Bulk Transport Container

Carlsberg Technical Requirements for the carriers

Version	Date	Revised topics/Name
1.0	03.02.2020	Transfer from old format
2.0	23.04.2021	Naming update (CB-PD-...) Updated: CB-PD-Blk-R039; CB-PD-Blk-R014; Added:CB-PD-BLK-R043
3.0	28.04.2022	Updated: CB-PD-Blk-R016
4.0	24.04.2023	Updated: CB-PD-BLK-R001; CB-PD-Blk-R024
5.0	05.08.2024	Updated: CB-PD-Blk-R037

Scope

This document is applicable for all liquid bulk transports within the Carlsberg Group and to or from license and 3PP partners.

The cleaning requirements are also applicable for all internal and external cleaning stations that are used for cleaning bulk equipment.

It is intended to cover all available liquids; however, special cleaning procedures may be applicable for other liquids such as e.g. concentrated mal base. These procedures will then be shared on a need-to-know basis.

Purpose

This document provides the minimum standards and requirements that are applicable and have to be followed for all bulk transports of liquids.

Definitions

AFB Alcohol Free Beverage – may contain up to 0.5% ABV

CIP Cleaning In Place

PAA Peracetic Acid

Equipment

CB-PD-Blk-R001

The equipment used for Carlsberg products transport shall only carry

- Beer
- Soft drinks
- Wine or water
- Liquid sugar*
- NAB concentrate

as its primary product. The tanks may be used for transport of other products in agreement with B&P Director. This must be a part of the written contract with the transportation company.

*If glucose syrup was transported it is required to perform rapid test after cleaning to ensure absence of glucose in the last rinse water. The test result must be noted in the cleaning certificate.

CB-PD-Blk-R002

Under no circumstances, the tanks must have been used or are used to transport:

- Dairy
- Aroma
- Oil products
- Juice pulp

CB-PD-Blk-R039

For safety reasons the tanker must be constructed in such a way that all service activities during loading and unloading must be done from the ground level.

The below picture shows with a maximum 30 cm step, which is still acceptable. If local legislation is stricter it has priority.

CB-PD-Blk-R003

All fittings must be secured against dust and dirt, which may arise during transport with a blind cap over the outlet. The outlet must be protected by a seal.

CB-PD-Blk-R004

The fittings of the tanker for liquid and CO2 must be according to DIN 11851, beer flange DN80 and CO2 flange DN25 unless there is an agreement with the receiving partner.

All fittings and valves must be 100% operational (no leakage etc.).

CB-PD-Blk-R005

Tankers must guarantee a temperature increase during transportation of no more than 1 °C in 24 hours at a temperature difference of 30 °C.

CB-PD-Blk-R006

Multi chamber tanks are allowed. They must be designed for the hygienic transport.

CB-PD-Blk-R007

The tanks must be made of stainless steel (1.4306/AISI 304L) and all internal surfaces, pipework, valves and equipment must be designed to allow problem free cleaning and sanitizing using standard CIP equipment.

CB-PD-Blk-R008

Sample point in the tank or in the pipe must be sealed to prohibit unauthorized access.

CB-PD-Blk-R038

Sampling valves must be of hygienic design (EHEDG-certified) and must allow efficient sterilization.

CB-PD-Blk-R009

Overpressure safety valve must be in place. Maximum acceptable efficiency defined in m3/h or hl/h for filling must match the filling flow (55 m3/h). Pressure relief pipe must be located at the highest point of tank/container.

CB-PD-Blk-R010

Vacuum safety valve must be in place with max acceptable efficiency defined in m3/h or hl/h for emptying matching the emptying flow (45 m3/h)

CB-PD-Blk-R011

The tanker must be equipped with a manometer, which allows reading the gas pressure.

CB-PD-Blk-R012

The tanker must have a minimum operating pressure of 2 bar.

CB-PD-Blk-R013

The tanks and/or chassis must be designed to secure complete filling and emptying of the tanks.

CB-PD-Blk-R014

The inlet and outlet must be placed in the back and at the bottom of the tank. The maximum distance from filling valve to end of chassis is 50 cm.

The below picture is showing an unacceptable tanker.

CB-PD-Blk-R015

The interior of the tankers must be inspected at least once per year. An inspection report must be available on request.

CB-PD-Blk-P009

It is recommended that tankers have internal (installed inside) cleaning devices (Rota jets, spray balls or similar) for cleaning. Cleaning should be done using these devices only.

CB-PD-Blk-R024

What?

The road tanker must be delivered completely empty of water.

Why?

Residual water can be mixed with the product creating dilution if not drained before filling as well as can freeze the main valve during winter time

How?

Drain completely the bulk tanker before CO2 compression

CB-PD-Blk-R025

In case the pressure in empty tanker upon arrival is lower than 0.5 bar, the tanker must be rejected.

CB-PD-BLK-R043

In case the pressure drop of the empty tanker upon arrival is > 0.2 bar, the tanker must be rejected for filling.

CB-PD-Blk-R026

Prior to filling the tankers must be:

- Empty
- Pressurized with either CO2, N2 or mixed gas (CO2/N2) with the purity according to the quality specification.
- Oxygen content must be checked and must not be higher than 500 ppm by volume – this applies for products that are sensitive for oxygen.

CB-PD-Blk-R017

The driver must be able to show the cleaning certificate (in English), including tanker number, name of responsible person, date of cleaning, name and address of cleaning station, the final internal pressure. It is also required to present the record of the last three loadings.

CB-PD-Blk-P002

The maximum height of the road tanker (chassis plus tank) should be 3.75 m

Bulk CIP Requirements

CB-PD-Blk-R016

The tankers must be cleaned and sanitized after each emptying according to the Cleaning Matrix as defined in Blk-R037 below. Refilling without cleaning can be done after thorough micro validation done by local Quality team. The validation protocol must be available on request. The boundary conditions are:

- The tanker will be refilled with the same product type (Lager, Cider).
- No flavor carryover can be detected.
- Filling can be done within 24 h without disinfection and within 3 days with disinfection.
- The tanker must be cleaned min. weekly.

CB-PD-Blk-R018

The tanker must to be sealed after cleaning and the seal number must be recorded on cleaning certificate.

CB-PD-Blk-R019

The tanker must be cleaned by a cleaning station certified by Carlsberg and approved by supplier audit

Cleaning Matrix

CB-PD-Blk-R037

The below Cleaning Matrix provides the requirements, which cleaning procedures have to be applied. If in doubt, the Special Cleaning Procedure (CB-PD-Blk-P017) with caustic must be applied.

		To								
		Filtered Lager Beer	Unfiltered and Wheat Beer	Ales, dry-hopped Beer	Beermix with sugar and flavor	Alcohol Free Beer	Cider	Soft Drinks	Strong Flavor	Water
From	Filtered Lager Beer	AC	AC	AC	AC	CAC	AC	AC	AC	CAC
	Unfiltered and Wheat Beer	CAC	AC	CAC	CAC	CAC	CAC	CAC	CAC	CAC
	Ales, dry-hopped Beer	CAC	CAC	AC	CAC	CAC	CAC	CAC	CAC	CAC
	Beermix with sugar and flavor	AC	AC	AC	AC	CAC	AC	AC	AC	CAC
	Alcohol Free Beer	AC	AC	AC	AC	AC	AC	AC	AC	CAC
	Cider	AC	AC	AC	AC	CAC	AC	AC	AC	CAC
	Soft Drinks	AC	AC	AC	AC	CAC	AC	AC	AC	CAC
	Strong Flavor	CAC	CAC	CAC	CAC	CAC	CAC	CAC	AC	CAC
	Water	AC	AC	AC	AC	AC	AC	AC	AC	AC
	Liquid sugar	CAC	CAC	CAC	CAC	CAC	CAC	CAC	CAC	CAC

Standard Cleaning Procedure (Acid Cleaning)

CB-PD-Blk-P016

The below table describes the standard cleaning procedure (AC) as mentioned in the Cleaning Matrix Blk-R037.

Step	Medium	Temperature [°C]	Time [min]	Concentration [%]	Comments
1	Drainage – completely emptying the bulk vessel				
2	Fresh water rinse	Ambient	5		
3	Acid circulation with disinfection	Ambient	> 20; maximum duration depending on cleaning equipment	Depending on product	• Combined cleaning acid + disinfection, e.g. PAA • Follow supplier recommendations
4	Fresh water rinse, drinking water quality	Ambient	Rinse until conductivity of water is reached in return flow		• Alternative water with ClO_2 or PAA – if allowed by local legislation
5	Pressurize with CO_2 or N_2 to 0.7 – 2.0 bars immediately after cleaning up to a maximum of **72 hours** prior to loading, unless formal dispensation is provided by the Site Quality Manager.				

Special Cleaning Procedure with Caustic (CAC)

CB-PD-Blk-P017

All tankers, which had as a previous load liquids with high sugar, containing yeast, or with strong or pungent flavors have to be cleaned with a more stringent procedure, as outlined below. This may also be applicable to other liquids, after a formal risk assessment or following local requirements. (was R-034 in previous version)

Step	Medium	Temperature [°C]	Time [min]	Concentration [%]	Comments
1	Drainage – completely emptying the bulk vessel				
2	Vent and rinse with air or CO_2 if the previous liquid had a strong or pungent flavor				
3	Fresh water rinse	Ambient	5		
4	Caustic circulation	Ambient	Duration depending on cleaning equipment and tank dimensions	0.5 – 1.0	• Always with appropriate additive • Possibility of in-line addition of PAA (min 550 ppm) as booster for flavor removal
5	Fresh water rinse	Ambient	Until conductivity of water is reached in return flow		
6	Acid circulation with disinfection	Ambient	> 20; maximum duration depending on cleaning equipment	Depending on product	• Combined cleaning acid + disinfection, e.g. PAA • Follow supplier recommendations
7	Fresh water rinse, drinking water quality	Ambient	Until conductivity of water is reached in return flow		• Alternative water with ClO_2 or PAA – if allowed by local legislation
8	Pressurize with CO_2 or N_2 to 0.7 - 2 bars immediately after cleaning up to a maximum of **72 hours** prior to loading, unless formal dispensation is provided by the Site Quality Manager.				

CB-PD-Blk-R036

All material for sealings and gaskets have to be checked for flavor carry-over and compatibility to the flavor and cleaning chemicals. If needed, materials have to be exchanged! (was R035 in previous version)