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UN Regulation No. 105 (Vehicles for the Carriage of Dangerous Goods)

Proposal for the 07 Series of Amendments to UN Regulation No. 105 (Vehicles for the Carriage of Dangerous Goods)

Submitted by the expert from the International Organization of Motor Vehicles Manufacturers *

The text reproduced below has been prepared by the expert from the International Organization of Motor Vehicles Manufacturers (OICA) to align the text of UN Regulation No. 105 on the latest version of the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). The modifications to the current text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2024 as outlined in proposed programme budget for 2024 (A/78/6 (Sect. 20), table 20.5), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

I. Proposal

***Paragraph 5.1. (the table),* amend to read:**

"

Technical specifications		*Vehicle designation (according to chapter 9.1 of Annex b to ADR)*				
		EX/II	*EX/III*	*AT*	*FL*	
…	…					
5.1.3.	~~Prevention of fire risks~~ **Vehicle propulsion system**					
5.1.3.2.	Fuel tanks **and cylinders**	X	X	**X**	X	
5.1.3.3.	**Internal combustion engine**	X	X	**X**	X	
5.1.3.3.1.	Engine	X	X	**X**	X	
5.1.3.3.2.	Exhaust system	X	X		X	
…	…	…	…	…	…	…
5.1.3.5.	Electric power train			X	**X**	
5.1.3.5.1.	**General provisions**			**X**	**X**	
5.1.3.5.2.	**Rechargeable electrical energy system**			**X**	**X**	
5.1.3.5.3.	**Measures against thermal propagation**				**X**	
5.1.3.5.4.	**Vehicle charging inlet**				**X**	
5.1.3.6.	**Hydrogen fuel cell**			**X**	**X**	
…	…	…	…	…	…	…

"

Paragraph 5.1.1.3., amend to read (addition of a new item (g)):

"5.1.1.3. Fuses and circuit breakers

All circuits shall be protected by fuses or automatic circuit breakers, except for the following:

(a) From the starter battery to the cold start system;

(b) From the starter battery to the alternator;

(c) From the alternator to the fuse or circuit breaker box;

(d) From the starter battery to the starter motor;

(e) From the starter battery to the power control housing of the endurance braking system (see paragraph 5.1.2.1.), if this system is electrical or electromagnetic;

(f) From the starter battery to the electrical lifting mechanism for lifting the bogie axle.

(g) From the starter battery to the electric steering equipment.

The above unprotected circuits shall be as short as possible."

Paragraph 5.1.1.8. to 5.1.1.8.5., amend to read:

"5.1.1.8. ~~Battery master switch~~ **De-energizing electrical circuits**

5.1.1.8.1. ~~A switch for breaking the electrical circuits~~ **Features to enable the de-energization of the electrical circuits for all voltage levels** shall be placed as close to the battery as practicable. ~~If a single-pole switch is used it shall be placed in the supply lead and not in the earth lead~~. **If the feature interrupts only one lead from the energy source, it shall interrupt the supply lead.**

5.1.1.8.2. A control device to facilitate the ~~disconnecting and the reconnecting functions of the switch~~ **de-energizing** shall be installed in the driver's cab. It shall be readily accessible to the driver and ….

5.1.1.8.3. ~~The switch shall break the circuits within 10 seconds after activation of the control device~~ **Features to enable the de-energization of the electrical circuits shall be designed so that they can be operated when the vehicle is stationary. The de-energization shall be completed within 30 seconds after the activation of the control device.**

5.1.1.8.4. The switch shall have a casing with protection degree IP65 in accordance with IEC Standard 60529. **The feature shall be installed in such a way that IP65 protection complies with IEC 60529.**

5.1.1.8.5. **Cable connections on the feature**

~~The cable connections on the battery master switch shall have a protection degree IP54 in accordance with IEC Standard 60529. However, this does not apply if these connections are contained in a housing which may be the battery box. In this case it is sufficient to insulate the connections against short circuits, for example with a rubber cap.~~

Systems with a voltage that exceeds 25 V AC or 60 V DC and systems under the scope of UN Regulation No. 100, shall comply with the requirements of the said regulation.

Systems with a voltage up to 25 V AC or 60 V DC shall have a protection degree IP 54 in accordance with IEC 60529. However, this does not apply if these connections are contained in a housing, which may be the battery box. In this case, it is sufficient to insulate the connections against short circuits, for example by a rubber cap."

Paragraph 5.1.3., amend to read:

"5.1.3. ~~Prevention of fire risks~~ **Vehicle propulsion system**

5.1.3.1. General provisions

The following technical provisions shall apply in accordance with the table of paragraph 5.1.

Hybrid vehicles equipped with an internal combustion engine and electric power train shall comply with the relevant provisions of 5.1.3.2. to 5.1.3.5."

Paragraph 5.1.3.2., amend to read (delete the note):

"5.1.3.2. Fuel tanks and cylinders

~~NOTE: 5.1.3.2 likewise applies to fuel tanks and cylinders used for hybrid vehicles which include an electric power train in the mechanical driveline of the internal combustion engine or use an internal combustion engine to drive a generator to energize the electric power train.~~

The fuel tanks and…"

Paragraph 5.1.3.3., amend to read:

"5.1.3.3. ~~Engine~~ **Internal combustion engine**

~~NOTE: 5.1.3.3. likewise applies to hybrid vehicles which include an electric power train in the mechanical driveline of the internal combustion engine or use an internal combustion engine to drive a generator to energize the electric power train.~~

5.1.3.3.1. Engine

The engine propelling the vehicle shall be so equipped and situated to avoid any danger to the load through heating or ignition. ~~The use of CNG or LNG as fuel shall be permitted only if the specific components for CNG and LNG are approved according to UN Regulation No. 110 and meet the provisions of~~

~~paragraph 5.1.1. The installation on the vehicle shall meet the technical requirements of paragraph 5.1.1. and UN Regulation No. 110. The use of LPG as fuel shall be permitted only if the specific components for LPG are approved according to UN Regulation No. 67 and meet the provisions of paragraph 5.1.1.~~

~~The installation on the vehicle shall meet the technical requirements of paragraph 5.1.1. and UN Regulation No. 67. In the case of EX/II, and EX/III and MEMU vehicles, the engine shall be of compression ignition construction using only liquid fuels with a flashpoint above 55 °C. Gases shall not be used.~~

The use of a fuel shall only be permitted if components are approved and installation meet the provisions of Para 5.1.1. and the technical requirements of:

(a) UN Regulation No. 110 for CNG or LNG.

(b) UN Regulation No. 67 for LPG.

(c) UN Regulation No. 134 for compressed hydrogen and the technical provisions of Global Technical Regulation No.13, Amendment 1 for liquid hydrogen, as relevant.

In the case of EX/II and EX/III vehicles the engine shall be of compression-ignition construction using only liquid fuels with a flashpoint above 55 °C. Gases shall not be used.

Paragraph 5.1.3.4., renumber as paragraph 5.1.3.3.2.

Insert a new paragraph 5.1.3.4., to read:

"5.1.3.4. **Reserved**"

Paragraph 5.1.3.5., amend to read:

"5.1.3.5. Electric power train

~~NOTE: 5.1.3.5. likewise applies to hybrid vehicles that include an electric power train in the mechanical driveline of an internal combustion engine. Electric power trains shall not be used for EX and FL vehicles.~~

Electric power trains shall not be used for EX vehicles. Trailers with regenerative braking or electric power train are not allowed."

5.1.3.5.1. General provisions

The electric power train shall meet the requirements of UN Regulation No. 100, as amended at least by the 03 series of amendments. ~~Measures shall be taken to prevent any danger to the load by heating or ignition.~~

Vehicles with an electric power train shall be equipped with an isolation resistance monitoring system.

The vehicle shall give external signals in stationary conditions, in addition to the warning to the driver received in the driver's cab as required by paragraph 6.15.1. of UN Regulation No.100 [8], as amended at least by the 03 series of amendments.

5.1.3.5.2. Rechargeable Electrical Energy Storage System (REESS)

Note: **Other acronyms for REESS are used in other documentation for similar systems (e.g. RESS).**

REESS of vehicles with an electric power train shall be designed and constructed taking into account a risk evaluation according to ISO 6469-1:2019/Amd 1:2022 to establish safety for normal operational conditions.

Note: **Normal operating conditions also include malfunctions and reasonably foreseeable accidental situations.**

[8] UN Regulation No. 100 (Uniform provisions concerning the approval of vehicles with regard to specific requirements for the electric power train)

5.1.3.5.3. Measures against thermal propagation

REESS containing cells for which thermal propagation cannot be guaranteed to be contained within the REESS, measures shall be taken to mitigate danger to the load by heating or ignition.

5.1.3.5.4. Vehicle charging inlet

The vehicle charging inlet shall be provided with thermal sensing function which limits or interrupts current transfer according to ISO 17409:2020, when the temperature exceeds component rated values or required limits by applicable product standards, see for example, IEC 62196-3-1:2020.9.2.5."

Insert new paragraphs 5.1.3.7. to 5.1.3.7.3., to read (including the references to new footnotes [9] and [10]):

"5.1.3.7. Hydrogen and fuel cell vehicles

5.1.3.7.1. Hydrogen fuel cell vehicles shall comply with the requirements for the electrical power train of paragraph 5.1.3.5.

5.1.3.7.2. Hydrogen fuel cell vehicles shall comply with UN Regulation No. 134[9], as amended at least by the 02 series of amendments. Vehicles using liquid hydrogen shall be subject to the technical requirements of the [Global Technical Regulation No.13[10], Phase 2].

5.1.3.7.3. Shut-off devices of hydrogen containers shall close automatically:

(a) when the vehicle is no longer in driving mode;

(b) at a deceleration of [3.25 $m \cdot s^{-2}$ for 0.7 s]; and

(c) in case of a lateral overturning above an angle of 23°.

The shut-off devices may be re-opened by a deliberate action of the driver."

Insert new paragraphs 10.5 to 10.6.5., to read:

"10.5. General transitional provisions

10.5.1. Contracting Parties applying this Regulation may grant type approvals according to any preceding series of amendments to this Regulation.

10.5.2. Contracting Parties applying this Regulation shall continue to grant extensions of existing approvals to any preceding series of amendments to this Regulation

10.6. Transitional provisions for the 07 series of amendments

10.6.1. As from the official date of entry into force of the 07 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals under this Regulation as amended by the 07 series of amendments.

10.6.2. As from 1 September 2026, Contracting Parties applying this Regulation shall not be obliged to accept type approvals to the preceding series of amendments, first issued after 1 September 2026.

10.6.3. Until 1 September 2027, Contracting Parties applying this Regulation shall accept type approvals to the preceding series of amendments, first issued before 1 September 2026.

10.6.4. As from 1 September 2027, Contracting Parties applying this Regulation shall not be obliged to accept type approvals issued to the preceding series of amendments to this Regulation.

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[9] **UN Regulation No. 134 (Uniform Provisions concerning the Approval of Motor Vehicles and their Components with regard to the Safety-Related Performance of Hydrogen-Fuelled Vehicles (HFCV)).**

[10] **UN Global Technical Regulation No. 13 on hydrogen and fuel cell vehicles.**

10.6.5. Contracting Parties applying this Regulation shall continue to accept type approvals issued according to the preceding series of amendments to this Regulation first issued before 1 September 2026."

II. Justification

1. This document aims to align UN Regulation No.105 with ADR, the 2025 edition.

2. It contains the amendments agreed on by the Working Party on the Transport of Dangerous Goods (WP.15) at their November 2023 and March 2024 sessions.

3. The table of paragraph 5.1. is amended to reflect the new structure adopted for ADR 2025. In particular, references to the provisions for Electric Vehicles (EVs) and hydrogen fuel cell vehicles are introduced.

4. Paragraph 5.1.1.3. introduces a new exemption for the electric steering equipment, as per the ADR 2025. Electric steering equipment will become the standard steering system in the near future to accompany the new fuel economy requirements and the introduction of EVs. The electric steering systems may reach such high temporary current intensities as those of the other exemptions listed in paragraph 5.1.1.3.: the situation for the electric steering systems is similar to that of, for example, the electric axle lifting system. Fuses for these systems would have to be so large that they would only have a symbolic value.

5. Paragraph 5.1.1.8. is amended to reflect the new wording adopted at WP.15 to address the so-called "battery master switch" now identified as "features to enable the de-energization of the electrical circuits". The new provisions are adapted to EVs.

6. Paragraph 5.1.3. is re-structured and is amended to reflect the new powertrains that are progressively introduced by the manufacturers (EVs, hybrid vehicles, fuel cell vehicles, etc.).

7. The proposed transitional provisions are introduced to assist the manufacturers to adapt their (future and current) production and to apply for approval to UN Regulation No. 105 in time to comply with the new provisions of ADR 2025.

8. This proposal does not deviate from the provisions contained in the ADR 2025; there is no other amendments than those introduced by ADR 2025.