

## Economic Commission for Europe

### Inland Transport Committee

#### Working Party on the Transport of Dangerous Goods

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Item 6 of the provisional agenda

**Interpretation of ADR**

12 October 2017

### **Interpretation of the requirements concerning precautions against electrostatic charges, sections 7.5.10, 9.7.4 and 9.8.3**

**Transmitted by the Government of Sweden**

#### *Summary*

**Executive summary:** Sweden would like to ask WP.15 how the requirements regarding precautions against electrostatic charges in sections 7.5.10, 9.7.4 and 9.8.3 of ADR should be understood and applied.

**Action to be taken:** Interpretation

### **Introduction**

Sweden seeks advice concerning precautions against electrostatic charges, which in ADR is required for flammable gases and liquids with a flash-point of  $\leq 60$  °C and for UN 1361, carbon or carbon black, packing group II.

### **Background**

Recently, a proposal for new national provisions about the handling of flammable gases and aerosols was submitted for comments to Swedish industry and different authorities. Amongst the comments received from the hearing, a question related to “earthing” and “bonding” aroused. In these Swedish national provisions, the text concerning the precautions to be taken against electrostatic charges before tanks are filled or emptied is based on section 7.5.10 in ADR.

#### **Earthing or bonding in ADR?**

In section 7.5.10 and in Chapter 8.5, special provision S2 (3), it is required that a good electrical connection from the chassis of the vehicle, the portable tank or the tank-container to earth shall be established before tanks are filled or emptied. In addition, in sub-section 6.8.2.1.27, shells shall be provided with at least one earth fitting and tank-containers shall be capable of being electrically earthed.

Sections 9.7.4 and 9.8.3 also contains requirements concerning earthing, but in these provisions this should be done by a link from the tanks, containers and compartments to the chassis by means of at least one good electrical connection. According to our understanding,

this is referred to as “bonding” in IEC 60079-32 (see annex), while the word “earthing” is used in ADR.

Some places in part 9 in ADR refer to different parts of IEC 60079 standards. IEC/TS 60079-32-1 is a technical specification prepared by IEC (the International Electrotechnical Commission) Technical Committee 31. Part 32 concerns electrostatic hazards in explosives atmospheres and gives guidance about the equipment, product and process properties necessary to avoid ignition and electrostatic shock hazards arising from static electricity. It also contains the operational requirements needed to ensure safe use of the equipment, product or process.

In this specification, “earthing” and “bonding” are two procedures that both describes how to reduce potential differences (see also figure in annex):

- **Bonding** is used to minimize the potential difference between conductive objects to an insignificant level, even where the resulting system is not earthed.
- **Earthing**, on the other hand, equalizes the potential difference between the objects and the earth.

Considering the use of the word “earthing” in ADR, it is not clear what is actually meant in the different parts. Therefore, Sweden would like to hear the view of the meeting on the following two cases:

1. *To fulfil the requirements in section 7.5.10, a connection from the chassis of the vehicle to earth shall be established before tanks are filled or emptied. According to our understanding, this could be done either:*

- a) *by a direct connection to earth from the vehicle/tank, or*
- b) *by connecting the vehicle/tank to a receiving tank that is earthed.*

2. *In 9.7.4 and 9.8.3, the headlines refer to earthing of FL-vehicles and earthing of MEMU:s. To our understanding, it seems both sections should rather refer to “bonding”.*

Depending on the outcome, Sweden might come back with an official proposal to clarify the text.

## Annex

### Extracts from ADR:

#### 7.5.10 Precautions against electrostatic charges

In the case of flammable gases, or liquids with a flash-point of 60 °C or below, or UN No. 1361, carbon or carbon black, packing group II, a good electrical connection from the chassis of the vehicle, the portable tank or the tank-container to earth shall be established before tanks are filled or emptied. In addition, the rate of filling shall be limited.

#### 9.7.4 Earthing of FL vehicles

Tanks made of metal or of fibre-reinforced plastics material of FL tank-vehicles and battery elements of FL battery-vehicles shall be linked to the chassis by means of at least one good electrical connection. Any metal contact capable of causing electrochemical corrosion shall be avoided.

*NOTE: See also 6.9.1.2 and 6.9.2.14.3.*

#### 9.8.3 Earthing of MEMUs

Tanks, bulk containers and special compartments for packages of explosives made of metal or of fibre-reinforced plastics material shall be linked to the chassis by means of at least one good electrical connection. Any metal contact capable of causing electrochemical corrosion or reacting with the dangerous goods carried in the tanks and bulk containers shall be avoided.

### Extract from IEC/TS 60079-32-1:

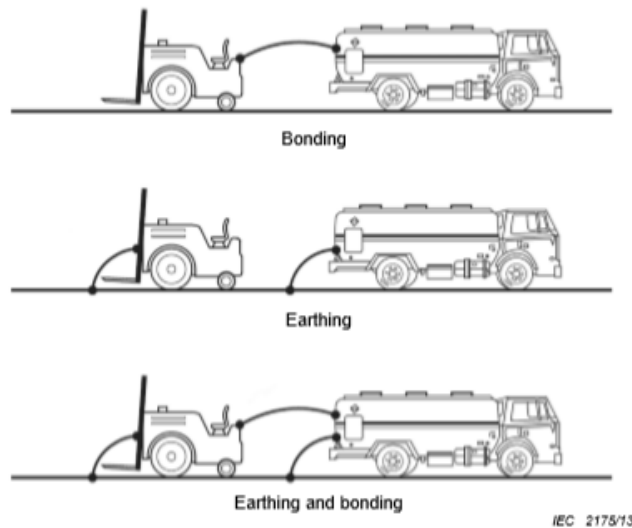


Figure 4 – Difference between earthing and bonding