radioactive material**
 - developed by IAEA for all modes of transport

Part 1 - General requirements

- **Chapter 1.8: Checks and other support measures to ensure compliance with safety requirements**
 - Safety adviser
 - Report on occurrences during transport of dangerous goods

Part 1 - General requirements

- **Chapter 1.9: Restrictions on carriage imposed by the competent authorities**
 - additional safety requirements or restrictions on
 - using certain structures (bridges, tunnels)
 - using combined transport installations
 - prohibitions on sections with special and local risks
 - residential areas, environmentally sensitive areas, ...
 - exceptional provisions specifying the routing

Part 1 - General requirements

- **Chapter 1.10: Security provisions**
 - Security training
 - High consequence dangerous goods
 - Security plans
- **Chapter 1.11: Internal emergency plans for marshalling yards**

- **Chapter 2.1: General provisions**
 - Different classes
 - Entries
 - Single entries
 - Generic entries
 - Specific n.o.s. entries
 - General n.o.s. entries
 - Principles of classification
- **Chapter 2.2: Class specific provisions**

Part 2 - Classification

Class 1:

Explosive substances
and articles (e.g. fireworks)



Part 2 - Classification

Class 2: Gases
(e.g. butane, propane)



Part 2 - Classification

Class 3: Flammable liquids
(e.g. diesel fuel, gasoline)



Part 2 - Classification

Class 4.1: Flammable solids, self-reactive substances and solid desensitized explosives (e.g. sulphur)



Part 2 - Classification

Class 4.2: Substances liable to spontaneous combustion (e.g. phosphorus)



Part 2 - Classification

Class 4.3: Substances which, in contact with water, emit flammable gases (e.g. lithium)



Part 2 - Classification

Class 5.1: Oxidizing substances
(e.g. perchloric acid)



Part 2 - Classification

Class 5.2: Organic peroxides



Part 2 - Classification

Class 6.1: Toxic substances
(e.g. strychnine, nicotine)



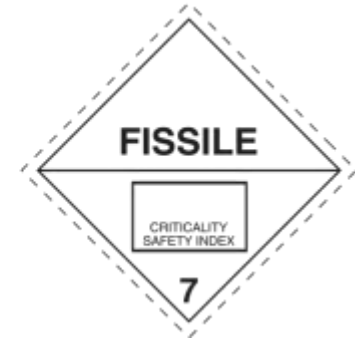
Part 2 - Classification

Class 6.2: Infectious substances
(e.g. clinical waste)



Part 2 - Classification

Class 7: Radioactive material
(e.g. uranium)



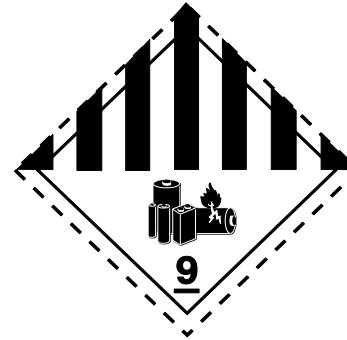
Part 2 - Classification

Class 8: Corrosive substances
(e.g. sulphuric acid)



Part 2 - Classification

Class 9: Miscellaneous dangerous substances and articles (e.g. Lithium batteries, asbestos)



Part 2 - Classification

- **Chapter 2.2 Class specific provisions**
 - Criteria
 - Substances not accepted for carriage
 - List of collective entries

Part 2 - Classification

2.2.8.3 List of collective entries

		Classification code	UN No.	Name of the substance or article
Corrosive substances <u>without</u> subsidiary risk and articles containing such substances				
Acid	inorganic	liquid C1	2584	ALKYLSULPHONIC ACIDS, LIQUID with more than 5% free sulphuric acid or
			2584	ARYLSULPHONIC ACIDS, LIQUID with more than 5% free sulphuric acid
			2693	BISULPHITES, AQUEOUS SOLUTION, N.O.S.
			2837	BISULPHATES, AQUEOUS SOLUTION
			3264	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
		solid C2	1740	HYDROGENDIFLUORIDES, SOLID, N.O.S.
			2583	ALKYLSULPHONIC ACIDS, SOLID with more than 5% free sulphuric acid or
			2583	ARYLSULPHONIC ACIDS, SOLID with more than 5% free sulphuric acid
			3260	CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.

Part 2 - Classification

- **Chapter 2.3 Test methods**

Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Chapter 3.1 General**
 - Proper shipping name
 - Use of technical names for generic or n.o.s. entries
- **Chapter 3.2 Dangerous goods lists**
 - **Table A:** List of dangerous goods in UN number order

Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Table A**
 - (1): UN number
 - (2): Name and description
 - (3a): Class
 - (3b): Classification code
 - (4): Packing group
 - (5): Labels
 - (6): Special provisions (Chapter 3.3)
 - (7a): Limited quantities (Chapter 3.4)
 - (7b): Excepted quantities (Chapter 3.5)

Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Table A (cont'd)**
 - (8): Packing instructions (Chapter 4.1)
 - (9a): Special packing provisions (Chapter 4.1)
 - (9b): Mixed packing provisions (Chapter 4.1)
 - (10): Portable tank and bulk container instructions (Chapters 4.2 and 7.3)
 - (11): Portable tank and bulk container special provisions (Chapter 4.2)
 - (12): Tank codes for RID tanks (Chapter 4.3)
 - (13): Special provisions for RID tanks (Chapter 4.3)

Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Table A (cont'd)**
 - (15): Transport category (1.1.3.1 c))
 - (16): Special provisions for carriage – Packages (Chapter 7.2)
 - (17): Special provisions for carriage – Bulk (Chapter 7.3)
 - (18): Special provisions for carriage – Loading and unloading (Chapter 7.5)
 - (19): Colis express (express parcels) (Chapter 7.6)
 - (20): Hazard identification number (Chapter 5.3)

Table A: List of dangerous goods in UN number order

UN No.	Name and description	Class	Classification code	Packing group	Labels	Special provisions	Limited and excepted quantities	Packaging			Portable tanks and bulk containers		RID Tanks		Transport category	Special provisions for carriage			Colis express (express parcels)	Hazard identification No.	
								Packing instructions	Special packing provisions	Mixed packing provisions	Instructions	Special provisions	Tank code	Special provisions		Packages	Bulk	Loading, unloading and handling			
	3.1.2	2.2	2.2	2.1.1.3	5.2.2	3.3	3.4/3.5.1.2	4.1.4	4.1.4	4.1.10	4.2.5.2, 7.3.2	4.2.5.3	4.3	4.3.5, 6.8.4	1.1.3.1c)	7.2.4	7.3.3	7.5.11	7.6	5.3.2.3	
(1) ▾	(2) ▾	(3) ▾	(3t) ▾	(4) ▾	(5) ▾	(6) ▾	(7) ▾	(7t) ▾	(8) ▾	(9a) ▾	(9b) ▾	(10) ▾	(11) ▾	(12) ▾	(13) ▾	(15) ▾	(16) ▾	(17) ▾	(18) ▾	(19) ▾	(20) ▾
1202	GAS OIL or DIESEL FUEL or HEATING OIL, LIGHT (flash-point not more than 60 °C)	3	F1	III	3	363 640K	5 L E1	P001 IBC03 LP01 R001		MP19	T2	TP1	LGBF		3	W12			CE4	30	
1202	DIESEL FUEL complying with standard EN 590:2009 + A1:2010 or GAS OIL or HEATING OIL, LIGHT with a flash-point as specified in EN 590:2009 + A1:2010	3	F1	III	3	363 640L	5 L E1	P001 IBC03 LP01 R001		MP19	T2	TP1	LGBF		3	W12			CE4	30	
1202	GAS OIL or DIESEL FUEL or HEATING OIL, LIGHT (flash-point more than 60 °C and not more than 100 °C)	3	F1	III	3	363 640M	5 L E1	P001 IBC03 LP01 R001		MP19	T2	TP1	LGBV		3	W12			CE4	30	
1203	MOTOR SPIRIT or GASOLINE or PETROL	3	F1	II	3	243 363 534	1 L E2	P001 IBC02 R001	BB2	MP19	T4	TP1	LGBF	TU9	2				CE7	33	
1204	NITROGLYCERIN SOLUTION IN ALCOHOL with not more than 1% nitroglycerin	3	D	II	3	601	1 L E0	P001 IBC02	PP5	MP2					2				CE7	33	

Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Chapter 3.2: Dangerous goods lists**
 - **Table B: Alphabetical list of dangerous goods**
 - (1): Name and description
 - (2): UN number
 - (3): Note
 - (4): NHM code

Table B: Alphabetical list of dangerous goods

Name and description	UN No.
DICHLOROSILANE	2189
1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE	1958
DICYCLOHEXYLAMINE	2565
DICYCLOHEXYLAMMONIUM NITRITE	2687
DICYCLOPENTADIENE	2048
1,2-DI-(DIMETHYLAMINO) ETHANE	2372
DIDYMIUM NITRATE	1465
DIESEL FUEL	1202
1,2-Diethoxyethane: see	1153
DIETHOXYMETHANE	2373
3,3-DIETHOXYPROPENE	2374
DIETHYLAMINE	1154
2-DIETHYLAMINOETHANOL	2686
3-DIETHYLAMINOPROPYLAMINE	2684

Seite 14

Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

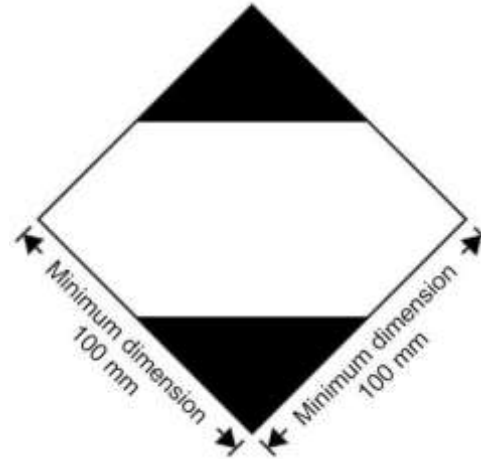
- **Chapter 3.3 Special provisions applicable to certain articles or substances**
 - indicated in column (6) of Table A
 - mainly connected with e.g. carriage prohibitions, exemptions from requirements, explanations concerning the classification of certain forms of the dangerous goods concerned and additional labelling or marking provisions
 - SP 1 to 499: applicable for all modes
 - SP 500 to ...: applicable for land modes

Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Chapter 3.4 Dangerous goods packed in limited quantities**
 - Quantity limit per inner packaging indicated in column (7a) of Table A (ml/g)
 - Total gross mass of the package: 30 kg
(in case of shrink-wrapped or stretch-wrapped trays: 20 kg)
 - only some provisions of RID must be applied

Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Chapter 3.4 (cont'd)**
 - mark (instead of labels):



Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Chapter 3.5 Dangerous goods packed in excepted quantities**
 - Only a few provisions of RID must be applied
 - Training of persons involved
 - Classification procedures
 - Basic packaging requirements
 - Not more than 1000 packages per wagon or container

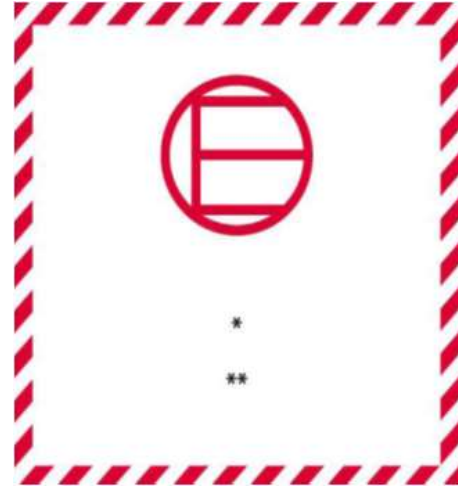
Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Chapter 3.5 (cont'd)**
 - Codes E0 to E5 (see column (7b) of Table A)

Code	Maximum net quantity per inner packaging (in grams for solids and ml for liquids and gases)	Maximum net quantity per outer packaging (in grams for solids and ml for liquids and gases, or sum of grams and ml in the case of mixed packing)
E0	Not permitted as Excepted Quantity	
E1	30	1000
E2	30	500
E3	30	300
E4	1	500
E5	1	300

Part 3 - Dangerous goods lists, special provisions and exemptions related to limited and excepted quantities

- **Chapter 3.5 (cont'd)**
 - Mark



- **Chapter 4.1**
 - Packing instructions concerning the use of packagings
 - Code **P** xxx (see column (8) of Table A)
 - Type of packagings
 - Maximum net mass
 - P099: packagings approved by the competent authority
 - Special packing provisions **PP** x (see column (9a) of Table A)

Part 4 - Packing and tank provisions

- **Chapter 4.1 (cont'd)**
 - Packing instructions concerning the use of IBCs
 - Code **IBC** xx (see column (8) of Table A)
 - Type of IBCs
 - IBC99: IBCs approved by the competent authority
 - Special packing provisions **B** x (see column (9a) of Table A)

Part 4 - Packing and tank provisions

- **Chapter 4.1 (cont'd)**
 - Packing instructions concerning the use of large packaging
 - Code **LP** xx (see column (8) of Table A)
 - Type of large packagings
 - Maximum capacity
 - LP99: large packagings approved by the competent authority
 - Special packing provisions **L** x (see column (9a) of Table A)

Part 4 - Packing and tank provisions

- **Chapter 4.1 (cont'd)**
 - Special packing provisions for different classes
 - Special provisions for mixed packing
 - **MP** x (see column (9b) of Table A)

Part 4 - Packing and tank provisions

- **Chapter 4.2: Use of portable tanks and UN multiple-element gas containers (MEGCs)**
 - identical with Chapter 4.2 of the IMDG Code
 - multimodal tanks
 - portable tanks instructions T1 – T23 (see column (10) of Table A)
 - minimum test pressure
 - minimum shell thickness
 - pressure-relief requirements
 - bottom opening requirements
 - degree of filling

Part 4 - Packing and tank provisions

- **Chapter 4.2 (cont'd)**
 - hierarchy of tanks
 - portable tank special provisions **TP** x (see column (11) of Table A)

Part 4 - Packing and tank provisions

- **Chapter 4.3 Use of tank-wagons, demountable tanks, tank-containers and tank swap bodies with shells made of metallic materials, and battery-wagons and multiple-element gas containers (MEGCs)**
 - Part of the text in two columns
 - left-hand column: tank-wagons, demountable tanks, battery-wagons
 - right-hand column: tank-containers

- **Chapter 4.3 (cont'd)**
 - Coding of tanks, battery-wagons and MEGCs (Class 2)

The four parts of the codes (tank codes) given in Column (12) of Table A in Chapter 3.2 have the following meanings:

Part	Description	Tank Code
1	Types of tank, battery-wagons or MEGC	C = tank, battery-wagon or MEGC for compressed gases; P = tank, battery-wagon or MEGC for liquefied gases or dissolved gases; R = tank for refrigerated liquefied gases.
2	Calculation pressure	x = value of the minimum relevant test pressure according to the table in 4.3.3.2.5; or 22= minimum calculation pressure in bar.
3	Openings (see 6.8.2.2 and 6.8.3.2)	B = tank with bottom filling or discharge openings with 3 closures; or battery-wagon or MEGC with openings below the surface of the liquid or for compressed gases; C = tank with top filling or discharge openings with 3 closures with only cleaning openings below the surface of the liquid; D = tank with top filling or discharge openings with 3 closures; or battery-wagon or MEGC with no openings below the surface of the liquid.
4	Safety valves/devices	N = tank, battery-wagon or MEGC with safety valve according to 6.8.3.2.9 or 6.8.3.2.10 which is not hermetically closed; H = hermetically closed tank, battery-wagon or MEGC (see 1.2.1);

Part 4 - Packing and tank provisions

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The four parts of the codes (tank codes) given in Column (12) of Table A in Chapter 3.2 have the following meanings:

- **Chapter 4.3 (cont'd)**
 - Coding of tanks (classes 3 - 9)

Part	Description	Tank code
1	Types of tank	L = tank for substances in the liquid state (liquids or solids handed over for carriage in the molten state); S = tank for substances in the solid state (powdery or granular).
2	Calculation pressure	G = minimum calculation pressure according to the general requirements of 6.8.2.1.14; 1,5; 2,65; 4; 10; 15 or 21 = minimum calculation pressure in bar (see 6.8.2.1.14).
3	Openings (see 6.8.2.2.2)	A = tank with bottom-filling or bottom-discharge openings with 2 closures; B = tank with bottom-filling or bottom-discharge openings with 3 closures; C = tank with top-filling and discharge openings with only cleaning openings below the surface of the liquid; D = tank with top-filling and discharge openings with no openings below the surface of the liquid.
4	Safety valves/devices	V = tank with a breather device, according to 6.8.2.2.6, but no device protecting against the propagation of a flame; or non-explosion pressure shock resistant tank; F = tank with a breather device, according to 6.8.2.2.6, fitted with a device protecting against the propagation of a flame; or explosion pressure shock resistant tank; N = tank without a breather device according to 6.8.2.2.6 and not hermetically closed; H = hermetically closed tank (see 1.2.1).

Part 4 - Packing and tank provisions

- **Chapter 4.3 (cont'd)**

- Tank codes indicated in column (12) of Table A

- Hierarchy of tanks

- Part 1: Types of tanks

- $S \rightarrow L$

- Part 2: Calculation pressure

- $G \rightarrow 1.5 \rightarrow 2.65 \rightarrow 4 \rightarrow 10 \rightarrow 15 \rightarrow 21 \text{ bar}$

- Part 3: Openings

- $A \rightarrow B \rightarrow C \rightarrow D$

- Part 4: Safety valves/devices

- $V \rightarrow F \rightarrow N \rightarrow H.$

Part 4 - Packing and tank provisions

- **Chapter 4.3 (cont'd)**
 - Special provisions
 - TU** x (see column 13 of Table A)

Part 4 - Packing and tank provisions

- **Chapter 4.4 Use of tank-containers including tank swap bodies with shells made of fibre-reinforced plastics (FRP)**
- **Chapter 4.5 Use of vacuum-operated waste tanks**

Part 5 - Consignment procedures

- **Chapter 5.1 General provisions**
 - Use of overpacks
 - Empty uncleaned packagings (including IBCs and large packagings), tanks, wagons and containers for carriage in bulk
 - Mixed packing

- **Chapter 5.2 Marking and labelling**
 - UN number on packages
 - Proper shipping name on packages for classes 1 and 2
 - Class 7 mark

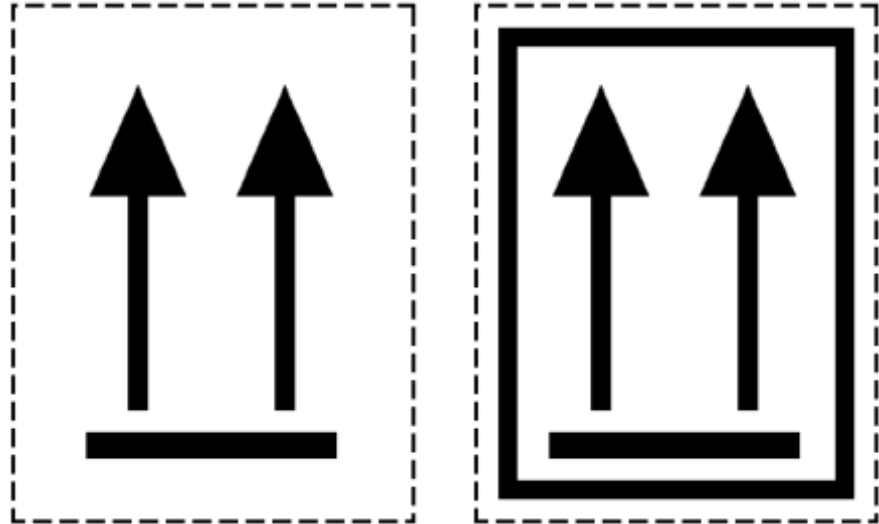


Part 5 - Consignment procedures

- **Chapter 5.2 (cont'd)**
 - Special marking provisions for environmentally hazardous substances



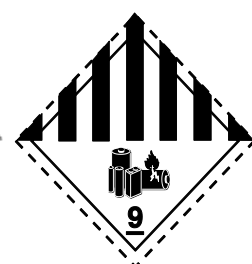
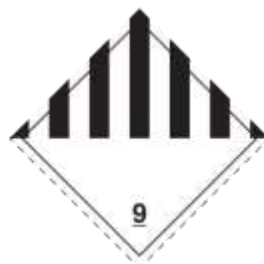
- **Chapter 5.2 (cont'd)**
 - Orientation arrows on certain packages



Part 5 - Consignment procedures

- **Chapter 5.2 (cont'd)**
 - Labelling provisions
 - Labels indicated in column (5) of Table A
 - on one side (packagings)
 - on two opposite sides (IBC > 450 litres and large packagings)
 - on a background of contrasting colour or dotted or solid outer boundary line
 - dimension: 100 x 100 mm

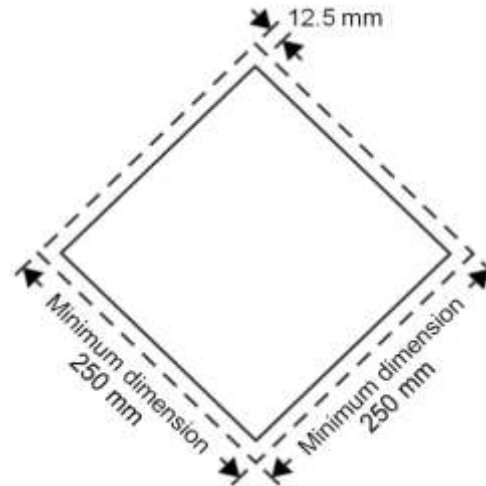
Danger labels



Part 5 - Consignment procedures

- **Chapter 5.3 Placarding and marking**

- on both (lateral) sides of wagons
(= 2)
- on all lateral sides of containers
(= 4)
- dimensions: 250 mm x 250 mm

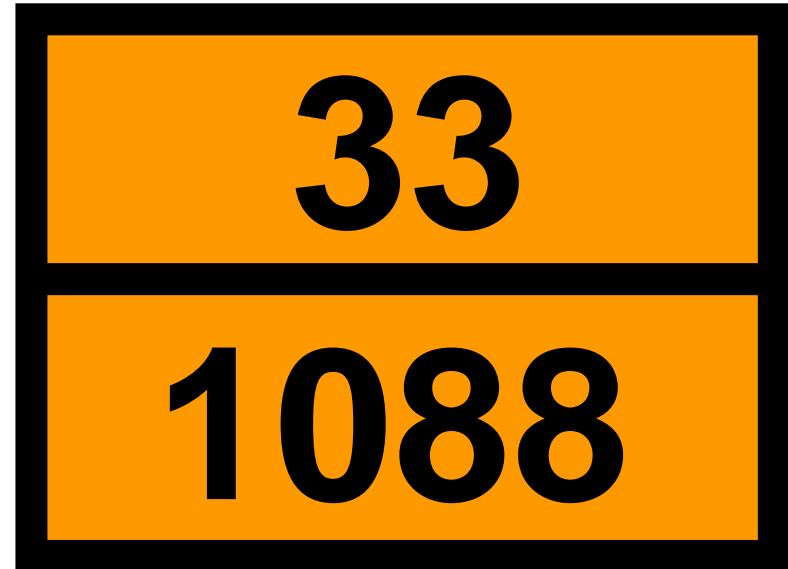


Part 5 - Consignment procedures

- **Chapter 5.3 (cont'd)**
 - Orange-coloured plate marking on
 - tank-wagons
 - battery-wagons
 - wagons with demountable tanks
 - tank-containers
 - portable tanks
 - MEGC
 - wagons or containers for carriage in bulk

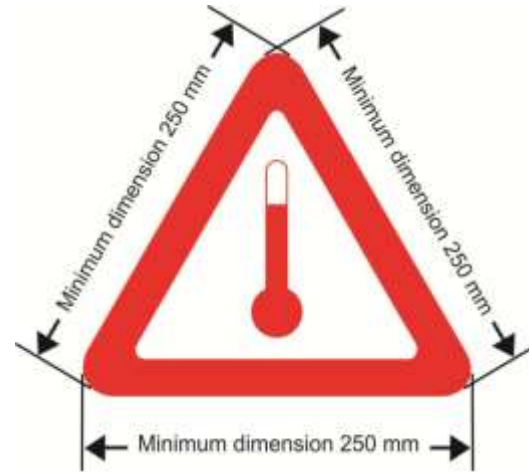
Part 5 - Consignment procedures

- **Chapter 5.3 (cont'd)**
 - Orange-coloured plate marking
 - upper half: hazard identification number (see column (20) of Table A)
 - bottom half: UN number (see column (1) of Table A)



Part 5 - Consignment procedures

- **Chapter 5.3 (cont'd)**
 - Elevated temperature substance mark

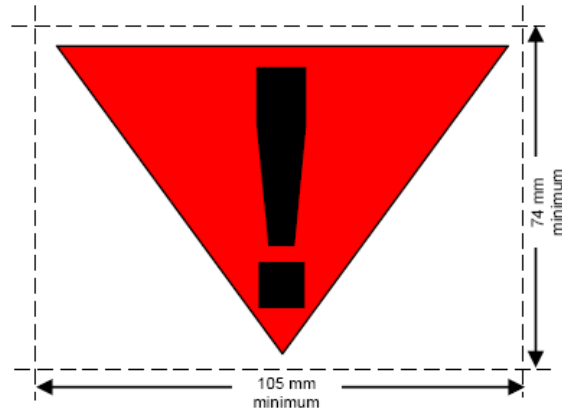


Part 5 - Consignment procedures

- **Chapter 5.3 (cont'd)**
 - Shunting labels (see column (5) of Table A)

No. 13

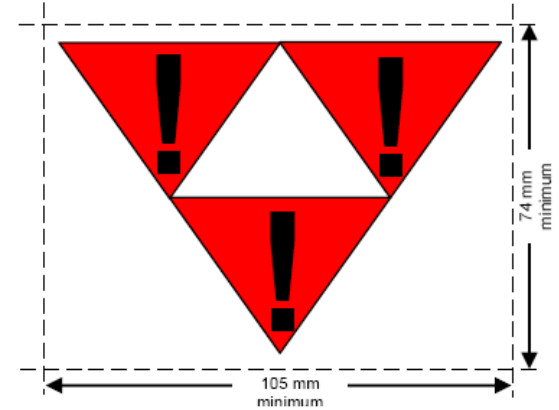
Shunt with care



red triangle with an exclamation mark in black on white background

No. 15

Loose shunting or hump shunting forbidden. Shall be accompanied by a motive power unit. Shall not bump, or be bumped by, other wagons.



three triangles, red, with black exclamation mark

Part 5 - Consignment procedures










- **Chapter 5.4: Documentation**
 - UN number preceded by the letters "UN"
 - Proper shipping name
 - Label numbers indicated in column (5) of Table A
 - Packing group
 - Number and description of packages
 - Total quantity of each dangerous good
 - Name and address of consignor and consignee
 - Hazard identification number

Part 5 - Consignment procedures

- **Chapter 5.4 (cont'd)**
 - Special provisions
 - for example
 - wastes
 - empty means of containment
 - Additional provisions for different classes
 - One or more languages but at least in English, French or German

Part 5 - Consignment procedures

- Chapter 5.4 (cont'd)
 - Instructions in writing for the locomotive driver

Additional guidance to drivers on the hazard characteristics of dangerous goods by class and on actions subject to prevailing circumstances		
Danger labels and placards, description of the hazards	Hazard characteristics	Additional guidance
(1)	(2)	(3)
Explosive substances and articles 	May have a range of properties and effects such as mass detonation; projection of fragments; intense fire/heat flux; formation of bright light, loud noise or smoke. Sensitive to shocks and/or impacts and/or heat.	Take cover but stay away from windows.
Explosive substances and articles 	Slight risk of explosion and fire.	Take cover.
Flammable gases 	Risk of fire. Risk of explosion. May be under pressure. Risk of asphyxiation. May cause burns and/or frostbite. Containments may explode when heated.	Take cover. Keep out of low areas.
Non-flammable, non-toxic gases 	Risk of asphyxiation. May be under pressure. May cause frostbite. Containments may explode when heated.	Take cover. Keep out of low areas.
Toxic gases 	Risk of intoxication. May be under pressure. May cause burns and/or frostbite. Containments may explode when heated.	Take cover. Keep out of low areas.
Flammable liquids 	Risk of fire. Risk of explosion. Containments may explode when heated.	Take cover. Keep out of low areas.
Flammable solids, self-reactive substances and solid desensitized explosives 	Risk of fire. Flammable or combustible, may be ignited by heat, sparks or flames. May contain self-reactive substances that are liable to exothermic decomposition in the case of heat supply, contact with other substances (such as acids, heavy-metal compounds or amines), friction or shock. This may result in the evolution of harmful and flammable gases or vapours or self-ignition. Containments may explode when heated. Risk of explosion of desensitized explosives after loss of desensitizer.	
Substances liable to spontaneous combustion 	Risk of fire by spontaneous combustion if packages are damaged or contents spoiled. May react vigorously with water.	
Substances which, in contact with water, emit flammable gases 	Risk of fire and explosion in contact with water.	


Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.1: Requirements for the construction and testing of packagings**
 - Kinds of packagings
 - drum, jerrican, box, bag, composite packaging, light gauge metal packaging
 - Types of material
 - steel, aluminium, other metal, natural wood, plywood, reconstituted wood, fibreboard, plastics material, textile, multiwall paper, glass, porcelain or stoneware

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.1 (cont'd)**

- Marking of packagings

- Example:  4G/Y145/S/02
NL/VL823

- Requirements for packagings

- Test requirements

- drop test, leakproofness test, internal pressure test, stacking test

- Test report

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.2: Requirements for the construction and testing of pressure receptacles, aerosol dispensers, small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas**
 - Requirements for UN pressure receptacles
 - Differing requirements for non-UN pressure receptacles

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks


- **Chapter 6.3 Requirements for the construction and testing of packagings for class 6.2 infectious substances of Category A**

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.4 Requirements for the construction, testing and approval of packages for radioactive material and for the approval of such material**
 - Requirements developed by IAEA for all modes of transport

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

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- **Chapter 6.5 Requirements for the construction and testing of intermediate bulk containers (IBCs)**
 - Types of IBCs
 - rigid and flexible
 - Types of material
 - steel, aluminium, other metal, natural wood, plywood, reconstituted wood, fibreboard, plastics material, textile, multiwall paper
 - Marking of IBCs
 - Example:  4G/Y145/S/02
NL/VL823

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

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- **Chapter 6.5 (cont'd)**
 - Requirements for different types of IBC
 - Test requirements
 - bottom lift test, top lift test, stacking test, leakproofness test, internal pressure test, drop test, tear test, topple test, righting test, vibration test
 - Test report

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks


- **Chapter 6.6 Requirements for the construction and testing of large packagings**
 - Types of large packagings
 - rigid and flexible
 - Types of material
 - steel, aluminium, other metal, natural wood, plywood, reconstituted wood, fibreboard, plastics material, textile, multiwall paper

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

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- **Chapter 6.6 (cont'd)**

- Marking of large packagings

- Example:  50A/X/0501/N/PQRS
2500/1000

- Requirements for different types of large packagings

- Test requirements

- bottom lift test, top lift test, stacking test, drop test

- Test report

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.7 Requirements for the design, construction, inspection and testing of portable tanks and UN multiple element gas containers (MEGCs)**
 - identical with Chapter 6.7 of the IMDG Code
 - Requirements for portable tanks for classes 1 and 3 to 9
 - Requirements for portable tanks for non-refrigerated liquefied gases

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

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- **Chapter 6.7 (cont'd)**
 - Requirements for portable tanks for refrigerated liquefied gases
 - Requirements for UN multiple-element gas containers for non-refrigerated liquefied gases

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

Figure 6.7.2.20.1: Example of identification plate marking

- Chapter 6.7 (cont'd)
- Example of mark

Owner's registration number							
MANUFACTURING INFORMATION							
Country of manufacture							
Year of manufacture							
Manufacturer							
Manufacturer's serial number							
APPROVAL INFORMATION							
	Approval country						
	Authorized body for design approval						
	Design approval number			"AA" (if applicable)			
Shell design code (pressure vessel code)							
PRESSURES							
MAWP				bar or kPa			
Test pressure				bar or kPa			
Initial pressure test date:		(mm/yyyy)		Witness stamp:			
External design pressure				bar or kPa			
MAWP for heating/cooling system (when applicable)				bar or kPa			
TEMPERATURES							
Design temperature range				°C to °C			
MATERIALS							
Shell material(s) and material standard reference(s)							
Equivalent thickness in reference steel				mm			
Lining material (when applicable)							
CAPACITY							
Tank water capacity at 20 °C				litres		"S" (if applicable)	
Water capacity of compartment ____ at 20 °C (when applicable, for multi-compartment tanks)				litres		"S" (if applicable)	
PERIODIC INSPECTIONS / TESTS							
Test type	Test date	Witness stamp and test pressure ^a		Test type	Test date	Witness stamp and test pressure ^a	
	(mm/yyyy)	bar or kPa			(mm/yyyy)	bar or kPa	

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.8 Requirements for the construction, equipment, type approval, inspections and tests, and marking of tank-wagons, demountable tanks and tank-containers and tank swap bodies, with shells made of metallic materials, and battery-wagons and multiple element gas containers (MEGCs)**

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

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- **Chapter 6.8 (cont'd)**
 - Part of the text in two columns
 - left-hand column: tank-wagons, demountable tanks, battery-wagons
 - right-hand column: tank-containers

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

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- **Chapter 6.8 (cont'd)**

- Marking provisions

- approval number, manufacturer, year of manufacture, test pressure, external design pressure, capacity of the shell, design temperature, material
 - vehicle keeper, tank code, codes of special provisions, date of the next inspection

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.8 (cont'd)**
 - Special provisions (see column (13) of Table A)
 - **TC** xx: construction
 - **TE** xx: equipment
 - **TA** xx: type approval of the tank
 - **TT** xx: tests
 - **TM** xx: marking

Example for provisions on the construction of wagons – Device to protect against the overriding of buffers

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Example for provisions on the construction of wagons – Protective shield

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Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

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- **Chapter 6.8 (cont'd)**
 - Examples of special provisions **TE**
 - Crash buffers



Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.9: Requirements for the design, construction, equipment, type approval, testing and marking of fibre-reinforced plastics (FRP) tank-containers including tank swap bodies**
 - Reference to certain provisions of Chapter 6.8

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.10: Requirements for the construction, equipment, type approval, inspection and marking of vacuum-operated waste tanks**
 - Complement or modification of Chapter 6.8 with regard to provisions concerning construction, equipment and inspection

Part 6 - Requirements for the construction and testing of packagings, intermediate bulk containers (IBCs), large packagings and tanks

- **Chapter 6.11: Requirements for the design, construction, inspection and testing of bulk containers**
 - applicable to all modes of transport

Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling

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- **Chapter 7.1: General provisions**
- **Chapter 7.2: Provisions concerning carriage in packages**
 - Requirements concerning wagons to be used for certain packages
 - **W** xx (see column (16) of Table A)

Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling

- **Chapter 7.3: Provisions concerning carriage in bulk**
 - only possible if a BK code or VC code is indicated in Table A
 - divided in two parts
 - Use of BK containers (multimodal container for carriage in bulk)
 - Code **BK 1** or **BK 2** indicated in column (10) of Table A
 - Additional requirements for certain classes

Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling

- **Chapter 7.3 (cont'd)**
 - Use of wagons or containers
 - Code **VC 1, VC 2 or VC 3** indicated in column (17) of Table A
 - Additional provisions **AP x** for certain classes indicated also in column (17) of Table A

Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling

- **Chapter 7.4: Provisions concerning carriage in tanks**
 - only possible if a code is indicated in column (10) or (12) of Table A

Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling

- **Chapter 7.5:**
Provisions concerning loading, unloading and handling
– Mixed loading prohibition

Labels Nos.	1	1.4	1.5	1.6	2.1, 2.2, 2.3	3	4.1	4.1 + 1	4.2	4.3	5.1	5.2	5.2 + 1	6.1	6.2	7A, 7B, 7C	8	9
1	See 7.5.2.2]										(d)							(b)
1.4					(a)	(a)	(a)		(a)	(a)	(a)	(a)		(a)	(a)	(a)	(a)	(a),(b),(c)
1.5																		(b)
1.6																		(b)
2.1, 2.2, 2.3		(a)			X	X	X		X	X	X	X		X	X	X	X	X
3		(a)			X	X	X		X	X	X	X		X	X	X	X	X
4.1		(a)			X	X	X		X	X	X	X		X	X	X	X	X
4.1 + 1								X										
4.2		(a)			X	X	X		X	X	X	X		X	X	X	X	X
4.3		(a)			X	X	X		X	X	X	X		X	X	X	X	X
5.1	(d)	(a)			X	X	X		X	X	X	X		X	X	X	X	X
5.2		(a)			X	X	X		X	X	X	X	X	X	X	X	X	X
5.2 + 1													X					
6.1		(a)			X	X	X		X	X	X	X		X	X	X	X	X
6.2		(a)			X	X	X		X	X	X	X		X	X	X	X	X
7A, 7B, 7C		(a)			X	X	X		X	X	X	X		X	X	X	X	X
8		(a)			X	X	X		X	X	X	X		X	X	X	X	X
9	(b)	(a),(b),(c)	(b)	(b)	X	X	X		X	X	X	X		X	X	X	X	X

- **Chapter 7.5: Provisions concerning loading, unloading and handling**
 - Mixed loading prohibition for Class 1

[illegible]

Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling

- **Chapter 7.5: Provisions concerning loading, unloading and handling**
 - Protective distance between wagons carrying certain substance of Class 1 (1, 1.5 or 1.6) and wagons carrying flammable substances (2.1, 3, 4.1, 4.2, 4.3, 5.1 or 5.2)
 - Precautions with respect to foodstuffs

Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling

- **Chapter 7.5: Provisions concerning loading, unloading and handling**
 - Handling and stowage
 - Cleaning after unloading
 - Additional provisions for certain goods
 - **CW** xx (see column (18) of Table A)

Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling

- **Chapter 7.6: Provisions for carriage as colis express (express parcels)**
 - Carriage in passenger trains
 - only if a **CE** xx code is indicated in column (19) of Table A
 - CE codes contain quantity limits

Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling

- **Chapter 7.7: Piggyback transport in mixed trains (combined passenger and freight transport)**
 - Reference to the conditions fixed by the competent authority

Thank you very much for your attention!



Unified railway law to connect Europe, Asia and Africa

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Organisation intergouvernementale pour les transports internationaux ferroviaires

Zwischenstaatliche Organisation für den internationalen Eisenbahnverkehr

Intergovernmental Organisation for International Carriage by Rail

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