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Inland Transport Committee

Working Party on the Transport of Dangerous Goods

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Interpretation of ADR

Request for opinion regarding coding of tanks

Transmitted by the Government of the Poland

1. Subject of tank coding seems clear in the ADR regulations. In practice there is a diverse approach to this issue.

We would like to obtain the opinion from the WP15 Working Group on coding of tanks with technical parameters defined in the given example.

2. The construction assumptions of the exemplary tanks include:

- 1) the tank will be filled or emptied under pressure and will be designed to transport materials with a vapor pressure at 50 °C not exceeding 110 kPa (1,1 bar) (absolute pressure) (according to 6.8.2.1.14 b))
- 2) the tank has been designed for filling or emptying pressure (working pressure) equal to $p_w = 2$ bar
- 3) internal design pressure $p_c = 2,6$ bar (1,3 x 2 bar)
- 4) external design pressure $p = 0,05$ bar
- 5) the tank secured with a safety valve set on an opening pressure of 2 bar and a vacuum valve set to $-0,05$ bar

The tank has been marked with the LGBF code.

3. The question is: was the tank built according to ADR requirements and correctly marked with the LGBF code?

4. In our opinion the applied tank construction solution and the code assigned to it is not reflected in the current ADR regulations.

5. Our objections concern the letter „F” in the code of tank, in which instead of breathing valves the overpressure and vacuum pressure valve with opening pressure of 2 bar/ $-0,05$ bar respectively were applied.

According to 4.3.4.1.1 ADR the letter „F” in the tank code means:

„F = tank with a breather device, according to 6.8.2.2.6, fitted with a device protecting against the propagation of a flame; or explosion pressure shock resistant tank”

6. Pursuant to the provisions in 6.8.2.2.6: “Tanks intended for the carriage of liquids having a vapour pressure of not more than 110 kPa (1.1 bar)(absolute) at 50°C shall have a breather device and a safety device to prevent the contents from spilling out if the tank overturns; otherwise they shall conform to 6.8.2.2.7 or 6.8.2.2.8.”

This provisions means that these tanks should be equipped with breather device.

The breather device should meet the requirements of EN 14595:2005 or EN 14595:2016.

7. The requirements given in 6.8.2.1.7 shall be taken into account: “Measures shall be taken to protect shells against the risk of deformation as a result of a negative internal pressure. Shells, other than shells according to 6.8.2.2.6, designed to be equipped with vacuum valves shall be able to withstand, without permanent deformation, an external pressure of not less than 21 kPa (0.21 bar) above the internal pressure...”

8. The provision given in 6.8.2.1.7 shows that in the case of tanks complying with 6.8.2.2.6, equipped with breathing valves, no calculation of the negative pressure tank is required. In other cases, if the tanks are equipped with vacuum valves, they should withstand without permanent deformation, an external pressure of not less than 21 kPa (0,21 bar) above the internal pressure.

9. The tank in question does not fulfill this condition, because the tank is calculated for external pressure of 5 kPa (0,05 bar) above the internal pressure, and not as it is required in 6.8.2.1.7 for the external pressure of not less than 21 kPa (0,21 bar) above the internal pressure.

10. In our opinion, in accordance with the current provisions of the ADR agreement, the tank may be marked with the LGBF code provided that the breathing valves are applied which comply with the requirements of EN 14595:2005 or EN 14595:2016.

11. If safety valves are used it must be demonstrated, that the shell of the tank can withstand, without permanent deformation, an external pressure of not less than 21 kPa (0,21 bar) above the internal pressure. Then the tank will meet requirements for tanks with L1,5BN code and the tank can be marked with this code.

12. In accordance with 4.3.4.1.2 in the tank of code L1,5BN it will be also possible to transport materials admitted for carriage in tanks with the LGBF code (while maintaining special provisions).

13. Poland asks for the opinion of WP15 working group on the coding of this type of tanks.

Are the construction solution applied and given tank code sufficiently clear in the light of the current provisions in ADR, or would it be appropriate to modify the existing tank coding system?

This is particularly important, if we want to obtain mutual recognition of devices for the transport of dangerous goods as well as documents issued for these devices.
