

## **Notes on the draft official proposals**

Please find below the wording developed for the official document by the IWG-EV. The wording is not yet in the official format.

I felt that sufficient justification would be given to the reader. However, due to budget constraints at the UNECE I have asked the secretariat if they wished the justification in an accompanying Informal document. No answer was received up till Sunday 3 August when this note was written.

### **While writing some issues arose.**

**On Item 1;** following the discussions my conclusions were that developing a new external warning, when work is done by the driver outside the vehicle, would cost more time we have for ADR 2027. Seeing the complications and effect of the current requirement it seemed to me best to remove this, at least until a decision can be decided upon for other signals. Please mind that battery technology is developing fast and existing safety concerns are dealt with and new ones may occur yet unknown to use.

**On Item 2;** The recommendations by the TDG and EX-subgroup are followed. Concerns surfaced for light commercial vehicles and in particular Panel Vans. In the past provisions on wiring lead to issue with the approval of these vehicles because the very low number of very standardized products to carry dangerous goods. Another discussion with light duty vehicles is the change in GVW that is allowed to be driven with a “B” license. I included for EX/II an exemption for these panel vans up to 4250 kg because of the ongoing discussion that you may drive 4250 kg (additional weight of the battery) on a “B” license. I would be interested in your view on this matter.

**On Item 3;** I questioned if this was still necessary as only crosses appear for AT and FL. On the other hand, there are the discussions last session on 9.2.4.4 where we proposed crosses for all categories (although still in square brackets).

I would be interested to know your view on keeping Item 3 in or not. If in doubt we should leave it in.

**On Item 3;** we still need to decide on the temperature measuring part. We must see what is available. You know my opinion to extend the pressure monitoring to all categories of vehicles (even those carrying packages see text before table of 9.2.1.1) that is already mandatory for new vehicles in the European Union. This may not be the case for the other twenty-seven contracting parties outside the EU. The effect of the Tyre Pressure Monitoring Systems is positive on tyre failure and fires alike.

**On Item 4: -**

**On Item 5;** over the last week discussion continued with several number of improvements. The question on this application is here today and this is urgent. The wording so far is not 100% yet but keep it in to have at least a start on this topic and time until the first half of October to fine-tune.

## Introduction

The Informal Working Group on Electrified Vehicles (IWG-EV) remained active on a reduced level to deal with issues arising from the introduction of Battery Electric Vehicles (BEV) and Hydrogen Fuelled Vehicles (Hydrogen Fuel Cell Vehicle - HFCV) in ADR 2027 for AT/FL and deal with EX vehicles and electrified trailers.

Below proposals by the IWG-EV are represented for discussion and approval by WP.15.

## Proposals

### Item 1 – External signal 9.2.4.4.1

**Proposal** - Delete the last paragraph of 9.2.4.4.1 (deleted wording stricken through):

~~“The vehicle shall give external signals in stationary conditions, in addition to the warning the driver receives in the driver’s cab as required by 6.15.1 of UN Regulation No.100<sup>t</sup>, as amended at least by the 03 series of amendments.”~~

### Justification

In the May 2025 session WP.15 agreed on an interpretation of “Stationary conditions” when the external signal should be provided by the vehicle. As this requirement is linked to the warning light on the dashboard required by 6.15.1 of Un Regulation No.100, the interpretation was agreed by WP.15 that this is only when the vehicle is in active driving possible mode but not yet moving. As the driver at that moment is in his seat the external signal has no additional value.

Concerns were expressed that while work is ongoing around the vehicle, for example unloading using a pump, or during charging at stops or overnight no signal would be given to warn the driver or the environment of a thermal event being eminent. However, it was expressed that the trigger for such a warning was critical (one cell in thermal runaway to full thermal propagation) as is the uniform and recognizable sound.

*“It is proposed to request WP.29 to develop an external warning when a thermal event is eminent that threatens the dangerous load. The signal should be recognizable as being for such an event, load enough to be noticed when activities are ongoing around the vehicle and if possible, also available when the feature to de-energize is activated by the control device.”*

### Item 2 – Battery Electric Vehicles for category EX/II and EX/III.

**Proposal** - Delete the first sentence, for 9.2.4.4 to read (deleted wording stricken through):

~~“Electric power trains shall not be used for EX vehicles. Trailers with re-generative braking or electric power train are not allowed.”~~

In the table of 9.2.1.1 amend to read (new crosses/wording underlined):

		EX/II	EX/III	AT	FL	
9.2.4.4.1	<b>General provisions</b>	<u>“X”</u>	<u>“X”</u>	X	X	
9.2.4.4.2	<b>Rechargeable electrical energy system</b>	<u>“X”</u>	<u>“X”</u>	X <sup>i</sup>	X	<sup>i</sup> Applicable to motor vehicles first registered after 31 December 2026. <sup>y</sup> Applicable to motor vehicles with a <u>maximum mass exceeding 4.25 tonnes.</u>
9.2.4.4.3	<b>Measures against thermal propagation</b>	<u>“X”</u>	<u>“X”</u>		X	<sup>y</sup> Applicable to motor vehicles with a <u>maximum mass exceeding 4.25 tonnes.</u>

9.2.4.4.4	<b>Vehicle charging inlet</b>	<u>“X”</u>	<u>“X”</u>		X	<sup>m</sup> Applicable to motor vehicles with a maximum mass exceeding 4.25 tonnes.”
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**Justification**

For expertise on the carriage of explosive substances and articles the IWG-EV decided to work together with the Energetics Working Group (EWG) meeting under the Subcommittee of Experts on the Transport of Dangerous Goods (TDG). In their July 2025 session the recommendation of the EWG were endorsed by the TDG meeting to allow battery Electric Vehicles to be used for the carriage of explosive substances and articles. (see ST/SG/AC.10/C.3/132 paras 15-19 and UN/SCETDG/66/INF70 para 8). Based on this outcome the sub-group on explosives forwarded this result that was accepted by the IWG-EV.

**Item 3 – Hydrogen Fuel Cell Vehicles for category EX/II and EX/III**

**Proposal** - Amend 9.2.4.5.1 to read (new wording underlined):

*“9.2.4.5.1 Hydrogen fuel cell vehicles shall comply with the requirements for the electrical power train of 9.2.4.4. Hydrogen Fuel Cell shall not be used for EX vehicles.”*

In the table of 9.2.1.1 amend to read (new crosses underlined):

		EX/II	EX/III	AT	FL	
9.2.4.5	<b>Hydrogen fuel cell</b>	<u>“X”</u>	<u>“X”</u>	X	X	

**Justification**

The use of Hydrogen Fuel Cell Vehicles was not yet discussed in the EWG and not endorsed by the TDG. It is suggested not to allow for the time being. Gases fuels are banned for EX vehicles in 9.2.4.3. However, as 9.2.4.3 only deals with fuels for Internal Combustion Engines the amendment if felt to be appropriate.

**Item 4 – Tyre pressure and tyre temperature monitoring system for EX vehicles.**

**Proposal – introduce a new sub-section 9.2.9.**

**“9.2.9 Tyre pressure monitoring system**

*Motor vehicles and trailers, shall be equipped with tyre pressure monitoring systems according to the technical requirements of UN Regulation No. 141<sup>x</sup>, as amended. [The system shall also provide information to the driver on the tyre temperature].”*

Include a new line in the table of 9.2.1.1 to read:

		EX/II	EX/III	AT	FL	
“9.2.9	<b>Tyre pressure monitoring system</b>	X <sup>m</sup>	X <sup>m</sup>	[X <sup>m</sup> ]	[X <sup>m</sup> ]	<sup>m</sup> Applicable to motor vehicles and trailers first registered (or which entered into service if registration is not mandatory) after [1 July 2027].”

Introduce a new footnote to 9.2.9 to read:

<sup>x</sup> UN Regulation No. 141 (Uniform provisions concerning the approval of vehicles with regard to their Tyre Pressure Monitoring System (TPMS)).

### ***Justification***

Although the tyre pressure monitoring systems is not specific for BEV, the advice of the EX-subgroup is to have mandatory fitment of a tyre pressure monitoring systems. In addition to this a temperature measurement was suggested to have an early indicator of binding brakes or worn wheel bearings. The temperature item is kept in square brackets to be verified if systems monitoring the temperature besides the pressure are available. In Australia, Tyre Pressure Refill Systems or Central Tyre Inflation Systems are applied. These systems are also regulated by the latest amendments of UN Regulation No. 141 and it need to be decided if this extra kit and weight is justified for the ADR territory. Although no direct statistical data on reduction of tyre fires is available, positive feed-back can be heard on the benefits against tyre failure in practice. In the 27 EU ADR contracting parties tyre pressure monitoring systems are mandatory for new vehicles. For the other 27 contracting parties this may not be the case. It should therefore be considered to make this provision applicable to other vehicles as well.

### ***Item 5 – feature to de-energize for EX/III***

***Proposal*** - In the table of 9.2.1.1 Place the cross for EX/III in square brackets.

### ***Justification***

The Ex sub-group discussed that an explosive atmosphere would not be present in the normal carriage of explosives substances and articles. Only in specific cases a fuel to drive an article containing an explosive, such as a ready fuelled rocket or self-propelled grenade, may contain a flammable if the propulsion system, developing an explosive atmosphere in case it fails.

On the other hand, the feature to de-energise electrical circuits would cut out also the Battery Management System. This system that controls the cells in the battery against malfunction is seen as an important safety item.

It was also felt that for the low voltage system the additional value was limited, circuits being protected by fuses. Using the feature would also prevent other electronics that nowadays control the vehicle including theft alarm and track-trace systems.

Although a final confirmation by the Ex sub-group is due, lifting the provision for the feature for EX/III was felt justified to be kept in square brackets for a final decision at the May 2026 session of WP.15.

### ***Item 5 – “stand alone” batteries to energize accessories.***

***Proposal*** - Introduce a new 9.7.10 to read.

***“9.7.10 Electric systems to energize accessories and other circuits with a battery other than lead-acid not galvanically connected to the vehicle re-generation or traction system.***

*Electric systems and batteries to energize accessories and other circuits shall not be used for EX/III vehicles.*

***9.7.1.0.1 Batteries with a capacity up to [1 kWh] [included in electronic devices] are exempted from the provisions 9.7.10.2 to 9.7.10.3.***

9.7.10.2 *Electric systems to energize accessories and other circuits with batteries shall meet the requirements of UN Regulation No.100<sup>1</sup> Part II, as amended at least by the 03 series of amendments.*

*[The vehicle shall give external and internal signals according to 9.2.4.4.1.]*

*Systems with a voltage that exceed 25V AC or 60V DC shall be provided with an isolation resistance monitoring system.*

*The system shall comply with the requirements of 9.2.4.4.2, 9.2.4.4.3 and 9.2.4.4.4.*

9.7.10.3 *Unintended vehicle movement shall be impossible when the system or battery is externally charged, and the vehicle connector is physically connected to the vehicle inlet.*

9.7.10.4 *The electrical system of FL vehicles connected to the batteries, shall de-energize when the feature to de-energize the vehicles electrical system is activated or they shall comply with 9.2.2.9.1.”*

Introduce a new foot note to read (see also foot note to 9.2.4.4.1):

*<sup>1</sup> UN Regulation No. 100 (Uniform provisions concerning the approval of vehicles with regard to specific requirements of the electric power train).”*

Introduce a new transitional measure to read:

*“1.6.5.xx Vehicles first registered (or which are taken into service if registration is not mandatory) before 1 July 2027, but not in compliance with the requirements of 9.7.10 may continue to be used.”*

### ***Justification***

In many cases batteries are added to vehicles to power accessories. In the past this was by lead-acid batteries that presented no fire hazards by its chemistry. Increasingly this is now equipped with Li-ion batteries that may present fire hazards. In WP.29 work is undertaken to include REESS or batteries in UN Regulation No.100 connected to the electric power train or E-axle to generate electricity for accessories. Only “stand alone” batteries are left to regulate. It is also felt that small batteries that power electronics have only a limited fire hazard to the load and should be permitted. The exact capacity is still open to discussion, as is the including in an electronic device.

It was suggested not to allow these batteries to EX/III tank vehicles that carry ANFO and are a very limited number.

### ***Sustainable Development Goals***

The provisions in this document support Sustainable Development Goal No. 9 “Industry Innovation and Infrastructure” by allowing innovative technology to be used and No. 13. Climate Action to lower the carbon footprint of transport by zero and low emission solutions.

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