Global Gateway

Workshop on Dangerous goods

03 - Classification

EASA
European Union Aviation Safety Agency

EU-ASEAN Sustainable Connectivity Package Aviation Partnership Project (EU-ASEAN SCOPE APP)
This project is funded by the European Union and implemented by the European Union Aviation Safety Agency (EASA)

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03 - Classification

ICAO Technical Instructions list approximately 3000 dangerous goods

The substances (including mixtures and solutions) and articles subject to these Instructions are classified according to the hazard or hazards they present:

etc.

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1. **Hazard classes and divisions**
2. **Packing groups**
3. **Classification of articles/substances with multiple hazards**

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03 - Classification

1. **Hazard classes and divisions**
2. **Packing groups**
3. **Classification of articles/substances with multiple hazards**

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03 - Classification

01 – Hazard classes and divisions

9 hazard classes

- Class 1: Explosives;
- Class 2: Gases;
- Class 3: Flammable liquids;
- Class 4: Flammable solids; substances liable to spontaneous combustion substances which, on contact with water, emit flammable gases;
- Class 5: Oxidizing substances and organic peroxides;
- Class 6: Toxic and infectious substances;
- Class 7: Radioactive material;
- Class 8: Corrosive substances;
- Class 9: Miscellaneous dangerous substances and articles, including environmentally hazardous substances.

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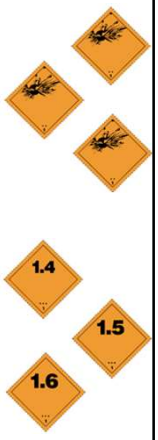
03 - Classification

01 – Hazard classes and divisions

Some of these hazard classes can be subdivided into divisions

CL.	Div.	Associated hazard
	1.1	mass explosion hazard
	1.2	projection hazard but not a mass explosion hazard
	1.3	fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
	1.4	no significant hazard
	1.5	very insensitive substances with a mass explosion hazard
	1.6	extremely insensitive articles but with no mass explosion hazard



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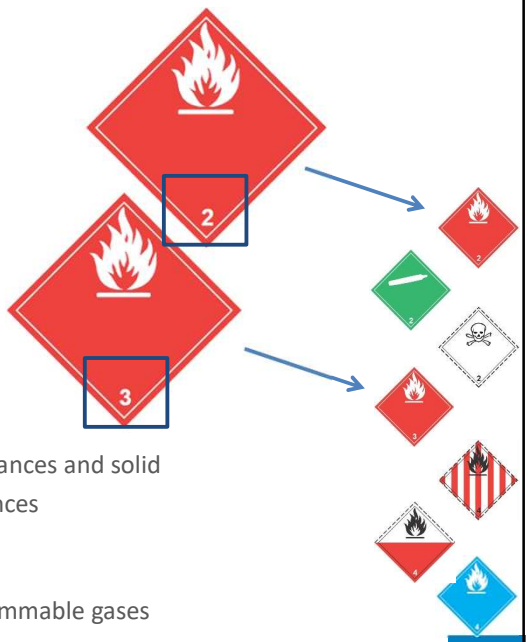
03 - Classification

01 – Hazard classes and divisions

Some of these hazard classes can be subdivided into divisions

CL.	Div.	Associated hazard
	2.1	Flammable gases
	2.2	Non-flammable, non-toxic gases
	2.3	Toxic gases
3		Flammable liquids
	4.1	Flammable solids, self-reactive and related substances and solid desensitized explosives and polymerizing substances
	4.2	Substances liable to spontaneous combustion
	4.3	Substances which, in contact with water, emit flammable gases



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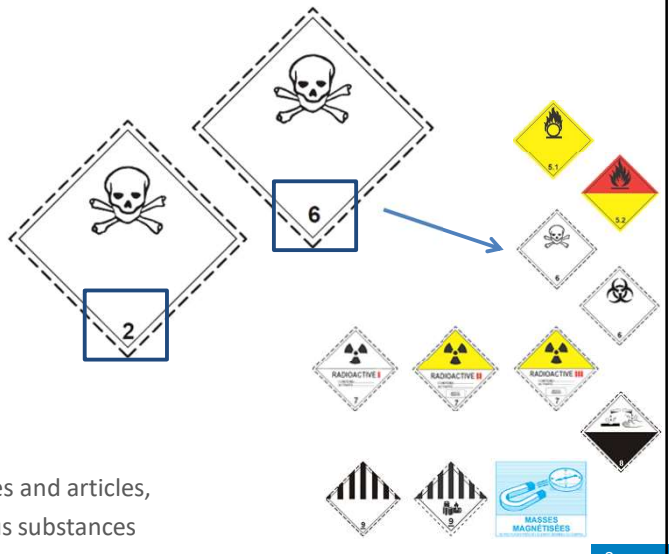
01 – Hazard classes and divisions

Some of these hazard classes can be subdivided into divisions

CL.	Div.	Associated hazard
	5.1	Oxidizing substances
	5.2	Organic peroxides
	6.1	Toxic substances
	6.2	Infectious substances
7		Radioactive material
8		Corrosive substances
9		Miscellaneous dangerous substances and articles, including environmentally hazardous substances



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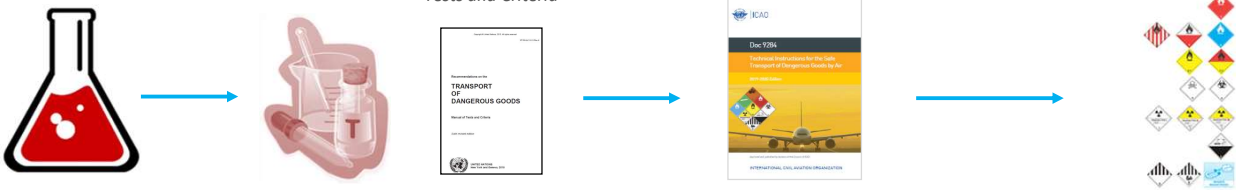
03 - Classification

01 – Hazard classes and divisions

In general substances or articles will be designated as Dangerous Goods and classified in accordance with the Technical instructions.

This classification is done following tests.

Most of these tests, procedures and criteria are prescribed in the UN Manual of Tests and Criteria.

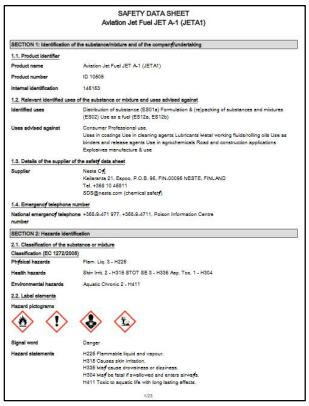


03 - Classification

01 – Hazard classes and divisions

Safety Data Sheet

Already classified substances or articles are generally documented with a Safety Data Sheet (S.D.S.).
The Safety Data Sheet follows a 16 sections format which is internationally agreed.
Information related to transport are listed in the 14th section.


SAFETY DATA SHEET
Aviation Jet Fuel JET A-1 (JETA1)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Product name: Aviation Jet Fuel JET A-1 (JETA1)
Product number: ID 10808
Internal identification: 146163

1.2. Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Distribution of substance (ES01a); Formulation & (re)packing of substances and mixtures (ES02); Use as a fuel (ES12a, ES12b)
Uses advised against: Consumer; Professional use; Uses in coatings Use in cleaning agents Lubricants Metal working fluids/rolling oils Use as binders and release agents Use in agrochemicals Road and construction applications Explosives manufacture & use

1.3. Details of the supplier of the safety data sheet
Supplier: Neste Oyj, Keilaranta 21, Espoo, P.O.B. 96, FIN-00095 NESTE, FINLAND, Tel. +358 10 45811, SDS@neste.com (chemical safety)

1.4. Emergency telephone number
National emergency telephone number: +358-9-471 977, +358-9-4711, Poison Information Centre number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification (EC 1272/2008):
Physical hazards: Flam. Liq. 3 - H226
Health hazards: Skin Irrit. 2 - H315 STOT SE 3 - H336 Asp. Tox. 1 - H304
Environmental hazards: Aquatic Chronic 2 - H411

2.2. Label elements
Hazard pictograms
Signal word: Danger
Hazard statements: H226 Flammable liquid and vapour. H315 Causes skin irritation. H336 May cause drowsiness or dizziness. H304 May be fatal if swallowed and enters airways. H411 Toxic to aquatic life with long lasting effects.

Identification
Hazards identification
Composition
First aid measures
Firefighting measures
Accidental release measure
Handling and storage
Personal protection
Physical and chemical properties
Stability and reactivity
Toxicological information
Ecological information
Disposal considerations
Transport information
Regulatory information
Other information

SECTION 14: Transport information

14.1. UN number
UN No. (ADR/RID) 1863

14.2. UN proper shipping name
Proper shipping name (ADR/RID) UN 1863 FUEL, AVIATION, TURBINE ENGINE

14.3. Transport hazard class(es)
ADR/RID class 3

14.4. Packing group
ADR/RID packing group III

14.5. Environmental hazards
Environmentally hazardous substance/marine pollutant
MARINE POLLUTANT

14.6. Special precautions for user
Hazard Identification Number (ADR/RID) 30
Tunnel restriction code (D/E)

03 - Classification
01 – Hazard classes and divisions

Before going further: IMP codes

Interchange/International Message Procedure

3 letters code set up by IATA

Simplification/standardization of exchanges in many areas, including cargo designation, e.g:
- AVI: live animal;
- EAT: edible food;
- HUM: mortal remains;
- CAO: cargo a/c only;
- etc.

DG are designated depending on their hazard(s) (class, division, etc.)

The majority of codes starts with a R** (Restricted...)

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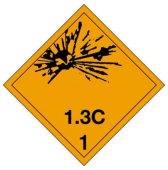
03 - Classification
01 – Hazard classes and divisions

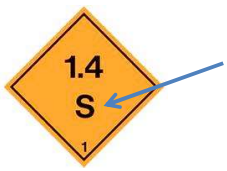
Class 1 – Explosives

Cl.1 = restricted class

>> ONLY those listed in the  may be accepted for transport.

6 divisions	from 1.1 to 1.6	→ hazard
13 compatibility groups*	letter	→ compatibility between Cl.1 goods





*mutually exclusive
except group « S » which can represent any kind of hazardous effect but with a very limited impact

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03 - Classification

01 – Hazard classes and divisions

Class 1 – Explosives

Div 1.1 - mass explosion hazard

REX – Restricted EXplosive

↳ dedicated to forbidden explosives

Div 1.2 - projection hazard but not a mass explosion hazard

REX – Restricted EXplosive

Div 1.3 - fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard

REX – Restricted EXplosive

RCX – Restricted 1.3C eXplosive

RGX – Restricted 1.3G eXplosive

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01 – Hazard classes and divisions

Class 1 – Explosives

Div 1.4 - no significant hazard:

- Small hazard;
- Effect confined;
- No projection;
- External fire > no instantaneous explosion of the entire content.

REX – Restricted EXplosive (incl.1.4F)

RXB – Restricted eXplosive – 1.4B

RXC – Restricted eXplosive – 1.4C

RXD – Restricted eXplosive – 1.4D

RXE – Restricted eXplosive – 1.4E

RXG – Restricted eXplosive – 1.4G

RXS – Restricted eXplosive – 1.4S

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03 - Classification

01 – Hazard classes and divisions

Class 1 – Explosives

Div 1.5 - very insensitive substances with a mass explosion hazard

REX – Restricted EXplosive

Div 1.6 - extremely insensitive articles but with no mass explosion hazard

REX – Restricted EXplosive

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03 - Classification

01 – Hazard classes and divisions

Class 1 – Explosives

Compatibility groups

A B C D E F G H J K L N S

Table 2-2. Classification codes

Description of substance or article to be classified	*Compatibility group*	*Classification code*
Primary explosive substance	A	1.1A
Article containing a primary explosive substance and not containing two or more effective protective features. Some articles, such as detonators for blasting, detonator assemblies for blasting and primers, and cap type, are	B	1.1B 1.2B 1.4B
Substances or articles so packed or designed that any hazardous effects arising from accidental functioning are confined within the package unless the package has been degraded by fire, in which case all blast or projection effects are limited to the extent that they do not significantly hinder or prohibit fire fighting or other emergency response in the immediate vicinity of the package	S	1.4S
containing a secondary detonating explosive substance, in each case without means of initiation and without a propelling charge, or article containing a primary explosive substance and containing two or more effective protective features		1.2D 1.4D 1.5D
Article containing a secondary detonating explosive substance, without means of initiation, with a propelling charge (other than one containing a flammable liquid or gel or hypergolic liquids)	E	1.1E 1.2E 1.4E

some of them can be found among the exemptions granted to passengers

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01 – Hazard classes and divisions

Class 2 – Gases

A gas is a substance which is completely gaseous at
- at 20°C at a standard pressure of 101.3 kPa, or;
- at 50°C has a vapour pressure greater than 300 kPa.

The transport condition of a gas is described according to its physical state as:
- compressed gas;
- liquefied gas;
- refrigerated liquefied gas (=cryogenic);
- dissolved gas (in a liquid solvent);
- adsorbed gas (onto a solid porous material).

This class also comprises:
- mixtures of one or more gases with one or more vapours of substances of other classes;
- articles charged with a gas;
- and aerosols.

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03 - Classification
01 – Hazard classes and divisions

Class 2 – Gases

Div 2.1 - Flammable gases
RFG – Restricted Flammable Gas

Div 2.2 - Non-flammable, non-toxic gases
RNG – Restricted Non flammable/Non toxic Gas
RCL – Restricted Cryogenic Liquids

Div 2.3 - Toxic gases
(Presumed to be) toxic or corrosive to humans
RPG – Restricted Poisonous Gas

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03 - Classification
01 – Hazard classes and divisions

Class 2 – Gases

Gases of Division 2.2 are not subject to the Technical Instructions if they are transported:

- at a pressure less than 200 kPa (equal to 2 bars) at 20 Celsius degrees and are not liquefied or refrigerated liquefied gases;
- when contained in foodstuffs, except if in aerosols;
- when contained in balls intended for use in sports;
- when contained in serviceable tires at a pressure not exceeding the maximum rate or in damaged ones deflated to a pressure of less than 200 kPa.

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01 – Hazard classes and divisions

Class 2 – Gases

Gases and gas mixtures with hazards associated with more than one division take the following precedence:

Div 2.3

>

Div 2.1

>

Div 2.2

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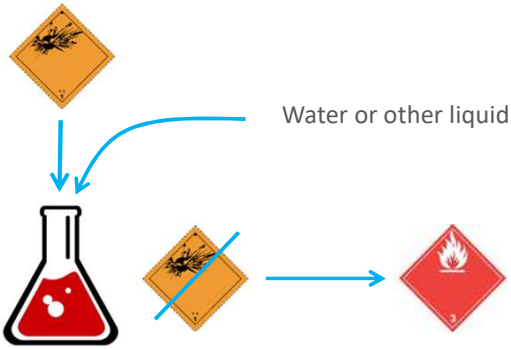
03 - Classification
01 – Hazard classes and divisions

Class 3 - Flammable liquids

No division

- Flammable liquids

- Liquid desensitized explosives



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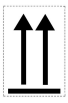
01 – Hazard classes and divisions

Class 3 - Flammable liquids

Liquids presenting a hazard of flammability are associated to a packing group (III II I)

They are associated to the orientation mark :  or 

RFL – Restricted Flammable Liquid

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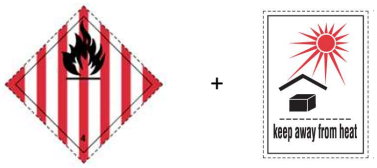
01 – Hazard classes and divisions

Class 4 - Flammable solids, substances liable to spontaneous combustion, substances which, in contact with water, emit flammable gases

Div 4.1 - Flammable solids

Solids which, under conditions encountered in transport,
are readily combustible or may cause or contribute to fire through friction.
RFS – Restricted Flammable Solid



03 - Classification

01 – Hazard classes and divisions

Class 4 - Flammable solids, substances liable to spontaneous combustion, substances which, in contact with water, emit flammable gases

Div 4.2 - Substances liable to spontaneous combustion

Substances which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up in contact with air and being then liable to catch fire.
RSC – Restricted Spontaneously Combustible

Div 4.3 - Substances which, in contact with water, emit flammable gases

Substances which, by interaction with water, are liable:

- to give off flammable gases in dangerous quantities;
- or to become spontaneously flammable.

RFW – Restricted Flammable when Wet

03 - Classification

01 – Hazard classes and divisions

Class 5 - Oxidizing substances and organic peroxide

Div 5.1 - Oxidizing substances

substances which, in themselves are not necessarily combustible, may generally, by yielding oxygen, cause or contribute to the combustion of other material

ROX – Restricted OXidizer

Div 5.2 - Organic peroxide

organic peroxides are thermally unstable substances and are liable to exothermic decomposition.

They may have one or more of the following properties:

- be liable to explosive decomposition;
- burn rapidly;
- react dangerously with other substances;
- cause damage to the eyes.

ROP – Restricted Organic Peroxyde

+

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03 - Classification

01 – Hazard classes and divisions

Class 6 - Toxic and infectious substances

Div 6.1 - Toxic substances

Substances liable either to cause death or injury or to harm human health if:
swallowed;

- inhaled;
- or by skin contact.

These substances are associated to a packing group (III II I)

RPB – Restricted Poisonous suBstance

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03 - Classification
01 – Hazard classes and divisions

Class 6 - Toxic and infectious substances

Div 6.2 - Infectious substances

Substances known or expected to contain pathogens.
These are micro-organisms including:

- bacteria;
- viruses;
- parasites, etc.

which can cause disease in humans or animals.

>> Category A
>> Category B

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03 - Classification
01 – Hazard classes and divisions

Class 6 - Toxic and infectious substances

Div 6.2 - Infectious substances

>> Category A

substances which are transported in a form that, when exposure to it occurs, is capable of causing:

- permanent disability;
- life-threatening;
- or fatal disease.

in otherwise healthy humans or animals.

Indicative examples of substances that meet these criteria are given in table 2-10, e.g.

UN 2814 **Infectious substances affecting humans**	*Bacillus anthracis (cultures only)* *Brucella abortus (cultures only)* *Brucella melitensis (cultures only)*

RIS – Restricted Infectious Substance

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03 - Classification
01 – Hazard classes and divisions

Class 6 - Toxic and infectious substances

Div 6.2 - Infectious substances

>> Category B

substances which do not meet the criteria for inclusion in Category A.
Infectious substances in Category B must be assigned to UN 3373.
>> specific mark (≠ label):

The proper shipping name of UN 3373 is “Biological substances, Category B”

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03 - Classification
01 – Hazard classes and divisions

Class 6 - Toxic and infectious substances

Are not subject to the Technical Instructions:

- substances which:
  - do not contain infectious substances;
  - are unlikely to cause disease;
  - contain micro-organisms which are non-pathogenic;
  - have been neutralized or inactivated;
- environmental samples which are not considered to pose a significant risk of infection;
- blood or blood components that have been collected for the purposes of transfusion;
- etc.

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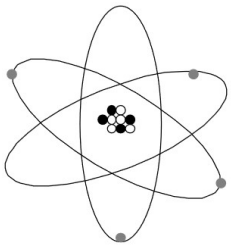
01 – Hazard classes and divisions

Class 7 - Radioactive materials

Matter is composed of atoms (∃ ≈ 120 ≠ types of atoms)



3 types of particules:
- ○ Neutron - charge = 0
- ● Proton - charge = +
- ● Electron - charge = -

(C_{12}) nbr ^{6}● : nbr ^{6}○ → stable

(C_{13}) Atoms with = nbr ^{6}● ; ≠ nbr ^{7}○ } Isotope → ≠ nuclear properties = chemical properties ≠ mass

(C_{14}) Too many nbr ^{8}○ ≠ nbr ^{6}● → unstable

Particle(s) → radiations → stable

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03 - Classification
01 – Hazard classes and divisions

Class 7 - Radioactive materials

A radioactive material is characterized by:
- Becquerel >> represents the number of disintegrations per second"
- Sievert >> represents the measurement of radiation damage to the human body

Classification — Activity (Bq)
Activity concentration (Bq/g).

Category of package — Radiation in contact (mSv/h)
Radiation at 1m (Transport Index (1TI ≈ 100mSv/h))

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03 - Classification

01 – Hazard classes and divisions

Class 7 - Radioactive materials

They are assigned to an UN number IAW table 2-11

Table 2-11. Assignment of UN numbers

UN number	*Proper shipping name and description[a]*
Excepted packages (1;6.1.5)	
UN 2908	**Radioactive material, excepted package — empty packaging**
UN 2909	**Radioactive material, excepted package — articles manufactured from natural uranium or depleted uranium or natural thorium**
UN 2910	**Radioactive material, excepted package — limited quantity of material**
UN 2911	**Radioactive material, excepted package — instruments or articles**
UN 3507	**Uranium hexafluoride, radioactive material, excepted package**, less than 0.1 kg per package, non-fissile or fissile-excepted[b,c]
Low specific activity radioactive material (7.2.3.1)	
UN 2912	**Radioactive material, low specific activity (LSA-I)**, non-fissile or fissile excepted[b]

and classified IAW table 2-12

Table 2-12. Basic radionuclides values for individual radionuclides

Radionuclide (atomic number)	*Special form A_1 (TBq)*	*Other form A_2 (TBq)*	*Activity concentration limit for exempt material (Bq/g)*	*Activity limit for an exempt consignment (Bq)*
Actinium (89)				
Ac-225 (a)	8×10^{-1}	6×10^{-3}	1×10^{1}	1×10^{4}
Ac-227 (a)	9×10^{-1}	9×10^{-5}	1×10^{-1}	1×10^{3}
Ac-228	6×10^{-1}	5×10^{-1}	1×10^{1}	1×10^{6}

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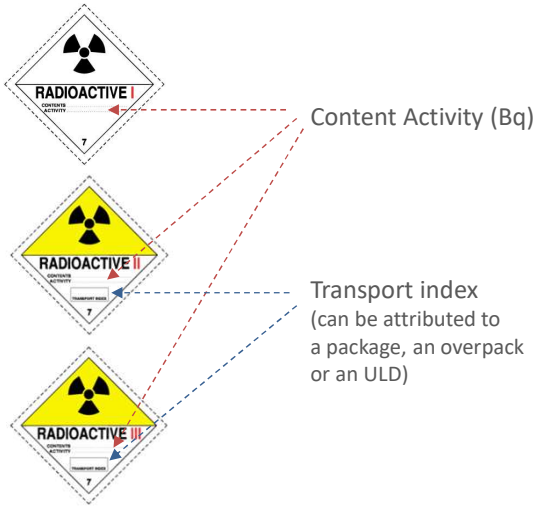
03 - Classification

01 – Hazard classes and divisions

Class 7 - Radioactive materials

Conditions		
Transport index	*Maximum radiation level at any point on external surface*	*Category*
0*	Not more than 0.005 mSv/h	I-WHITE
More than 0 but not more than 1*	More than 0.005 mSv/h but not more than 0.5 mSv/h	II-YELLOW
More than 1 but not more than 10	More than 0.5 mSv/h but not more than 2 mSv/h	III-YELLOW
More than 10	More than 2 mSv/h but not more than 10 mSv/h	III-YELLOW**

RRW – Restricted Radioactive White
RRY – Restricted Radioactive Yellow



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03 - Classification

01 – Hazard classes and divisions

Class 7 - Radioactive materials

When they do not represent any particular danger, radioactive materials can be transported in excepted packages.
>>In that case, less provisions of the technical instructions are to be applied.

A package may be classified as excepted packages if it meets one of the following conditions

- empty packaging having contained radioactive material (provided certain conditions);
- radiation in contact ≤ 5 µSv/h;
- activity ≤ limits specified in table 2-14.

Table 2-14. Activity limits for excepted packages

	Instruments or article		*Materials*
Physical state of contents	*Item limits**	*Package limits**	*Package limits**
Solids			
Special form	10^{-2} A_1	A_1	10^{-3} A_1
Other form	10^{-2} A_2	A_2	10^{-3} A_2
Liquids	10^{-3} A_2	10^{-1} A_2	10^{-4} A_2
Gases			
Tritium	2×10^{-2} A_2	2×10^{-1} A_2	2×10^{-2} A_2
Special form	10^{-3} A_1	10^{-2} A_1	10^{-3} A_1
Other forms	10^{-3} A_2	10^{-2} A_2	10^{-3} A_2

* For mixtures of radionuclides, see 7.2.2.4 to 7.2.2.6.

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Class 7 - Radioactive materials

The TIs do not apply to any of the following:

- material implanted into a person or live animal;
- material in or on a person following contamination
  (protection of other passengers + approval from the operator);
- radioactive material in consumer products which have received regulatory approval;

- non-radioactive solid objects with radioactive substances present on any surfaces in quantities not in excess of the limit specified in the definition of contamination.

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Class 8 – Corrosive substances

Substances which, by chemical action, will cause:

- irreversible damage to the skin;
- or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport.

RCM – Restricted Corrosive Material

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03 - Classification
01 – Hazard classes and divisions

Class 9 - Miscellaneous dangerous substances and articles, including environmentally hazardous substances

Substances and articles which, during air transport, present a danger not covered by other classes. E.g.
RMD – Restricted Miscellaneous Dangerous Good

- self-inflating lifejacket, Air-bag systems;
- genetically modified organisms;
- environmentally hazardous substances;
- etc.

ICE – dry ICE

MAG – MAGnetized material

RBI – Restricted Battery Lithium Ion
RBM – Restricted Battery Lithium Metal
RLI – Restricted Battery Lithium Ion in/with equipment
RLM – Restricted Battery Lithium Metal in/with equipment

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1. **Hazard classes and divisions**
2. **Packing groups**
3. **Classification of articles/substances with multiple hazards**

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03 - Classification

02 – Packing groups

For packing purposes, these classes or divisions are assigned to three packing groups in accordance with the degree of danger they present:

Cl.3

Div. 4.1, 4.2, 4.3

Div. 5.1

Div. 6.1

Cl. 8

Packing Group I:
Substances presenting high danger

Packing Group II:
Substances presenting medium danger

Packing Group III:
Substances presenting low danger

>> Impact on the packaging
>> Impact on the transportable quantities

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03 - Classification
02 – Packing groups

Consequence: for the same material and/or object, we will use different types of packaging and different quantities per package, e.g.

Magnesium alloys powder	1418	4.3	4.2	Danger if wet & Spontaneous combustion		A3	I	E0	FORBIDDEN	488	15 kg
							II	E2	483	490	50 kg
							III	E1	486	491	100 kg

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03 - Classification
02 – Packing groups

Example - Class 3

Table 2-4. Packing group based on flammability

Packing group	*Flash point (closed-cup)*	*Initial boiling point*
I	—	≤35°C
II	<23°C	>35°C
III	≥23°C, ≤60°C	>35°C

Lowest temperature at which the vapor ignite briefly if given an ignition source

temperature at which the liquid turns to vapor

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02 – Packing groups

Example - Division 6.1

Packing Group I: very severe toxicity hazard
Packing Group II: serious toxicity hazard
Packing Group III: relatively low toxicity hazard

Depending on the route of administration (oral ingestion, inhalation or dermal contact), the packing group classification is described in these tables and figure:

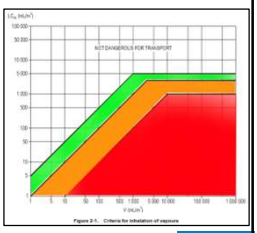
Table 2-8. Grouping criteria for administration through oral ingestion, dermal contact and inhalation of dusts and mists

Packing group	*Oral toxicity LD_{50} (mg/kg)*	*Dermal toxicity LD_{50} (mg/kg)*	*Inhalation toxicity by dusts and mists LC_{50} (mg/L)*
I	≤5.0	≤50	≤0.2
II	>5.0 and ≤50	>50 and ≤200	>0.2 and ≤2.0
III[a]	>50 and ≤300	>200 and ≤1 000	>2.0 and ≤4.0

a. Tear gas substances must be included in Packing Group II even if their toxicity data correspond to Packing Group III values.

Table 2-9. Criteria for inhalation

Packing Group I	V ≥ 10 LC_{50} and LC_{50} ≤ 1 000 mL/m³
Packing Group II	V ≥ LC_{50} and LC_{50} ≤ 3 000 mL/m³ and not meeting the criteria for Packing Group I
Packing Group III	V ≥ 0.2 LC_{50} and LC_{50} ≤ 5 000 mL/m³ and not meeting the criteria for Packing Groups I and II



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European Union Aviation Safety Agency

03 - Classification

1. **Hazard classes and divisions**
2. **Packing groups**
3. **Classification of articles/substances with multiple hazards**

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03 - Classification

03 – Classification of articles/substances with multiple hazards

Examples

Some substances or articles can represent not one but several hazards at the same time:

Oxygen, compressed → non-flammable non-toxic gas
Oxygen, compressed → oxidizer

What is the most dangerous hazard?
Which class or division prevails ?

Zinc dust → liable to spontaneous combustion
Zinc dust → emit flammable gases when in contact with water

precedence of hazards

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03 - Classification

03 – Classification of articles/substances with multiple hazards

Table 2-1. Precedence of hazards and packing groups for Classes 3, 4 and 8 and for Divisions 5.1 and 6.1

Class or division and packing group	Class or division and packing group																	
	4.2 II	4.2 III	4.3 I	4.3 II	4.3 III	5.1 I	5.1 II	5.1 III	6.1 I (d)	6.1 I (o)	6.1 II	6.1 III	8 I (l)	8 I (s)	8 II (l)	8 II (s)	8 III (l)	8 III (s)
3 I*			4.3,I	4.3,I	4.3,I	—	—	—	3,I	3,I	3,I	3,I	3,I	—	3,I	—	3,I	—
3 II*			4.3,I	4.3,II	4.3,II	—	—	—	3,I	3,I	3,II	3,II	8,I	—	3,II	—	3,II	—
3 III*			4.3,I	4.3,II	4.3,III	—	—	—	6.1,I	6.1,I	6.1,II	3,III**	8,I	—	8,II	—	3,III	—
4.1 II*	4.2,II	4.2,II	4.3,I	4.3,II	4.3,II	5.1,I	4.1,II	4.1,II	6.1,I	6.1,I	4.1,II	4.1,II	—	8,I	—	4.1,II	—	4.1,II
4.1 III*	4.2,II	4.2,III	4.3,I	4.3,II	4.3,III	5.1,I	4.1,II	4.1,III	6.1,I	6.1,I	6.1,II	4.1,III	—	8,I	—	8,II	—	4.1,III
4.2 II			4.3,I	4.3,II	4.3,II	5.1,I	4.2,II	4.2,II	6.1,I	6.1,I	4.2,II	4.2,II	8,I	8,I	4.2,II	4.2,II	4.2,II	4.2,II
4.2 III			4.3,I	4.3,II	4.3,III	5.1,I	5.1,II	4.2,III	6.1,I	6.1,I	6.1,II	4.2,III	8,I	8,I	8,II	8,II	4.2,III	4.2,III
4.3 I						5.1,I	4.3,I	4.3,I	6.1,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I
4.3 II						5.1,I	4.3,II	4.3,II	6.1,I	4.3,I	4.3,II	4.3,II	8,I	8,I	4.3,II	4.3,II	4.3,II	4.3,II
4.3 III						5.1,I	5.1,II	4.3,III	6.1,I	6.1,I	6.1,II	4.3,III	8,I	8,I	8,II	8,II	4.3,III	4.3,III
5.1 I									5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I
5.1 II									6.1,I	5.1,I	5.1,II	5.1,II	8,I	8,I	5.1,II	5.1,II	5.1,II	5.1,II
5.1 III									6.1,I	6.1,I	6.1,II	5.1,III	8,I	8,I	8,II	8,II	5.1,III	5.1,III
6.1 I (d)													8,I	6.1,I	6.1,I	6.1,I	6.1,I	6.1,I
6.1 I (o)													8,I	6.1,I	6.1,I	6.1,I	6.1,I	6.1,I
6.1 II (i)													8,I	6.1,I	6.1,II	6.1,II	6.1,II	6.1,II
6.1 II (d)													8,I	6.1,I	8,II	6.1,II	6.1,II	6.1,II
6.1 II (o)													8,I	8,I	8,II	6.1,II	6.1,II	6.1,II
6.1 III													8,I	8,I	8,II	8,II	8,III	8,III

(l) = liquid; (s) = solid; (i) = inhalation; (d) = dermal; (o) = oral; — denotes an impossible combination

* Substances of Division 4.1 other than self-reactive substances, and solid desensitized explosives and substances of Class 3 other than liquid desensitized explosives.
** For pesticides only, the primary hazard must be Division 6.1.

Note.— For hazards not shown in this table, see 4.

Zinc dust

Hazard = Div.4.3 (4.2)

primary

subsidiary

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03 - Classification

03 – Classification of articles/substances with multiple hazards

Table 2-1. Precedence of hazards and packing groups for Classes 3, 4 and 8 and for Divisions 5.1 and 6.1

Class or division and packing group	Class or division and packing group																	
	4.2 II	4.2 III	4.3 I	4.3 II	4.3 III	5.1 I	5.1 II	5.1 III	6.1 I (d)	6.1 I (o)	6.1 II	6.1 III	8 I (l)	8 I (s)	8 II (l)	8 II (s)	8 III (l)	8 III (s)
3 I*			4.3,I	4.3,I	4.3,I	—	—	—	3,I	3,I	3,I	3,I	3,I	—	3,I	—	3,I	—
3 II*			4.3,I	4.3,II	4.3,II	—	—	—	3,I	3,I	3,II	3,II	8,I	—	3,II	—	3,II	—
3 III*			4.3,I	4.3,II	4.3,III	—	—	—	6.1,I	6.1,I	6.1,II	3,III**	8,I	—	8,II	—	3,III	—
4.1 II*	4.2,II	4.2,II	4.3,I	4.3,II	4.3,II	5.1,I	4.1,II	4.1,II	6.1,I	6.1,I	4.1,II	4.1,II	—	8,I	—	4.1,II	—	4.1,II
4.1 III*	4.2,II	4.2,III	4.3,I	4.3,II	4.3,III	5.1,I	4.1,II	4.1,III	6.1,I	6.1,I	6.1,II	4.1,III	—	8,I	—	8,II	—	4.1,III
4.2 II			4.3,I	4.3,II	4.3,II	5.1,I	4.2,II	4.2,II	6.1,I	6.1,I	4.2,II	4.2,II	8,I	8,I	4.2,II	4.2,II	4.2,II	4.2,II
4.2 III			4.3,I	4.3,II	4.3,III	5.1,I	5.1,II	4.2,III	6.1,I	6.1,I	6.1,II	4.2,III	8,I	8,I	8,II	8,II	4.2,III	4.2,III
4.3 I						5.1,I	4.3,I	4.3,I	6.1,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I	4.3,I
4.3 II						5.1,I	4.3,II	4.3,II	6.1,I	4.3,I	4.3,II	4.3,II	8,I	8,I	4.3,II	4.3,II	4.3,II	4.3,II
4.3 III						5.1,I	5.1,II	4.3,III	6.1,I	6.1,I	6.1,II	4.3,III	8,I	8,I	8,II	8,II	4.3,III	4.3,III
5.1 I									5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I	5.1,I
5.1 II									6.1,I	5.1,I	5.1,II	5.1,II	8,I	8,I	5.1,II	5.1,II	5.1,II	5.1,II
5.1 III									6.1,I	6.1,I	6.1,II	5.1,III	8,I	8,I	8,II	8,II	5.1,III	5.1,III
6.1 I (d)													8,I	6.1,I	6.1,I	6.1,I	6.1,I	6.1,I
6.1 I (o)													8,I	6.1,I	6.1,I	6.1,I	6.1,I	6.1,I
6.1 II (i)													8,I	6.1,I	6.1,II	6.1,II	6.1,II	6.1,II
6.1 II (d)													8,I	6.1,I	8,II	6.1,II	6.1,II	6.1,II
6.1 II (o)													8,I	8,I	8,II	6.1,II	6.1,II	6.1,II
6.1 III													8,I	8,I	8,II	8,II	8,III	8,III

(l) = liquid; (s) = solid; (i) = inhalation; (d) = dermal; (o) = oral; — denotes an impossible combination

* Substances of Division 4.1 other than self-reactive substances, and solid desensitized explosives and substances of Class 3 other than liquid desensitized explosives.
** For pesticides only, the primary hazard must be Division 6.1.

Note.— For hazards not shown in this table, see 4.

Oxygen, compressed

??

OK

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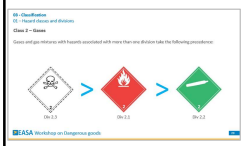
03 - Classification

03 – Classification of articles/substances with multiple hazards

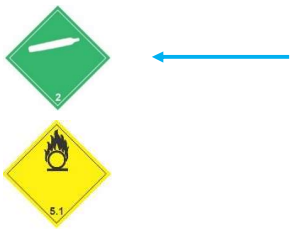
Always take precedence…

The precedence of hazard characteristics of the following have not been addressed in Table 2-1, as the primary characteristics always take precedence:



- Cl. 1;
- Cl. 2;
- Cl. 3 - desensitized explosives;
- Div. 4.1 - self-reactive substances;
- Div. 4.1 - solid desensitized explosives;
- Div. 4.2 - pyrophoric substances;
- Div. 5.2;
- Div. 6.1 - I (with some exceptions);
- Div. 6.2;
- Cl. 7.

Oxygen, compressed



Hazard = Div. 2.2 (5.1)

primary

subsidiary

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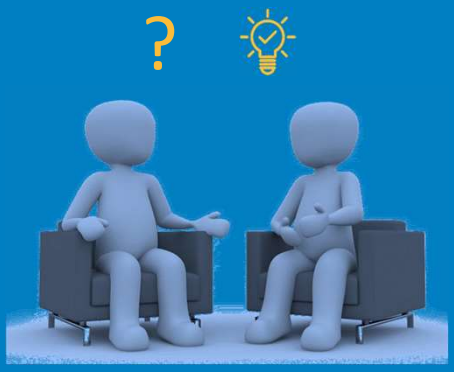
Thank you for your attention



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