

INEOS Solvents

Code of Practice for the safe supply of Propylene in rail tank cars

Issue 1
June 2018

1.0 INTRODUCTION

The purpose of this document is to detail the INEOS Solvents safety requirements related to the supply of propylene in rail tank cars (RTCs).

When the product is supplied under 'delivered' conditions, the supplier is responsible for the safety of the transport until the delivery into the INEOS Solvents tank. The ownership of the product is transferred to INEOS Solvents when the product leaves the flange of the RTC during the unloading.

2.0 TECHNICAL REQUIREMENTS RAIL TANK CARS

The supplier must ensure that the RTCs offered, comply with all applicable national and international regulations.

The supplier shall:

- Ensure compliance with the requirements for construction, equipment, tests, inspections and marking of the RTCs according to RID
- Ensure that the maintenance of tanks and their equipment is carried out in such a way as to ensure that, under normal operating conditions, the RTC satisfies the requirements of RID until the next inspection
- Have a special check made when the safety of the tank or its equipment is liable to be impaired by a repair, an alteration or an accident.

Requirements outlet connections:

- Liquid phase: WECO DN 80 (ISO thread)
- Gas phase: WECO DN 50 (ISO thread)

Pressure in the RTCs:

According to RID requirements The partial pressure of inert gas (e.g. nitrogen) may not exceed 2 Bara this is 1 Barg, so the overpressure in the vapour phase may not exceed 1 bar above the normal vapour pressure of the product at the temperature of the liquid. Example: if temperature of the liquid is 20°C and vapour pressure at 20°C is 10 bara (9 barg), the max pressure in the rtc may not exceed 10 barg (9+1).

3.0 MAIN RESPONSIBILITIES ACCORDING TO RID

According to RID, the following obligations apply:

- **The consignor (Supplier)**
 - Ascertain that the dangerous goods are classified and authorized for the carriage in accordance with RID
 - Furnish the carrier with information and data

- Use RTCs approved for and suited to the carriage of the products and bearing the markings as prescribed by RID
- Comply with the requirements on the means of dispatch and on forwarding restrictions
- **The carrier (railway company)**
 - Ascertain that the dangerous goods are classified and authorized for the carriage in accordance with RID
 - Ascertain that the required information has been supplied by the consignor
 - Ascertain visually that the RTCs and loads have no obvious defects, leakages, cracks, missing equipment etc.
 - Ascertain that the date of the next test for the RTCs has not expired
 - Ascertain that the RTCs have not been overloaded
 - Ascertain that the placards and labels prescribed for the RTCs have been fitted
- **The filler (Loading site)**
 - Ascertain prior to filling that the tank and the filling equipment are technically in a satisfactory condition
 - Ascertain that the date of the next test of the RTCs has not expired
 - Fill only tanks with the dangerous goods authorized for carriage
 - Observe, during the filling, the permissible degree of filling or the maximum permissible mass of the contents per litre capacity for the substance being filled
 - Check, after the filling, the leakproofness of the closing devices
 - Affix the prescribed orange plates, danger labels, markings and shunting labels on the RTCs in accordance with the requirements.
 - Observe, before and after filling, the applicable checking requirements for liquefied gasses according to RID 4.3.3.4
See also Annex 1

4.0 INSPECTION AND LOADING RAIL TANK CARS

- All people involved in the loading operations must be adequately trained. The training should also include basic RID requirements (construction, labelling, marking, inspection etc. of RTCs)
- Each RTC must be inspected before and after loading. This must be done by the loading site by using a checklist. The checks to be done are listed in the checklist in annex 1. The purpose of this inspection is to ensure that:
 - The RTC is suitable for its intended use.
 - No damages or apparent deficiencies are present.
 - The applicable RID requirements are met (e.g. labelling).

- In case some of the checks cannot be done by the loading site operators then a specialised company (surveyor) must be assigned to do these checks.

If RTCs arrive at INEOS Solvents in an unsuitable technical or unsafe condition, then INEOS Solvents will, for each subsequent delivery, impose an inspection by a specialised company (surveyor) and, for each RTC, a completed and signed checklist, before arrival of the RTCs at INEOS Solvents site.

The loading installation must ensure that all the valves of the RTC and the connections/ flanges/ couplings are leak-tight. Also the other side of the RTC must be checked. This can be done by means of a visual inspection / soap test or a vacuum or pressure test of the valves and couplings prior to loading.

- RTCs must be weighed before and after loading to ensure that the maximum filling weight is not exceeded.

For determining the max filling weight, one must take into account:

- The allowed maximum filling weight of the tank. This is written on the side of the tank.
- Weight restrictions on the route that the RTC is to be transported (loading category). The maximum predetermined loading limit of the railway route is given by the railway transport company. If the maximum filling weight of the railway route is less than the safe maximum filling weight of the RTC, the limit of loading is the lower value.
- The amount of product can be filled also depends on the maximum filling degree according to RID regulations (which takes into account the thermal expansion).

To prevent overfilling, the filling weight in the RTC is to be continuously monitored during the filling process (e.g. via mass flow meter). The mass flow should be continuously monitored during the filling operation.

The RTC must be weighed before and after loading on a calibrated weighbridge

- The connections must be sealed, preferably with tie-raps, on both sites of the RTC, in order to warn against unauthorized opening.
- **Telematic units mounted on RTCs must be announced upfront and approved by INEOS Solvents site.** Contact: Feedstock Operator MRS.Solvents.FSO@ineos.com (+49 2841 49-2770).

5.0 EMERGENCY RESPONSE

The prime responsibility to deal with off-site emergencies rests with the local authorities.

When the product is sold under 'delivered' conditions, the supplier remains responsible for the product until it is unloaded into the INEOS Solvents tank.

The supplier must provide to INEOS Solvents an emergency telephone number that can be contacted on a 24/7 basis in case of emergencies. Please send number to MRS.Solvents.FSO@ineos.com (+49 2841 49-2770).

In case of an emergency with an RTC close to an INEOS Solvents site, INEOS Solvents might be requested by the authorities to give support.

Because of the proximity of the INEOS Solvents plant, local media and the public may link the incident to INEOS Solvents and therefore the INEOS Solvents site should be prepared to give support:

e.g.: Sending an RTC technician from an external company to the incident scene to stop a leakage

Providing product information to the authorities


Acting as the local incident communication centre

....

In case there is a requirement to carry out a product transfer or a degassing of an RTC, the authorities may launch the national Chemical Emergency response scheme (e.g. TUIS in Germany) whereby a major Chemical Company will deal with the product like carry out a product transfer or a degassing of the RTC.

Annex 1: CHECKLIST FOR LOADING GAS RAIL TANK CARS

Note L/R means: Left and Right side of RTC

1. Identification		
1.1 Number RTC		
1.2 Number RTC in accordance with loading order.	YES	NO
1.2 Loading ref nr		
1.3 Product		
1.5 Danger placards (L/R) present: right numbers and in good condition (example propylene)	<input type="checkbox"/>	<table border="1" style="margin: auto;"> <tr style="background-color: #ff9900; color: black; font-weight: bold;">23</tr> <tr style="background-color: #ff9900; color: black; font-weight: bold;">1077</tr> </table>
1.6 Danger labels (L/R) present and in good condition	<input type="checkbox"/>	
1.7 Date of next tank inspection,		
1.8 Date of next revision chassis/ underframe		
1.9 Test/ revision dates not expired		
1.10 Tare weight according to Inscription board		
1.11 Tare weight after weighing empty RTC		
1.12 The RTC is authorised to carry the gas to be loaded		

2. BEFORE LOADING	YES	NO	N/A
2.1 Inscription board/ wagon plate is in good condition and inscriptions are readable (L/R)			
2.2 RTC is free of visual damage- general condition is OK			
2.3 Orange band at the sides present			
2.4 Sunshield OK			
2.5 Condition footboard/ steps OK			
2.6 Condition crossing bridge OK			
2.7 Handbrake in good condition and operational			
2.8 Air Brake hose and coupling OK			
2.9 Screw couplings OK			
2.10 Brake system OK (brake shoes not worn out)			
2.11 Buffers OK (crash buffers operational)			
2.12 Axle box housing/ bearing OK – no signs of overheating			
2.13 Springs OK			
2.14 Wheels, wheel flange surface OK (no damages/ no flat wheels)			
2.15 Earthing plate present			
2.16 Railhook cable/ ring present and in good condition			
2.17 Earthing lugs between chassis and tank present and in good condition			
2.18 RTC marked with non-conformity note Railways? If yes: Which model of note Which defect/damage Action to take			

2.19 Data regarding the gases that are allowed to be carried that are mentioned on the stainless steel plate are in accordance with the data on the inscription panel (RID 4.3.3.4.1)			
2.20 Markings inscription board/chassis and barrel are properly readable (L/R)			
2.21 Right product name marked on wagon (L/R)			
2.22 Last product in RTC has been checked (on the basis of transport document or analysis) (RID 4.3.3.4.1)			
2.23 The mass of residue in the RTC has been determined by weighing and has been taken into account to determine the loading weight (RID 4.3.3.4.1)			
2.24 Max weight to be loaded is in accordance with max weight limits			
2.25 Flange connections: DN 80 for liquid phase and DN 50 for gas phase (L/R)			
2.26 Flange connections marked Liquid/ Gas (L/R)			
2.27 Visual condition of (flange) connections, bottom valve, outlet valve and tank OK (L/R)			
2.28 Bottom valve operating instructions present (L/R)			
2.29 Bottom valve operation mechanism OK (L/R) (RID 4.3.3.4.1) Indicators OK (L/R) emergency screw in right position (cap in place and sealed for mechanical bottom valves, screws present in oil reservoir for hydraulical bottom valves) No signs of leaking hydraulic oil			
2.30 Outlet/discharge valves (gas- and liquid phase) on opposite side of RTC (side not used for loading) closed, secured and sealed			
2.31 Gaskets in blindflanges on opposite side of the RTC (gas and liquid phase) are in good condition and suitable for the purpose and flanges are properly bolted/ tightened (bolt of suitable length in each bolt hole). (RID 4.3.3.4.1)			
2.32 Visually no leaks of valves, flanges, manlid, tank. OK (RID 4.3.3.4.1)			

3. AFTER Loading	YES	NO	N/A
3.1 Closing sequence of valves observed (from inside to outside)			
3.2 Outlet/ discharge valves loading site closed, secured and sealed			
3.3 Bottom valves closed (indicators in 'closed' position) , secured and sealed (L/R)			
3.4 Visually no leaks of all valves (L/R), flanges (L/R), manlid, tank. (RID 4.3.3.4.1)			
3.5 Gaskets blindflanges loading site (gas and liquid phase) replaced by new ones which are suitable for the purpose and blindflanges are properly bolted/ tightened (bolt with suitable length in each bolt hole) (RID 4.3.3.4.1)			
3.6 All bolts in flanges of sufficient length (The length of the bolts in the flanges must protrude at least two threads above the nuts)and properly tightened			
3.7 Right product indication and danger labels in place			

3. AFTER Loading	YES	NO	N/A
3.8 The partial pressure of inert gas (e.g. nitrogen) does not exceed 2 Bara (is 1 Barg, so the overpressure in the vapour phase may not exceed 1 bar above the normal vapour pressure of the product at the temperature of the liquid. Example: if temperature of the liquid is 20°C and vapour pressure at 20°C is 3 bara (2 barg), the max pressure in the RTC may not exceed 3 barg (2+1). (RID 4.3.3.4.1)			
3.9 Pressure RTC at departure: bar	...bar		
3.10 Weight RTC after loading (RID 4.3.3.4.1)			
3.11 Max filling degree/ weight is OK (RID 4.3.3.4.1)			

4. Remarks

Annex 2: TECHNICAL REQUIREMENTS RAIL TANK CARS

The RTCs must fully meet the requirements of the RID regulations.
Apart from these, the following specific requirements apply for INEOS Solvents RTCs:

- There must be a support framework (under frame) between the two wheel bogies. RTCs in which the tank is self-supporting may not be used.
- Pressure relief valves may NOT be fitted.
- Sunshields are not recommended. If they are fitted, a proper system must be in place for inspection and maintenance of the fittings.
- Construction material of the tanks: carbon steel, no internal coating
- All openings in the tank shell (except outlets and manlid) must be welded, not bolted.
- **Crash buffers must be fitted:** If the RTCs were built after 1st of January 2005, the crash buffers must have an energy absorbing capacity of at least **800 kJ** per wagon end (400 kJ per buffer). If built before 1st of January 2005, the absorption capacity must be **500 kJ** per wagon end (250 kJ per buffer).
- For LPG test pressure 27 bar (if no sun shield fitted).
- **Required:** silent brakes - LL or K brake blocks
- **Recommended:** maximum age of RTCs: 30 years
- **Ensure that only ATEX certified Telematics are installed (GSM units are not allowed to send/receive data after entering INEOS Solvents site)**

Outlet connections: Hydraulic drain valve
Axic-center distance less 18 meters
Flanged connection liquid gas pipeline DN80
Flanged connection vapour return pipeline DN50

All flanges must be fitted with bolts. For other systems like Weco approval of INEOS Solvents site must be given.



OK

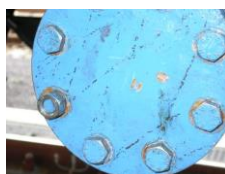


Not OK

The length of the bolts in the flanges must protrude at least two threads above the nuts:



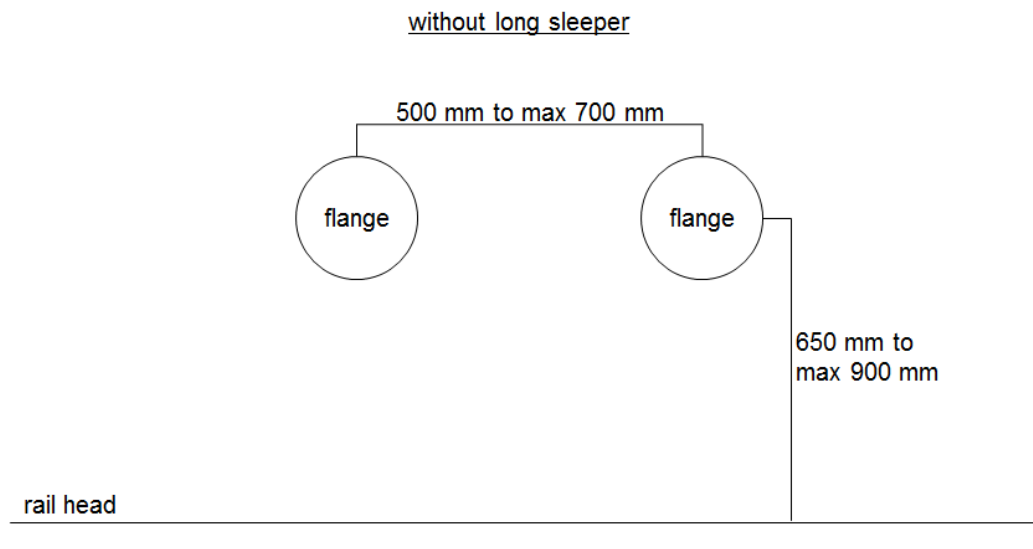
OK



Not OK

The flanged connections have to be easily accessible, without any hindrance by long sleeper. Flanged connections among each other 500 mm to max. 700 mm height, flange middle to rail head 650 mm to max. 900 mm

Distance of connections:



- **Bottom valves :**
Recommended type: hydraulically operated
Emergency screw (Notentleerungsschraube / Vis de dégivrage) or alternative system