



Organisation intergouvernementale pour les transports internationaux ferroviaires
Zwischenstaatliche Organisation für den internationalen Eisenbahnverkehr
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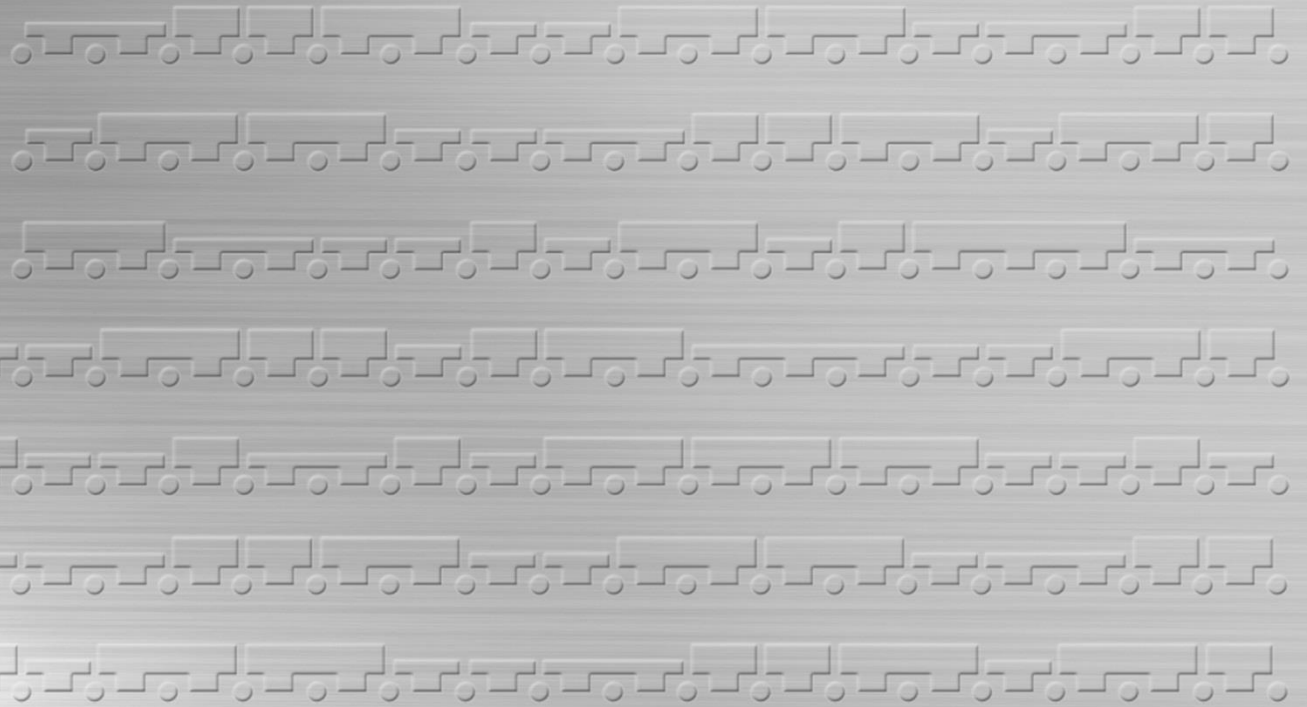
RID: **10th Session of the RID Committee of Experts' standing working group**
(Krakow, 21 to 23 November 2018)

Subject: **Key differences between RID and GOST in terms of the requirements for the manufacturing, equipment, design and testing of tank-wagons**

Information from the Russian Federation



**ЦЕНТР
ТРАНСПОРТНЫХ
ТЕХНОЛОГИЙ**



**Key differences between RID and GOST
in terms of the requirements to manufacture,
equipment, design and tests of tank-wagons**

Differences regarding requirements to tank-wagon

Operating conditions

- Ambient temperature
- Gravity sorting of freight cars

Requirements to vessels under pressure

- Differences in terminology
- Requirements to tests
- Calculation of the wall thickness
- Requirements to safety devices
- Requirements to materials

Updating of requirements

- Requirements to draft gears
- Coefficients of welds strength

Track gauge 1520 mm

SMGS (rev.2019)

1. Ambient temperature down to -60 °C:



application of the materials providing working capacity at temperatures down to -60°C regarding tank-wagons of 1520 mm track gauge is taken into account (6.8.2.1.8, 6.8.2.1.10, 6.8.3.2.20)

2. Gravity sorting of freight cars:



the impact force of up to 3.5 MN is taken into account when determining the wall thickness regarding tank-wagons of 1520 mm track gauge (6.8.2.1.15.1)

RID	GOST	SMGS (rev.2019)
1. Difference in terminology:		
<p>Design pressure means theoretical pressure equal to at least the test pressure which, depending on the hazard level of the transported substance, may be higher or lower than the operating pressure. ...</p> $P_{test} \leq P_{calc}$	<p>Design pressure is defined as the sum of excess pressure of vapors of liquid or gas in case of the greatest operating temperature and pressure of hydraulic blow in case of shock when the tank-car experiences the impact interaction with the adjacent cars.</p> $P_{calc} = P_{vap} + N \cdot \frac{m_{sub}}{m_{gross}} \cdot \frac{1}{F}$	<p>it has been taken into account in terms of tank-wagons of 1520 mm track gauge (6.8.2.1.15.1)</p>
2. Requirements to tests:		
<p>for dangerous goods other than class 2: $P_{test} \leq 4 (10)$ бар for dangerous goods of class 2: P_{test} determined in accordance with the table 4.3.3.2.5</p>	$P_{test} = 1,25 P_{calc} \frac{[\sigma]_{20}}{[\sigma]_t}$	<p>it has been taken into account in terms of tank-wagons of 1520 mm track gauge (6.8.2.4.1, 6.8.3.4.2)</p>
3. Calculation of the wall thickness:		
$e = \frac{P_{test} D}{2[\sigma]\lambda}; e = \frac{P_{calc} D}{2[\sigma]}; [\sigma] = \min(0,75R_e; 0,5R_m)$	$e = \frac{P_{test} D}{2[\sigma]\lambda - P_{test}}; e = \frac{P_{calc} D}{2[\sigma]\lambda - P_{calc}};$ $[\sigma] = \min\left(\frac{R_e \text{ или } R_{p0,2}}{1,5}; \frac{R_m}{2,4}\right); [\sigma] = \frac{R_e^{20} \text{ или } R_{p0,2}^{20}}{1,1}$	<p>it has been taken into account in terms of tank-wagons of 1520 mm track gauge (6.8.2.1.16, 6.8.2.1.17)</p>
4. Requirements to safety devices:		
$P_{open} = f(P_{vap}; t_{boil}) \text{ или } P_{open} = f(P_{test})$	$P_{open} = f(P_{calc})$	<p>it has been taken into account in terms of tank-wagons of 1520 mm track gauge (6.8.2.2.6-6.8.2.2.9, 6.8.3.2.9)</p>
5. Requirements to materials:		
<p>Water-quenched steel may not be used for welded steel shells. ...</p>	<p>Rolled products are supplied in a heat-treated condition: normalization, quenching with tempering, etc.</p>	<p>it has been taken into account in terms of tank-wagons of 1520 mm track gauge (6.8.2.1.10)</p>
<p>For base metal and welded joints: $KCV^{-20} \geq 34 \text{ J/cm}^2$</p>	<p>For base metal: $KCU^{-60} \geq 29 \text{ J/cm}^2$ For welded joints: $KCU^{-60} \geq 30 \text{ J/cm}^2$</p>	<p>it has not been taken into account</p>

RID	GOST	SMGS (rev.2019)
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1. Requirements to draft gears:

TE 22 (RID):
 "...
 This requirement for tank-cars equipped with automatic coupler with draft gear with power capacity not less than 130 kJ at each end of the car is considered to have been met."

GOST 32913-2014:

Parameter name	Draft gear class		
	T1	T2	T3
Static power capacity, not less than	30	40	60
<u>Nominal power capacity, not less than</u>	70	100	140
Maximum power capacity, not less than	90	130	190

T2 - for specialized freight cars, used to transport dangerous goods of classes 3, 4, 5, 8, 9;
 T2 - for freight cars, used to transport especially dangerous goods of classes 1, 2, 6, 7.

it has been taken into account regarding tank-wagons with automatic coupler (TE 22)
 it has not been taken into account (6.8.2 и 6.8.3)

2. Requirements to coefficients of strength of welded joints:

$\lambda = f(\text{control scope; type of weld})$

$\lambda = f(\text{control scope; type of weld; welding technology})$

it has not been taken into account (6.8.2.1.23)

Chapters 6.8 of SMGS

- requirements to tank-wagons of 1435 mm track gauge
- requirements to tank-wagons of 1520 mm track gauge
- requirements to tank-containers

Discussion involving OSJD specialists of the option of the availability of requirements to tank-wagons of 1520 mm track gauge in the text of the SMGS

With the exception of the same requirements from chapter 6.8

Chapters 6.8 of SMGS

- requirements to tank-wagons of 1435 mm track gauge
- requirements to tank-containers

Chapter 6.X SMGS/RID?

- requirements to tank-wagons of 1520 mm track gauge