

**Significant Changes and Amendments
of the 2019-2020 Edition of the
ICAO Technical Instructions for the
Safe Transport of Dangerous Goods
by Air (“TI”)**

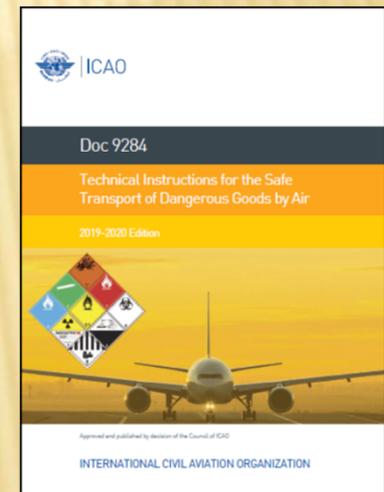
Civil Aviation Department

19 December 2018

Significant Changes and Amendments of the TI 2019-2020

Effective on 1 January 2019, unless otherwise stated

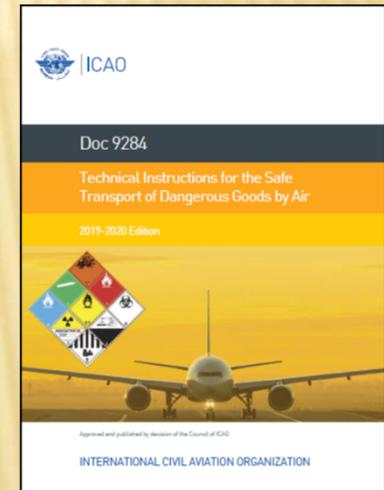
1. Replacement of 'risk' with 'hazard'
2. New classification criteria for lithium batteries & new SP A213
3. Relocation of classification criteria for non-spillable batteries from PI872 to SP A67
4. New SP A214 for vehicles and battery-powered vehicles and equipment



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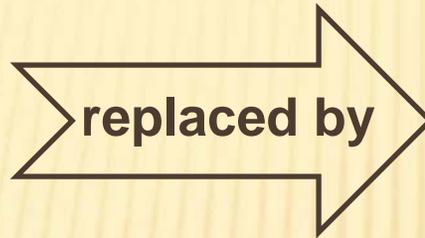
5. Revision to Packing Instruction 952
6. Revision to Packing Instruction Y963
7. Revision to lithium battery provisions
8. Revision to provisions for DG carried by passenger and crew
9. Updates on the proposed revision to DG training provisions



1) Replacement of 'risk' with 'hazard'

Risk

likelihood of the
harm that may
occur



Hazard

inherent properties
of a substance or
article that has the
potential to do harm
to persons, property
or the environment

$$\text{Risk} = \text{Hazard} \times \text{Exposure}$$

1) Replacement of 'risk' with 'hazard'

Definition of Dangerous Goods

Articles or substances which are capable of posing a **risk** to health, safety, property or the environment and which are shown in the list of dangerous goods in these Instructions, or which are classified according to these Instructions.



Risk : likelihood of the harm that may occur

Articles or substances which are capable of posing a **hazard** to health, safety, property or the environment and which are shown in the list of dangerous goods in these Instructions, or which are classified according to these Instructions.

Hazard : inherent properties of a substance to do harm

1) Replacement of 'risk' with 'hazard'

for example
 DG List
 Subsidiary risk ⇨ Subsidiary hazard

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
Aerosols, flammable, corrosive, containing substances in Class 8, Packing Group II	1950	2.1	8						FORBIDDEN		FORBIDDEN	
Aerosols, flammable, corrosive, containing substances in Class 8, Packing Group III	1950	2.1	8	Gas flammable & Corrosive		A145 A167		E0	203 Y203	75 kg 30 kg G	203	150 kg

2) New classification criteria for lithium batteries and new SP A213

- Lithium batteries, containing both **primary lithium metal cells** and **rechargeable lithium ion cells**, that are not designed to be externally charged must meet the following conditions :
 - ❑ rechargeable lithium ion cells can only be charged from the primary lithium metal cells
 - ❑ Overcharge of the rechargeable lithium ion cells is precluded by design
 - ❑ the battery has been tested as a lithium primary battery
 - ❑ component cells of battery must meet the UN38.3 test requirements

2) New classification criteria for lithium batteries and new SP A213

- New Special Provision A213
 - ❑ Lithium batteries, containing both **primary lithium metal cells** and **rechargeable lithium ion cells**
 - ❑ UN 3090 or UN 3091
 - ❑ When transported in accordance with section II of PI 968, 969 or 970 :
 - Total lithium content of all lithium metal cells contained in the battery must not exceed 1.5g, and
 - Total capacity of all lithium ion cells contained in the battery must not exceed 10 Wh.

3) Relocation of classification criteria for non-spillable batteries from PI872 to SP A67

- **Classification criteria for non-spillable batteries are removed from Packing Instruction 872, and re-located to Special Provision A67**

3) Relocation of classification criteria for non-spillable batteries from PI872 to SP A67

- **Special Provision A67**
 - Batteries can be considered as non-spillable provided that they are capable of withstanding the vibration and pressure differential tests without leakage of battery fluid.**
 - Specified the criteria of the vibration and pressure differential tests**

4) New SP A214 for vehicles and battery-powered vehicles and equipment

- New SP A214 replaces SP A21, A134, A203 & A207
- SP A214 is applicable to
 - UN 3166
 - Vehicle, fuel cell, flammable gas powered
 - Vehicle, fuel cell, flammable liquid powered
 - Vehicle, flammable gas powered
 - Vehicle, flammable liquid powered

and...

4) New SP A214 for vehicles and battery-powered vehicles and equipment

- **SP A214 is applicable to**
 - **UN 3171**
 - **vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries**
 - **equipment powered by wet batteries or sodium batteries**
 - **transported with these batteries installed**
 - **self-propelled apparatus designed to carry one or more persons or goods**

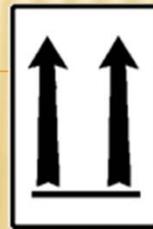
(e.g. equipment are lawnmowers, cleaning machines, model aircraft, etc. Equipment powered by lithium metal/ion batteries must be assigned to UN 3091 or UN 3481 as appropriate.)

5) Revision to Packing Instruction 952

- **Applicable to UN 3171 Battery-powered equipment or Battery-powered vehicle.**
- **Clarification of the requirement -**
 - where the lithium battery is removed from the vehicle and is packed separate from the vehicle in the same outer packaging**
 - the package must be consigned as UN 3481 Lithium ion batteries packed with equipment, or UN 3091 Lithium metal batteries packed with equipment, and**
 - packed according to PI966 or PI969 as appropriate.**

6) Revision to Packing Instruction Y963

- New exception :
 - Application of orientation arrows to packages of ID 8000 - Consumer commodities is not required if the DG is :
 - in inner packagings each containing not more than 120ml with sufficient absorbent material between the inner and other packagings to completely absorb the liquid contents; or
 - in gas tight inner packagings such as tubes, bags or vials which are opened by breaking or puncturing.



7) Revision to lithium battery provisions

(i) With effect from 1 January 2020, manufacturers and subsequent distributors of lithium cells and batteries must make available the test summary of UN38.3 test.

(ii) Revision to Packing Instructions 965 and 968 :

- ❑ UN 3480 Lithium ion battery, and UN 3090 Lithium metal battery must not be packed in the same outer packaging with substances and articles of Class 1, Division 2.1, Class 3, Division 4.1 or Division 5.1**

7) Revision to lithium battery provisions

(iii) Clarified the restrictions on spare lithium ion batteries and lithium metal batteries packed with equipment in Packing Instructions 966 and 969

- The number of cells or batteries in each package must not exceed the number required for the equipment's operation, plus two spare sets. A 'set' of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment**

7) Revision to lithium battery provisions

(iv) Lithium battery mark

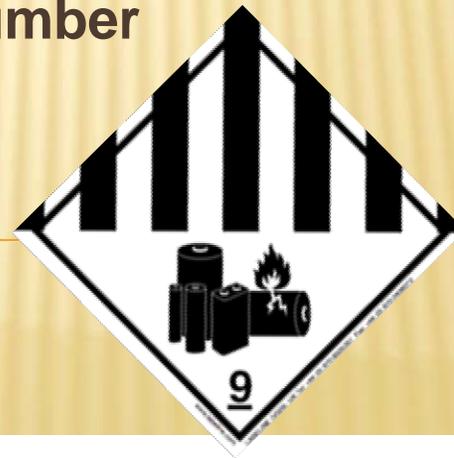
- ❑ section IB of Packing Instructions 965, 968
- ❑ section II of Packing Instructions 965 to 970



7) Revision to lithium battery provisions

(v) Clarified the specifications of Class 9 hazard label for lithium batteries

- ❑ the upper half of the label must only contain the seven vertical stripes of the symbol
- ❑ the lower half of the label must contain the group of batteries (one broken and emitting flame) of the symbol and the class number



7) Revision to lithium battery provisions

(vi) Revision to section II of Packing Instructions 965 to 970

- ❑ Minimum letter height of 12mm for the overpack mark

Overpack  min. 12mm

8) Revision to provisions for DG carried by passengers or crew

- **New provision on baggage equipped with a lithium battery(ies) exceeding :**
 - for lithium metal batteries, a lithium content of 0.3g; or**
 - for lithium ion batteries, a Wh rating of 2.7 Wh****must be carried as carry-on baggage unless battery(ies) is removed from the baggage, and protected from short circuits.**

9) Proposed revisions to DG training provisions

- **The proposed revisions to the DG training provisions in the 2017-2018 edition of the TI are being further reviewed by ICAO.**
- **ICAO will publish the revised DG training provisions upon finalization.**

The industry is reminded to make reference to the current edition of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air with regard to the complete requirements on the air transport of dangerous goods.

THANK YOU