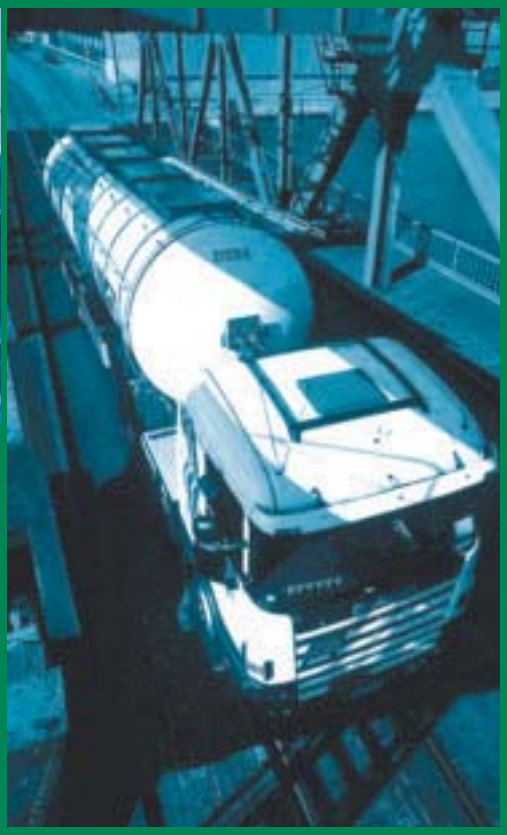
ROAD TRANSPORT EQUIPMENT SPECIFICATIONS: GUIDELINES FOR STANDARDISATION OF EQUIPMENT



ECTA

EPCA

cefic

Responsible Care

ISSUE 2 - AUGUST 2003

ISSUE 2 - AUGUST 2003

CONTENT

OBJECTIVES

- Standardised equipment will improve the utilization flexibility and the productivity of equipment and thus ensure an **efficient distribution** of chemicals.
- Standard equipment reduces the risks of product spillage and the empty movement of transport units and will thus have a **positive environmental impact**.
- Standardisation of equipment will contribute to the **responsible care** program of the chemical industry and the chemical transport industry.

1. STANDARD BULK LIQUID

1.1. GENERAL

OBJECTIVE

The specifications for transportation equipment for loading at loading points, including shipping points of contracted logistics service suppliers, are standard. This means that all these shipping points will adhere to the specifications described in this document. Any deviation from or exception to these specifications must have a written approval from the shipper's representative.

ROAD/INTERMODAL

The specifications in this section primarily apply to tank trucks and tank containers used in the transport of bulk liquids via road or intermodal transport.

COMPLIANCE

All contracted logistics service suppliers will be held responsible and accountable
for presenting their equipment for loading of bulk liquid products in compliance with:
- legal regulations (ADR, and RID, IMDG where this applies)
- national legislation for domestic transportation where this applies,
- international legislation and applicable legislation of the countries of transit
- specifications mentioned in this section.

When applicable, a valid ADR certificate must be present for both tractor, tank and trailer clearly indicating the tank code and vehicle code. In these cases, the driver must also be in possession of a valid professional ADR skill certificate.

"FIT FOR LOADING"

The logistics service supplier is responsible for presenting the equipment fit for loading the bulk liquid products, i.e.:
- in compliance with the specifications in this section
- suitable for the product to be loaded

Equipment thus needs to be inspected by the logistics service supplier, or his authorized agent, prior to arrival at the loading point.

1.2. EQUIPMENT

TANK/TANK CONTAINER

Tank equipment must conform to the following specifications:
- preferably made of stainless steel
- minimum allowable working pressure for:
  non-dangerous liquids: 1 bar / dangerous liquids: 1,75 bar
- be equipped with a vapor return connection to enable closed discharge and loading
- have properly identified earthing points
- the exterior of the tank should indicate the exact contents in l
- the exterior of the tank should indicate the exact tare mass and maximum allowable gross weight in kg.

In case of multi-compartment tank equipment:
- compartment numbers and exact contents (l) indicated on the exterior of the equipment
- outlet should be numbered in conformity with compartment numbers (NB numbering of the compartments starting from the front)(1=Fwd)
- each compartment must have its dedicated outlet (no manifold).

MANHOLE

The following specifications apply for the manholes:
- manhole gaskets must be made of PTFE or material compatible with the product
- must be located above the center line of the tank and above the highest possible liquid level of the compartment concerned
- minimum diameter 500 mm
- all swing bolts or equivalent fasteners present and in good operating condition
- manhole rims must be clean and free of dents
- manhole covers should open to more than 100 degrees, preferably 120 degrees
- manhole covers must be secured properly when opened less than 120 degrees (securing equipment should be part of the technical outfit of the tank/tankcontainer)
- no obstacles should prevent proper closure of loading cover
- manholes or manlid covers must be sealable
- cleaning hole : minimum diameter of 300mm.

COUPLING

Couplings on tanks for handling of standard bulk chemicals:

Top-loading and -unloading
- flange DN80
- pitchcircle 160 mm (flange PN10)
- holes 4x18 mm
- vapor return - flange DN50
- pitchcircle 125 mm(flange PN10)
- holes 4x18 mm
- ball valve or butterfly valve
- pressure connection
- express coupling DN 40.

Bottom unloading
- 3” coupling with dust cap or French coupling or TW coupling female or DIN 80 flange
  (NB: ECTA will support the design of a unique EU coupling in a separate Working Group).

Note: valves on discharge lines with bottom unloading - butterfly valve.

The following specifications apply for couplings:
- must be made of same material as the tank
- blind flange (with chain) must be present
- gaskets and product seals must be made of PTFE or compatible with the product.

Notes:
- all top valves have to be made blind by a cap or flange and equipped with at least one valve
- all bottom valves have to be made blind by a cap or flange and equipped with valve(s) according to the transport codes
- parts which may come in contact with the product must be product compatible.

PUMP/COMPRESSOR

Depending on the requirements by product or customers, the tank must be equipped with a compressor or a pump for discharge. If not otherwise specified, the standard equipment is the truck engine-driven compressor, equipped with the necessary filters to prevent any contamination. A preferred option is the use of a dedicated pump at the unloading location.

Additional specifications:
- all rotating parts of pumps or compressors must have safety protection made from non-sparking material
- the noise level, at a distance of 7.5 meters, under normal operating conditions, should be lower than 75 dB(A) as from 2001.

HOSES

A preferred option is the use of dedicated hoses of the unloading location.

The following specifications apply:
- minimum length is a total of 10 m
- suitable for the product to be discharged
- equipped with dust caps. Visible inspection of hoses while in the hose compartment must be possible
- the hoses applied shall have a rupture pressure of at least three times the maximum pressure,
- the hoses as well as the connections permanently fixed to them (couplings) shall be controlled at least once a year (visual control or test pressure) depending on the regulation
- anti static condition shall be tested
- test reports must be available from the haulier upon request or stamped/marked on the hose itself.

HEATING

Electrical or steam heating permitted.

If heating possibilities are fitted, tanks need to be insulated and equipped with standard external heating coils. Tanks with internal heating coils are not accepted.

Additional specifications:
- maximum operating steam pressure must be indicated on the exterior of the tank or near the steam inlet connection
- the hose connection size for heating should be 1 inch BSP
- for multi-compartment tanks, a temperature indicator is required for each compartment
- temperature indicator must be checked twice a year.

VAPOUR RETURN LINE

If fitted, vapour return line must have following specifications:
- line with diameter DN 50 (2")
- starting near the bottom unloading line (1 comp tank) /in the middle at same height of bottom unloading (multi comp tank)
- fitted with DN 50 female TW coupling
- line going up to the tank
- connection with vapour return on top of tank by means of flexible hose.

PRESSURE LINE

If fitted pressure line must have following specifications:
- line with diameter DN 25 (1")
- starting forward of the tank
- fitted with coupling, manometer, pressure relief valve, anti-return valve
- lining going up to the tank
- connection with pressure connection on top of the tank by means of flexible hose.

PRESSURE SAFETY DEVICES

As required by the actual relevant manufacturer and transport code(s).

HANDRAIL/WALKWAY

All tank/tank containers must be equipped with a handrail for all European traffic.

The following minimum specifications apply:
- the minimum width of the walkway must be 400 mm
- the minimum height of the handrail must be 1000mm along the walkway
- additional protection must exist at 50% of the maximum height
- horizontal tension test of 300 N in all directions
- the handrail can be installed/activated before entering the walkway.

SEALING

Fill opening and valves must be sealable.

2. BULK GRANULATE AND POWDERS

2.1. GENERAL

OBJECTIVES

The specifications for transportation equipment for loading at loading points, including loading points of contracted logistics service suppliers, are standard. This means that all these loading points will adhere to the specifications described in this document. Any deviation from, or exception to, these specifications must have a written approval from the shipper's representative.

ROAD/INTERMODAL

The specifications in this section primarily apply to silo/hopper trucks and containers used in the transport of bulk granulates and powders via road or intermodal transport.

COMPLIANCE

All contracted logistics service suppliers will be held responsible and accountable for presenting their equipment for loading of bulk granulates and powders in compliance with
- legal regulations (ADR, and RID, IMDG where this applies)
- national legislation for domestic transportation where this applies
- international legislation and applicable legislation of the countries of transit
- specifications mentioned in this section.

When applicable, a valid ADR certificate must be present for tractor, tank and trailer clearly indicating the tank code and vehicle code. In these cases, the driver must also be in possession of a valid professional ADR skill certificate.

"FIT FOR LOADING"

The logistics service supplier is responsible for presenting the equipment fit for loading bulk granulates and powdered products, i.e.
- in compliance with the specifications in this section
- suitable for the product to be loaded.

Equipment thus needs to be inspected by the logistics service supplier, or his authorized agent, prior to arrival at the loading point.

2.2. EQUIPMENT

EQUIPMENT MATERIAL

The equipment presented for the loading of granulate or powdered product must be made of aluminum (preferred) or stainless steel:
- minimum allowable working pressure for non-dangerous powders and granulates of 1 bar
- minimum allowable working pressure for dangerous powders and granulates in compliance with regulations (ADR, RID, IMO)
- tanks should indicate the content in m^3
- all welds and connection pieces must have a smooth surface
- all welding drops must have been removed
- any appendages fixed in any way, must not, if dislodged, be able to mix with the product
- have properly identified earthing points.

Notes:
- a fluidization cone must be installed in the unloading cone for unloading powdered product (except explosion-sensitive powdered products)
- for tank containers, the earthing cord is on the chassis.

GASKETS AND VALVES

The following specifications apply:
- all gaskets that come into contact with the product or air must be of neoprene rubber or PTFE, silicon rubber or compatible with the product
- gaskets must not protrude into product or airlines
- valves, in unloading lines, with internal stainless steel parts, must have PTFE seats or compatible with the product.

UNLOADING HOSES

The unloading hose must meet or exceed the test pressure of the tank and must be compatible with the product.

Minimum hose length must be 10 m (2x5 m), minimum diameter 4".

BLOWER

The following specifications apply:
- blowers must be of oil-free construction
- all rotating parts are to be properly protected, i.e. safety cover
- the connection hose between blower and header must be made of stainless steel
- an air filter must be inserted in the suction line of the blower to reduce contamination in the system and the filter.

FILTER

The following specifications apply:
- a suitable, stainless steel filter must be installed after the compressor in the air line before the manifold
- the filter must be shock-proof and capable of removing all particles larger than 5 microns (in air)
- internal metal parts are to be made of either stainless steel or aluminum
- the line between the filter and the blower must be constructed in such a way as to enable visual inspection
- a temperature indicator and a pressure indicator must be installed between the filter and the manifold; both indicators must be inspected twice a year.
- the filterhouse must be sealable, i.e. no bypass is allowed.

Filter casings may be provided with a sight glass to show the filter's condition; contamination may also be indicated by a green-red indicator on top of the casing.

AIR LINES

While several different unloading configurations are acceptable all must meet the following specifications:
- all air pressure relief valves, flexible or fixed to the equipment, must be made of aluminum, stainless steel or the accepted air lines must have an internal rubber lining
- these air lines must be constructed in such a way that visual inspection at all is always possible
- at least one safety relief valve must be installed between the filter and the tank
- these safety relief valves must be installed with the proper capacity and pressure settings
- at least one central non-return valve must be installed beyond the filter to prevent product particles entering the filter when the blower is turned off
- the number of check valves will depend on the location of the filter.

MANHOLE

The following specifications apply:
- manhole gaskets must be made of neoprene rubber or material compatible with the product
- must be located above the center line of the tank
- minimum diameter of 450 mm
- all swing bolts or equivalent fasteners present and in good operating condition
- manhole rims must be clean and free of dents
- manhole covers should open to more than 100 degrees, preferably 180 degrees
- manhole covers must be secured properly when open less than 120 degrees (securing equipment should be part of the technical outfit of the truck)
- no obstacles should prevent proper closure of loading cover
- manholes or manlid covers must be sealable.

HANDRAIL/WALKWAY

All tank/tank containers must be equipped with a handrail for all European traffic.

The following minimum specifications apply:
- the minimum width of the walkway must be 400 mm
- the minimum height of the handrail must be minimum 1000 mm along the walkway
- additional protection must exist at 50% of the maximum height
- horizontal tension test of 300 N in all directions.

UNLOADING VALVES

The following specifications apply:
- accepted valves are stainless steel butterfly valves
- easy inspection of these valves must be possible
- valve gaskets must be made of neoprene rubber, PTFE or compatible with the product
- to avoid unnecessary increase of temperature, the connection between the hopper and the valve must be flat, without edges.

COUPLING

The following specifications apply for couplings:
- gaskets have to be of neoprene rubber, silicon rubber, PTFE or compatible with the product
- couplings must fit exactly to the discharge hose
- the connection between coupling and hose must be such that no granules can remain in this connection.

SEALING

The following specifications apply:
- the fill opening and the valve must allow being sealed
- the fill openings, unloading cone and unloading valve must allow being sealed.

CERTIFICATION OF EQUIPMENT

Special attention will be focused on the following items:
- air filter in the suction line of the blower must be inspected at least once a year
- in-line filters: these are to be cleaned before each trip.
- small, stainless steel filters: these must be inspected at least twice a year
- large, stainless steel filters: these must be inspected at least once a year
- filters must clearly indicate the 5 micron spec. (in air).

INTERMODAL CONTAINERS

In addition to the requirements stated in “Transport Equipment Specifications - Packed Goods”, there are specific requirements for containers with innerliners used for the transport of bulk granules:
- wooden floors allowing entry of nails
- mounting points (height +/- 210 cm) to attach linen cord of the innerliner in the left and right corners
- on the sides, where the roof meets the sidewalls, a minimum of 4 mounting rings equally spread, and no more than 20 cm from the corners, must be available to position and attach the innerliner
- at the position where the steel bars (Ø =4 cm) are placed, wall slots must ensure proper locking of the bars. These slots must be +/- 7cm square
- it should also be possible to position (upper) steel bars (at 190 cm) at fixing points (ht. 220 - 225 cm) in the wall slots.

Note: containers with innerliners for LDPE must have a damwall profile such that the cardboard part of innerliner can be positioned and fastened behind this damwall profile.

UNLOADING EQUIPMENT

Although specifications apply for both hopper trucks and containers, it is recognized that the latter will be presented, in many cases, for loading on a standard chassis only. The specialized chassis with its accessories to enable unloading will thus normally not be presented for inspection at shipper’s locations.

It will be the responsibility of the carrier to present complete information on such equipment upon request.

3. PACKED GOODS

3.1. GENERAL

OBJECTIVE

The specifications for transportation equipment for loading at shipper's loading points, including loading points of contracted logistics service suppliers, are standard.

This means that all these shipping points will adhere to the specifications described in this section. Any deviation or exception from these specifications must have a written approval from shipper's representative.

ROAD/INTERMODAL

The specifications in this section primarily apply to packed cargo trucks/trailers and containers used in the transport of packed products via road or intermodal transport.

COMPLIANCE

All contracted logistics service suppliers will be held responsible and accountable for presenting their equipment for loading of packed products in compliance with
- international legislation (e.g. ADR/RID/ADNR/IMDG)
- national legislation for domestic transportation where this applies, and legal restrictions re. foodstuff/food grade transport in combination with chemicals (combined loads of chemicals and foodstuffs in the same loading space is not allowed)
- specifications mentioned in this document.

"FIT FOR LOADING"

The logistics service supplier is responsible for presenting the equipment fit for loading the packed products, i.e.
- in accordance with this specifications and all legal compliance requirements
- clean, dry, odour-free
- with proper and functioning cargo securement systems
- with the necessary legally required metal plates for transport of hazardous goods to be loaded
- suitable for the product to be loaded.

Equipment thus needs to be inspected by the logistics service supplier, or his authorised agent, prior to arrival at the loading point.

Note: The specifications in this section are primarily applicable to transport equipment. There exist requirements regarding required conditions or the transportation of specific products, i.e. compatibility, heating, cooling, stacking etc., which are detailed in the contract agreements or separate communications.

3.2. EQUIPMENT

TRAILERS/CONTAINERS

The following equipment is accepted:

- Tilt trailers
- Curtain side trailers with sideboards[1]
- Curtain side trailers without sideboards[1,2]
- Swap bodies
- Box vans[3]
- Containers[3]

Notes:
[1] Requirements curtain side trailers equipment:
- curtain strength : 42 t (Ultimate Tensile Strength)
- curtain streps : fitted in pockets within curtain
- belts are required every 60-70 cm
- all belts must be in proper operating condition (when this cannot be guaranteed, or the inspection at the loading point identifies failures, one layer of planks must be available to complement the cargo securement).

[2] Important: see table below for specific requirements.
[3] Depending on unloading capability at consignee.

Transport equipment

The following general specifications apply:

- the floor (plus sides/roof when applicable) must be smooth and free of objects (e.g. protruding nails)
- the loading space must structurally be in sound condition (e.g. watertight - no holes)
- the floor construction must allow fork-lift trucks (total weight 6000 kg) to enter the loading space
- the floor must be of a material to prevent slip or trip hazards (incl. at door entrance)
- the floor must be sized to allow lateral stuffing of 4 drums (Ø=58,5 cm) without overlapping seams
- all equipment should be sealable and easy to lock tightly from ground level
- sufficient (sunken) lashing points must be attached to the actual transport unit to enable proper securing of cargo
- equipment for load securement must meet governmental requirements and withstand forces of 3000 kg.

The following specific requirements apply:

1. access to curtains or tarpaulins must be possible without standing on the cargo
2. where tarpaulins/canvas is used to protect the cargo (flatbeds), these must be free of tears and holes
3. free of paint blisters and rust (containers)
4. curtain side trailers without sideboards must have “integrated” curtain belts
5. construction of the equipment is designed to withstand the forces set free under following conditions:
   b) emergency break
   c) emergency maneuver
   d) shunting
   e) ferry transport.

Applicability of specific requirements:

Transport equipment type	Specific req. (1)	Specific req. (2)	Specific req. (3)	Specific req. (4)	Specific req. (5)
Tilt trailer	y	y	-	-	a,b,d
Curtain side trailer with sideboards	y	y	-	-	a,b,d
Curtain side trailer without sideboards	y	y	-	y	a,b,d
Box van	-	-	y	-	a,b,c,d
Swap bodies	-	-	y	-	a,b,c,d
Container	-	-	y	-	a,b,c,d
Flatbed	y	y	-	-	a,b,d

LOADING ALLOWANCE

Loading of products is allowed under certain conditions and depending on the type of equipment:

	Non-palletized goods	Palletized Goods	IBC
Curtain side trailer	Single layer[1]	Double-stack[1]	Double-stack[1]
Tilt trailer	Double-stack[2]	Double-stack	Double-stack
Container	Double-stack	Double-stack[3]	Double-stack

[1] Cargo must be placed against the headboard
[2] Only when all products are non-hazardous
[3] Not in open-top containers

Special instructions on packing can be incorporated in the contract.

DIMENSIONS

Containers for loading of drums must have a minimum internal dimension of 2.34 m (width), 2.35 m (height) and drive-in height 2.28 m.

Maximum height of load from ground surface: 1.50 m.

Maximum allowed total height of vehicle: 4 m.

CONTACTS

Bernard BLET
Groupe SAMAT - Division Chimie
ZI de Seyssuel BP1654 — T + 33.4/74788037
38216 Vienne Cedex — F + 33.4/74788056
France — bernard.blet@groupesamat.com

Luc DRIESSEN
EWALS CARGO CARE
H. Fordlaan 20 — T +32.89/329303
3600 GENK — F +32.89/329302
Belgium — luc.driessen@eccgenk.be

Dirk GHEYS
Transport Gheys NV
Voortstraat 19 — T +32.14/812121
2400 Mol — F +32.14/816655
Belgium — dirk.gheys@gheys.com

Andres HERBADA
QUIMITRAN INTERMODAL
Edificio Plaza Castilla
Paseo de la Castellana,193
2ºPiso, Oficina 212 — T +34.91/3/89789
28029 MADRID — F +34.91/3789780
Spain — aherbada@grupotcs.com

Horst KUBEK
LKW WALTER
Internationale Transportorganisation AG
Zellerstrasse 1
PO Box 45 — T +43.5/7777-4200
6330 Kufstein — F +43.5/7777-54200
Austria — kubek@lkw-walter.com

Gerrit LANGEN
LANGEN
Postbus 90 — T +31.46/4788666
6160 AB GELEEN — F +31.46/4743985
The Netherlands — g.langen@langen.nl

Paul PEETERS
ExxonMobil
Hermeslaan 2 — T +32.2/7224410
1831 Machelen — F +32.2/7224337
Belgium — paul.peeters@exxonmobil.com

Leo PESKENS
EWALS CARGO CARE
H. Fordlaan 20 — T +32.89/329303
3600 GENK — F +32.89/329302
Belgium — l.peskens@ecc.be

Rudolf SCHEIBLER
BERTSCHI BELGIUM NV
Heizegemweg 2 — T +32.3/5460561
2030 ANTWERPEN — F +32.3/5460569
Belgium — rudolf.scheibler@bertschi.com

Jan SMIT
LYONDELL CHEMIE NED. BV
Weenapoint D
Weena 762 — T +31.10/2755791
ROTTERDAM — F +31.10/2755748
The Netherlands — ccejhs@lyondell.com

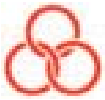
Luc SOLY
VOPAK CHEMICALS LOGISTICS BELGIUM N.V.
Haven 399 – Industrieweg 16 — T +32.3/5457312
2030 ANTWERPEN — F +32.0/5420213
Belgium — luc.soly@vopak.com

Erwin F. SPAANDERMAN
R.M.I. TRANSPORT & SUPPLY CHAIN
Seattleweg 11
PO Box 2538 — T +31.10/2831109
3000 CM ROTTERDAM — F +31.10/4956133
The Netherlands — erwin.spaanderman@rmi.nl

Nico VAN DEN OEVER
GRP MULTI-LOGISTICS BENELUX NV
Evence Coppeelaan 91 — T +32.89/354033
3600 GENK — F +32.89/355293
Belgium — nvdo@grp-group.com

Paul WAUTERS
Wauters Tanktransport
Zwaarveld 35 — T +32.52/479256
9220 Hamme — F +32.52/478872
Belgium — paul.wauters@wauterstt.be

Bert ZUIDEMA
DSM
P.O.Box 1163 — T +31.46/4773883
6160 BD Geleen — F +31.46/4770003
The Netherlands — bert.zuidema@dsm.com



Disclaimer:

This document is intended for information only and sets out guidelines for the standardisation of road transport equipment for specific goods. The information summarised in this brief is provided in good faith and, while it is accurate as far as the authors are aware, no representations or warranties are made with regard to its completeness. It is not intended to be a comprehensive guide to all the detailed aspects of road transport equipment.

ECTA wishes to thank the member companies Haesaerts Intermodal NV and Wauters Tanktransport, who generously offered the illustrations for this issue.

ECTA

Avenue de Tervueren, 149 • B-1150 Brussels • Belgium
Tel.: (32/2) 741.86.81 • Fax : (32/2) 741.86.82 • E-mail: ecta@ecta.be
www.ecta.be