BRL-K21008/03
Datum 2023-03-31

Evaluation Guideline

for the Kiwa product certificate for
Rotational moulded polyethylene (PE) tanks, with or without spill containers, for the above ground storage of chemicals

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Progress

Preface

This evaluation guideline has been accepted by the Kiwa Board of Experts “Tanks, Tank installations & Appendages”, wherein all the relevant parties in the field of thermoplastics piping systems for the transport of liquid oil and related products and their vapours are represented. This Board of Experts also supervises the certification activities and where necessary require the evaluation guideline to be revised. All references to Board of Experts in this evaluation guideline pertain to the above mentioned Board of Experts.

This evaluation guideline will be used by Kiwa in conjunction with the Kiwa Regulations for Certification.

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Validation
This evaluation guideline has been declared binding by Kiwa on 31-03-2023

Contents

1 Introduction

1.1 General

This evaluation guideline includes all relevant requirements which are employed by Kiwa when dealing with applications for the issue and maintenance of a certificate for products used for the transport of liquid oil and related products and their vapours.

This guideline replaces the evaluation guideline BRL-K21008/02, dated 01-12-2013 and amendment dated March 15th, 2015.
The quality declarations issued and based on that guideline will lose their validity at a maximum period of 6 months after validation of this BRL.

For the performance of its certification work, Kiwa is bound to the requirements as included in NEN-EN-ISO/IEC 17065 “Conformity assessment - Requirements for bodies certifying products, processes and services”.

1.2 Field of application / scope

The tanks are designed for:
- Storage of chemicals and liquid fertilizers; (i.e. PGS 31);
- Above ground installation;
- Inside or outside installation;
- Atmospheric pressure;
- Normal continuous operating temperature of fluid up to 25 ^{0}C;
- Maximum filling capacity = 95% of the nominal capacity or lower if the legislation should require that;
- Smooth inner surface

The tanks are not designed for:
- Combined installation such as a battery arrangement;
- Storage under pressure in excess of approximately 5 kPa;
- Transport and distribution of fluids.

The spill containers are designed for:
- Secondary containment of chemicals;
- Above ground installation;
- Atmospheric pressure;
- Normal operating temperature up to 25 ^{0}C;
- 110% of the nominal capacity of the tank.

The tanks and spill containers are rotational moulded from polyethylene (PE).

The tank manufacturer is responsible for the correct functioning of the tank and spill container (if supplied) as a combined unit. The operation of the combined unit shall be documented and approved by the manufacturer of the tank.

The product certificate with technical approval is only applicable if the requirements mentioned in paragraph 4.6 and 4.7 are fulfilled.

1.3 Acceptance of test reports provided by the supplier

If the supplier provides reports from test institutions or laboratories to prove that the products meet the requirements of this evaluation guideline, the supplier shall prove that these reports have been drawn up by an institution that complies with the applicable accreditation standards, namely:
- NEN-EN-ISO/IEC 17020 for inspection bodies;

- NEN-EN-ISO/IEC 17021-1 for certification bodies certifying systems;
- NEN-EN-ISO/IEC 17024 for certification bodies certifying persons;
- NEN-EN-ISO/IEC 17025 for laboratories;
- NEN-EN-ISO/IEC 17065 for certification bodies certifying products.

Remark:
This requirement is considered to be fulfilled when a certificate of accreditation can be shown, issued either by the Board of Accreditation (RvA) or by another institution that has been accepted as a member with an agreement on mutual recognition and acceptance of accreditation, which have been drawn up within EA, IAF and ILAC. The accreditation shall refer to the examinations as required in this evaluation guideline. When no certificate of accreditation can be shown, Kiwa shall verify whether the accreditation standard is fulfilled.

1.4 Quality declaration

The quality declaration to be issued by Kiwa is described as a Kiwa product certificate.
A model of the certificate to be issued on the basis of this evaluation guideline has been included for information as Annex I.

2 Terms and definitions

2.1 Definitions

In this evaluation guideline, the following terms and definitions apply:

- **Basic material:** The basic material is the PE raw material with pigments and additives for processing into a tank or spill container. Only virgin material is used.
- **Board of Experts**: the Board of Experts “Tanks, Tank installations & Appendages” (TTA).
- **Brim full capacity**: Volume of water held by the tank filled through the filling orifice to the point of overflowing.
- **Certification mark**: a protected trademark of which the authorization of the use is granted by Kiwa, to the supplier whose products can be considered to comply on delivery with the applicable requirements.
- **Cover spill container:** The cover, if provided, is placed over and attached to the spill container to protect all connections to the storage tanks and to prevent the ingress of water and deleterious material.
- **Evaluation Guideline (BRL)**: the agreements made within the Board of Experts on the subject of certification.
- **Inspection tests**: tests carried out after the certificate has been granted in order to ascertain whether the certified products continue to meet the requirements recorded in the evaluation guideline.
- **Installation:** configuration consisting the pipe work, fittings and appliances;
- **IQC scheme (IQCS):** a description of the quality inspections carried out by the supplier as part of his quality system.
- **Initial investigation**: tests in order to ascertain that all the requirements recorded in the evaluation guideline are met.
- **Maximum filling capacity:** 95% of the nominal capacity.
- **Minimum wall thickness:** The minimum thickness measured at any one point of the tank or spill container wall.
- **Mobile storage of fluids:** The term mobile storage is applicable to tanks / spill containers which are suitable for transport when filled. These tanks / spill containers shall also comply with the requirements of ADR and therefore have the UN-identification required by ADR. The life expectancy is limited to 5 years from the date of manufacture. Such tanks are not included in this Evaluation Guideline.
- **Nominal capacity:** The nominal capacity of the tank is the value used in the tank calculations.

- **Nominal wall thickness:** The wall thickness for the tank and spill container that is related to the specified maximum filling capacity.

- **Product certificate**: a document in which Kiwa declares that a product may, on delivery, be deemed to comply with the product specification recorded in the product certificate.

- **Product requirements**: requirements made specific by means of measures or figures, focussing on (identifiable) characteristics of products and containing a limiting value to be achieved, which can be calculated or measured in an unequivocal manner.

- **Pre-certification tests**: tests in order to ascertain that all the requirements recorded in the Evaluation Guideline are met.

- **Spill container:** Container which is designed to enclose a tank to prevent leakage from the tank entering the environment and which can enable the detection of leakage.

- **Stationary storage of fluids:** The term stationary storage is applicable when tanks / spill containers are permanently installed in one location and / or are not suitable for transport when filled.

- **Supplier**: the party that is responsible for ensuring that the products meet and continue to meet the requirements on which the certification is based.

- **Tank:** A container for fluids, which can retain its designed shape and function in any stage of its designed working life as a stationary storage container.

- **Tank battery:** Two or more tanks installed parallel or in series, whereby use is made of common suction, filling and venting lines without the possibility of isolating any individual tank. A tank battery is not included in this Evaluation Guideline.

- **Virgin material:** This is the raw PE-material with additives, pigments or other substances.

3 Procedure for granting a product certificate

3.1 Initial investigation

The initial investigation to be performed are based on the (product) requirements as contained in this evaluation guideline, including the test methods, and comprises the following:

- type testing to determine whether the products comply with the product and/or functional requirements;
- production process assessment;
- assessment of the quality system and the IQC-scheme;
- assessment on the presence and functioning of the remaining procedures.

3.2 Granting the product certificate

After finishing the initial investigation, the results are presented to the Decision maker (see § 7.2) deciding on granting the certificate. This person evaluates the results and decides whether the certificate can be granted or if additional data and/or tests are necessary.

3.3 Investigation into the product and/or performance requirements

Kiwa will investigate the to be certified products against the certification requirements as stated in the certification requirements.
The necessary samples will be drawn by or on behalf of Kiwa.

3.4 Production process assessment

When assessing the production process, it is investigated whether the producer is capable of continuously producing products that meet the certification requirements. The evaluation of the production process takes place during the ongoing work at the producer.
The assessment also includes at least:

- The quality of raw materials, half-finished products and end products;
- Internal transport and storage.

3.5 Contract assessment

If the supplier is not the producer of the products to be certified, Kiwa will assess the agreement between the supplier and the producer.
This written agreement, which is available for Kiwa, includes at least: Accreditation bodies, scheme managers. The supplier will give Kiwa (or on behalf of Kiwa) the opportunity to perform the production process assessment on the activities carried out by the producer (see 3.4).

4 Product requirements and test methods

4.1 General

This chapter lists the product and performance requirements that have to be met by the tanks and spill containers made from rotational moulded polyethylene. These requirements will make part of the technical specification of the products, as included in the certificate.

If case of 'family of products' the testing program may deviate. This is to be assessed in consultation with the certification body.

4.2 Design drawings and calculations

The design details of the assembled product, materials to be used, lifting instructions, life expectancy of the product and the dimensional tolerances used in production shall be specified by the manufacturer in technical drawings and calculations. The Certification Body shall evaluate these drawings and design for approval. The manufacturer shall define all tank types, nominal sizes including capacities proposed for approval. Furthermore, the design shall be based on the following:

- a life expectancy of 20 years
- an normal ambient temperature between – 20 °C to + 30 °C;
  - If the ambient temperature will be higher or lower, additional calculations based on this temperatures are required.
- Material used tested in accordance and within the requirements of chapter 6.3.8 Resistance against UV-ageing for inside and outside installations.
- for and outside installations:
  - a maximum wind speed of 29,5 m/sec;
  - snow loads of a maximum of 700 N/m²

4.3 Requirements and test methods of material charecteristics

4.3.1 General materials used

Only virgin material shall be used for the manufacturing of the tank and / or spill container.

4.3.2 Density

The reference density of the raw material shall not be less than 934 kg/m³ when determined according to NEN-EN-ISO 1183-1 method B and NEN-EN-ISO 1183-2. Annealing of the specimen shall be in accordance with NEN-EN-ISO 1872-2.

4.3.3 Melt Mass-flow rate

The melt mass-flow rate (MFR) of the raw material shall be 4,0 ± 3,0 g/10 min at 190 °C when determined according to NEN-EN-ISO 1133, condition D (mass applied is 2,16 kg). The MFR of material taken from the moulded tank and from the spill container shall also be determined and shall not vary by more than 20% of the MFR determined for the raw material.

4.3.4 Tensile stress at yield

The tensile stress at yield of the polyethylene material shall not be less than 15 MPa when determined according to NEN-EN-ISO 527-2 on Type 1BA test pieces. A testing speed of 100 mm/min shall be used.

A compression moulded specimen of 3 ± 0,2 mm thickness shall be used for this test. The specimens shall be prepared using the conditions specified in Table 2 of NEN-

EN-ISO 1872-2 except that the moulding temperature used shall be 200 °C. The moulding press and mould used shall comply with NEN-EN-ISO 293. The test material shall be taken from a section of the moulded tank and spill container.

The following requirements shall be complied with:
- Elongation at yield shall not be more than 25%
- Elongation at break shall not be less than 200%

4.3.5 Resistance to chemicals

The polyethylene material of the tank and spill container shall be resistant to the chemical to be stored for a minimum period of 20 years. For testing of the resistance to chemicals the following shall apply:
- For the chemicals listed in the DIBt chemical resistance list (Medienlisten 40) for PE material with an A_{2K} factor ≤ 1.4 no additional testing will be required.
- For the chemicals in de Medienlisten 40 with an A_{2K} factor > 1.4 or where the Medienlisten 40 warns against the unconditional suitability against the chemical, the manufacturer shall provide the Certification Body with suitable calculations based on this A_{2K} factor proving the acceptability of the design.
- For the storage of chemicals not listed in the Medienlisten 40, or where the Medienlisten 40 gives no information regarding the value A_{2K} for PE, the manufacturer shall determine the A2K factor in consultation with the certification body. In some cases additional testing may be required to demonstrate the suitability of the material of the tank and spill container. This shall be achieved by testing with the actual chemical to be stored in accordance with the requirements of ISO 4433-1. Hereby the samples shall be exposed to the chemical which will be maintained at (40 ± 2) °C until equilibrium is reached i.e. the change in weight after 1 week is less than 0,5%. After exposure the material shall comply with the requirements of ISO 4433-2.
- For the storage of chemicals not listed in the Medienlisten 40, or where the Medienlisten 40 gives no information regarding the value A2K for PE, the manufacturer shall determine the A2K factor in consultation with the material supplier/ -producer.

4.3.6 Resistance against UV-ageing

The test shall be carried out in accordance with NEN-EN-ISO 4892-1 and NEN-EN-ISO 4892-2 using the following conditions:
- Xenon arc lamp;
- Black standard temperature, 65 °C;
- Relative humidity 65%;
- Spray cycle:
  - duration of spray : 18 minutes,
  - dry interval between spraying: 102 minutes.

<u>For outside installation</u>
The elongation at break of the polyethylene material, after exposure to a global irradiance of
34 GJ/m^2 (corresponding to an irradiance of 2,3 GJ/m^2 from the band of 300 nm to 400 nm), shall be greater than 50% of the initial elongation at break, as determined in paragraph 4.3.4. Test specimens shall be taken from a section of the moulded tank and spill container.

<u>For inside installation</u>
The elongation at break of the polyethylene material, after exposure to a global irradiance of
3,4 GJ/m^2 (corresponding to an irradiance of 0,23 GJ/m^2 from the band of 300 nm to 400 nm), shall be greater than 50% of the initial elongation at break, as determined in

paragraph 4.3.4. Test specimens shall be taken from a section of the moulded tank and spill container.

4.3.7 Electrostatic behaviour (optional)

Chemicals with a flash point of 60 °C or lower could form a risk during the filling operation due to the build-up of static electricity. When storing such chemicals the electrostatic behaviour according to IEC/TS 60079-32-1 shall be taken into consideration.

4.4 Requirements and test methods of the tank and spill container characteristics

4.4.1 Visual inspection / appearance

The inner and outer surface of all tanks and spill containers shall be smooth and flawless, without holes, blisters or other defects. The material shall be free of contamination. The manufacturer's quality system shall include clear procedures for approval and rejection.

4.4.2 Wall thickness

The wall thickness of the tank and spill container shall be:

Maximum filling capacity	Nominal wall thickness	Minimum wall thickness
> 450 litre < 1 000 litre	6,5 mm	3,3 mm
≥ 1 000 litre < 1 500 litre	7,5 mm	3,5 mm
≥ 1 500 litre < 2 000 litre	9,0 mm	3,9 mm
≥ 2 000 litre < 2 500 litre	9,0 mm	4,1 mm
≥ 2 500 litre < 3 000 litre	10,0 mm	4,3 mm
≥ 3 000 litre < 3 500 litre	10,0 mm	4,4 mm
≥ 3 500 litre < 4 000 litre	10,0 mm	4,8 mm
≥ 4 000 litre < 5 000 litre	10,0 mm	4,8 mm
≥ 5 000 litre < 7 500 litre	11,0 mm	5,1 mm
≥ 7 500 litre ≤ 10 000 litre	13,0 mm	5,4 mm

Table 4.1: Wall thickness of tanks and spill containers

The nominal wall thickness of the tank is the wall thickness at the critical areas of the tank i.e. at the lower knuckle radius with a lower tolerance of - 1,5 mm. At the less critical areas i.e. the upper part of the tank the minimum wall thicknesses as specified in the table, shall be met. Critical areas are areas where the design analyses show the stresses to be the highest.

The above specified wall thicknesses are suitable for the storage of chemicals with a maximum density of 1 400 kg/m³ and a maximum A_{2K} factor of 1.0 (see § 4.3.5). Should the manufacturer consider the storage of chemicals with a higher density or a A_{2K} factor higher than 1.0 then the wall thicknesses shall need to be increased to meet this application. In such cases the manufacturer shall obtain prior approval from the Certification Body for his design which will be based on the requirements of paragraph 4.2.

4.4.3 Resistance to impact

The tank and spill container will be tested separately according to NEN-EN 13575. The test shall be performed on the wall of the construction with and without ribs and at locations that have a low flexibility and are vulnerable to impact.

The tank shall be filled to the point of overflow according to the test procedure of

NEN-EN 13575. After impact the tank shall be visually inspected for leakage and shall be free of cracks.

The spill container shall be half filled with water. After impact the spill container shall be visually inspected for leakage and shall be free of cracks.

4.4.4 Pressure resistance (type test)

The hydrostatic pressure test is performed according to NEN-EN 13575. The minimum pressure for the test is 50 kPa. After testing the tank shall be leak tight. All types/sizes shall be tested. All connections on the tank shall be properly closed before this test. All connections shall be checked for leaks.

Additionally, all types of tanks shall be leak tight to pneumatic pressure of 30 kPa for at least 30 minutes. For safety reasons, the tank can be filled with water and pressurized with air for conducting this test.

4.4.5 Leak tightness (production test)

All connections on the tank shall be properly closed before performing this test. All connections shall be checked for leaks using a soap water solution or equivalent.

All tanks shall be leak tight to pneumatic pressure of 30 kPa for at least 15 seconds

OR

All tanks shall be leak tight to pneumatic pressure of 10 kPa for at least 60 seconds

OR

All tanks shall be leak tight when completely filled with water for a period of at least 24 hours.

4.4.6 Deformation

The tank and the spill container shall be tested for deformation as follows:

4.4.6.1 Deformation of the tank

The test shall be performed according to NEN-EN 13575.

4.4.6.2 Deformation of the spill container

Test procedure

- The spill container and tank shall be set up under normal assembled conditions.
- The tank and spill container shall be conditioned for 48 hours at 20 ± 5 °C.
- The tank and spill container shall be located on a flat surface with reference to a measuring grid.
- The initial width (W_i) and the length (L_i) shall be measured while the tank and spill container are still empty and taken as the original dimensions.
- A volume of water at a temperature of 16 ± 6° C and equal to 110% of the brimful capacity of the tank shall be 'filled' in the assembled combination of tank and spill container so that the liquid level in the tank and in the spill container are equal in height measured from the flat surface.

  Note: The tank does not have to be perforated for this test to ensure that the liquid levels are the same in the tank and the spill container. However, both tank and spill container have to be filled at the same time while ensuring that the difference in the separate liquid levels is minimised during filling.
- When filled the width (W_i) and the length (L_i) are measured at day 5, 10 and 15.
- At day 15 the final width (W_f) and length (L_f) are measured.

- The change in width and length of the spill container is calculated by deriving the percentage of change from the final width and length with respect to the initial width and length.

The deformation shall comply with the following:
- Maximum increase of width 13,5 %
- Maximum increase of length 12,5 %

4.4.7 Elongation of the tank (optional)

This test is optional and is only required for compliance with NEN-EN 13575. The test shall be performed according to NEN-EN 13575.

4.4.8 Lifting test

The tank and spill container shall be resistance to the lifting forces during transport and installation. The tank shall be filled with 10% of its maximum filling capacity with water and the spill container shall be lifted in accordance with the manufacturer's instructions for a period of 48 hours. After this test the tank/spill container shall show no visible signs of deformation. Should the tank / spill container be equipped with lifting lugs or handles (at least two lifting lugs or handles suitable for transport of the assembled product are required) then these lugs or handles shall show no visible signs of deformation.

4.4.9 Connections on the tank

Each assembled tank shall be equipped with at least a connection for the fill pipe at the opposite site of the vent (as far away as possible), connection for the suction, fluid level indicator, fluid level switch and a vent connection at the highest point of the tank are required. The connection size of the vent shall not be less than 1.5 times the size of the largest size of fill pipe or suction pipe, to avoid either over pressure or vacuum.

All connections shall preferably be installed at the top of the tank and above the maximum fluid level. Should connections below the fluid level be necessary then these shall be fitted with a flange connection.

The connections on the tank shall be resistant to the fluid to be stored. Only welded- or rotational moulded connections (with threaded sockets, 3-piece couplings or flanges) are allowed. For all connections, the distance between the outside of the storage tank and the bottom of the flange must be designed so that the mounting of the counter-flange or other connection can be carried out. All flange surfaces should be flat and horizontal/vertical after welding.

4.4.10 Internal piping in the tank

The internal piping shall form an integral part of the assembled product. The manufacturer shall test the pipes after assembly.

Piping	Requirements
Fill pipe	If provided, this pipe shall have a 5 mm diameter hole as high as possible. When flammable fluids are being stored, this hole shall be reduced to 3 mm
Suction pipe	If provided, the distance of the lowest point of this pipe to the bottom of the tank shall be at least the diameter of the suction pipe
Fluid level indicator	If provided, this pipe shall have a 5 mm diameter hole as high as possible. When fluids with a flash point of 60 °C or lower are being stored, this hole shall be reduced to 3 mm
Vent	No internal pipe allowed

Table 4.2: Tank internal piping

Due to the hydraulic cyclical pressure all piping shall be at least PN 16. There shall be no openings in the internal piping with the exception of the pipe used for the fluid level indication (if applicable) and the fill pipe which shall be provided with a hole of 3 mm diameter as high as possible. All pipes shall be resistant to the fluid to be stored and shall be in accordance with NEN-EN-ISO 15494.

4.4.11 Manholes and inspection openings

Tanks can be equipped with a manhole for accessing the tank. The manhole opening shall have a minimum internal diameter of 600 mm and shall be located on the top of the tank.

The inspection opening shall have a diameter of not less than 100 mm, and shall be provided with a means of being secured in place so that it can only be used for the intended purpose.

Note: National regulations may require the re-qualification of a tank at periodic intervals. If these regulations stipulate that an internal inspection of the tank has to be carried out by a qualified inspector then a manhole is recommended. If an adequate internal inspection of the tank is not possible, the tank will be rejected after the first re-qualification period.

4.4.12 Elastomeric sealing elements

Elastomeric sealing elements shall be resistant to the chemicals to be stored. This shall be demonstrated in writing by the manufacturer of the sealing element based on the test reports of the actual compound supplied.

When no information is available regarding the chemical resistance of the elastomeric sealing element to the chemical to be stored then this shall be subjected to testing. The testing shall be based on the requirements of NEN-EN 681-1 (or equivalent) whereby the testing shall be done with the chemical to be stored. After performing the swelling test there shall be no visual deterioration of the elastomeric seal.

4.5 Periodic recertification of tank installations

All tank installations used for the storage of chemicals require to be recertified after a prescribed period. In order to facilitate this recertification the tank shall be provided with two test strips made of the parent polyethylene material of 30 cm length x 10 cm width x same thickness as the tank wall and shall be obtained from the material from the manhole or inspection opening. Alternatively, the test strips can be rotational moulded in a separate mould that is subjected to the same production cycle and is produced simultaneously with the storage tank. The test strips shall be foreseen with two notches in order to facilitate the breaking off of the test strip in 3 equal pieces of 10 x 10 cm. The test strips shall be affixed by means of a polyethylene thread or equivalent to the suction pipe. One test strip shall be at an approximate distance of 5 cm from the tank bottom in order to ensure it is continuously exposed to the chemical stored. The other test strip shall be at an approximate distance of 5 cm from the top of the tank in order to ensure that it is continuously exposed to the vapours of the chemical stored. The test strips shall be indelibly marked with the tank serial number and the original wall thickness. Measures shall be taken to ensure that the test strips can only be removed from the tank by an approved body.

4.6 Installation and user instructions

The manufacturer shall provide proper written installation and users' instructions in the language of the country where the tank is to be installed and used. These instructions shall reference compliance with the national environmental regulations pertaining to the storage of chemicals. National regulations can stipulate requirements for preventing accidental impact to the tank and spill container and

requirements for the overfill prevention and anti-siphon devices. National regulations stipulate that the installation is to be carried out by installers certified in accordance with the requirements of BRL SIKB 7800.

In all cases the appendages used shall be resistant to the chemical stored and this shall be suitably demonstrated by the tank installer.

4.7 Documentation to be supplied with tank and spill container

Every PE-tank / spill container shall be supplied with at least the following documents:

- Installation / user instructions in the language of the country where the tank is to be installed and used in. The certification body shall approve these instructions.
- A unique tank / spill container compliance document with the approval of the certification body in relation to the product certificate with technical approval.

4.8 Tank and spill container identification

Each PE-tank and spill container shall be indelibly marked with the following items:

- Manufacturer's name and/or trade name;
- Kiwa certification mark;
- Serial number of the tank and spill container;
- Month and year of manufacture;
- Maximum filling capacity of the tank in litres or m^3;
- Location of the storage tank: Inside and/or outside;
- Factory tested: With air at 0,1/0,3 bar/at full hydrostatic pressure with water for 24 hours*;
- Maximum operating temperature of chemical to be stored;

* = Stipulate as applicable

When this information is provided on an identification label, this label shall be mounted at eye level and provisions shall be made to ensure that this label cannot be removed from the tank / spill container. Both the tank and the spill container shall be provided with their own identification label. Should the spill container height be such that the tank identification label is not directly visible, a second tank identification label shall be mounted next to the identification label of the spill container.

5 Quality system requirements

5.1 General

This chapter contains the requirements that have to be fulfilled by the manufacturer's quality system.

5.2 Manager of the quality system

Within the manufacturer's organisational structure an employee shall be responsible for managing the manufacturer's quality system.

5.3 Internal quality control schedule / quality plan

As part of the quality system the manufacturer must implement an internal quality control schedule (IQC schedule).

In this IQC-schedule the following must be demonstrably recorded:

- which aspects are inspected by the manufacturer;
- according to which methods these inspections are carried out;
- how often these inspections are carried out;
- how the inspection results are registered and stored.

This IQC schedule shall be in the format as shown in Annex III. The schedule must be detailed in such a way that it provides Kiwa sufficient confidence that requirements will be continuously fulfilled.

Process control by the manufacturing shall be performed according to ISO 2859-1, with an inspection and AQL-level to be approved by the certification body.

5.4 Qualification of personnel

All welders involved in the production of the tanks and spill containers shall be qualified for this work in accordance with the procedures of the tank manufacturer. This also applies to the personnel carrying out the dye penetrant inspection, if applicable. The procedures used and the scope of the qualification of each person shall be documented. The manufacturer shall review and renew this documentation on a yearly basis.

5.5 Qualification/approval of special processes

All welding procedures shall be approved by the manufacturer prior to releasing these procedures for production purposes. This also applies to the personnel operating the rotational moulding machines. The qualification of personnel shall be in accordance with these approved procedures. The approvals shall be documented and the manufacturer shall review and renew this documentation on a yearly basis.

5.6 Procedures and working instructions

The supplier shall be able to submit the following:

- Procedures for:
  - Dealing with products showing deviations;
  - Corrective actions to be taken if non-conformities are found;
  - Dealing with complaints about products and/or services delivered;
- The working instructions and inspection forms used.
- Other requirements to be met by the quality system

5.7 Design Changes

Design changes of the certified products shall always be reported to Kiwa prior to the start of production. Kiwa shall evaluate these changes in order to determine the impact these changes have on the initial approved design and to determine which type tests shall have to be repeated.

Products that have been subjected to a design change can only be identified with the Kiwa quality stamp after they have been given a written approved by Kiwa.

5.8 Documentation retention

Unless otherwise specified, all qualification and inspection records, test reports and material certificates shall be retained for a period of at least 10 years.

6 Summary of tests and inspections

This chapter contains a summary of the following tests and inspections to be carried out in the event of certification:

- **initial evaluation:** tests in order to ascertain that all the requirements recorded in the evaluation guideline are met;
- **Surveillance assessment:** assessment carried out after the certificate has been granted in order to ascertain whether the certified products continue to meet the requirements recorded in the evaluation guideline;
- **inspection of the quality system of the supplier:** monitoring compliance of the IQC scheme and procedures.

6.1 Test matrix

Description of requirement	Article no. of BRL	Category (see note)	Tests within the scope of		
			Initial evaluation	Surveillance assessment after issue of the certificate	
				Assessment	Frequency
Design					
Design drawings and calculations	4.2	1	Yes	Yes	Every assessment
Requirements for material characteristics					
General materials used	4.3.1	1	Yes	Yes	Every assessment
Density	4.3.2	1	Yes	Yes*	1/year
Melt Mass-flow rate	4.3.3	1	Yes	Yes*	1/year
Tensile stress at yield	4.3.4	1	Yes	Yes	1/year
Resistance to chemicals	4.3.5	1	Yes	Yes	When material changed
Resistance against UV-ageing	4.3.6	1	Yes	Yes	When material changed
Electrostatic behaviour (optional)	4.3.7	1	Yes	Yes	When material changed
Requirements for tank and spill container					
Visual inspection / appearance	4.4.1	3	Yes	Yes	Every assessment
Wall thickness	4.4.2	1	Yes	Yes	Every assessment
Resistance to impact	4.4.3	2	Yes	Yes	When design changed
Pressure resistance (type test)	4.4.4	1	Yes	Yes	When design changed
Leak tightness (production test)	4.4.5	1	Yes	Yes	Every assessment
Deformation	4.4.6	2	Yes	Yes	When design changed
Elongation of the tank (optional)	4.4.7	2	Yes	Yes	When design changed
Lifting test	4.4.8	2	Yes	Yes	When design changed
Connections on the tank	4.4.9	1	Yes	Yes	Every assessment
Internal piping in the tank	4.4.10	2	Yes	Yes	Every assessment
Manholes and inspection openings	4.4.11	2	Yes	Yes	Every assessment
Elastomeric sealing elements	4.4.12	2	Yes	Yes	Every assessment
Periodic recertification of tank installations	4.5	2	Yes	Yes	Every assessment
Installation and user instructions	4.6	2	Yes	Yes	1x/year
Documentation to be supplied with tank and spill container	4.7	2	Yes	Yes	Every assessment
Tank and spill container identification	4.8	1	Yes	Yes	Every assessment
Quality system requirements					
Internal quality control schedule / quality plan	5.3	2	Yes	Yes	Every assessment
Qualification of personnel	5.4	2	Yes	Yes	1x/year
Qualification/approval of special processes	5.5	2	Yes	Yes	1x/year
Procedures and working instructions	5.6	3	Yes	Yes	1x/year
Design Changes	5.7	1	Yes	Yes	Every assessment
Documentation retention	5.8	3	Yes	Yes	Every assessment
Yes* = Certificate of conformity (specifications from suppliers)					

Note:
Non-conformities can be reported during the surveillance audits. These non-conformities can be classified into the following categories:

1. Critical (Major): These non-conformities can lead to a dangerous situation or result in a substandard product. The manufacturer shall, after approval from the certification body, implement corrective actions to rectify the situation within a maximum period of 2 weeks. Failure to do so shall result in the withdrawal of the certificate.
2. Important (Minor): These non-conformities can in the long term lead to a substandard product. The manufacturer shall, after approval from the certification body, implement corrective actions to rectify the situation within a maximum period of 3 months. Failure to do so shall result in the withdrawal of the certificate.
3. Less important (Minor): These non-conformities are less important but shall be rectified within a reasonable amount of time. The certification body shall check the corrective action taken during the following surveillance audit.

During the initial evaluation of the product, type tests have to be performed to determine whether the product meets the specified performance and product requirements. The requirements that shall be fulfilled in order to qualify for certification are stated in the above matrix. In the event of a change of the raw material or the supplier thereof the type tests shall be repeated by the tank manufacturer.

The quality system of the manufacturer is also audited during the initial evaluation.

After certification the certification body shall periodically assessment the manufacturer for compliance with this Evaluation Guideline. During these assessments a periodic repetition of some of type tests can also be required.

6.2 Inspection of the quality system of the supplier

The quality system of the supplier will be checked by Kiwa on the basis of the IQC scheme.
The inspection contains at least those aspects mentioned in the Kiwa Regulations for Certification.

7 Agreements on the implementation of certification

7.1 General

Beside the requirements included in these evaluation guidelines, the general rules for certification as included in the Kiwa Regulations for Certification also apply.

7.2 Certification staff

The staff involved in the certification may be sub-divided into:

- Certification assessor/Reviewer (**CAS/RV**): in charge of carrying out the pre-certification tests and assessing the inspectors' reports;
- Site assessor (**SAS**): in charge of carrying out external inspections at the supplier's works;
- Decision maker (**DM**): in charge of taking decisions in connection with the pre-certification tests carried out, continuing the certification in connection with the inspections carried out and taking decisions on the need to take corrective actions.

7.2.1 Qualification requirements

The competency criteria for the certification personnel are set in the table below. Education and experience of the concerning certification personnel shall be recorded demonstrably.

Basic requirements	**Evaluation criteria**
Knowledge of company processes Requirements for conducting professional assessments on products, processes, services, installations, design and management systems.	*Relevant experience: in the field* **SAS, CAS/RV** : 1 year **DM**: 5 years inclusive 1 year with respect to certification Relevant technical knowledge and experience on the level of: **SAS**: High school **CAS/RV, DM** : Bachelor
Competence for execution of site assessments. Adequate communication skills (e.g. reports, presentation skills and interviewing technique).	**SAS**: Kiwa Assessment training or similar and 4 site assessments including 1 autonomic under review.
Execution of initial examination	**CAS**: 3 (initial) assessments under review.
Conducting review	**RV**: conducting 3 reviews

Technical competences	**Evaluation Criteria**
Education	**General**: Education in one of the following technical areas: • Mechanical Engineering; • Engineering.
Testing skills	**General:** • Conducting tests (per scheme).

Experience - specific	**CAS** • 3 complete applications (excluding the initial assessment of the production site) under the direction of the **PM** • 1 complete application self-reliant (to be evaluated by **PM**) • 3 (initial) assessments of the production site under the direction of the **PM** • 1 (initial) assessment of the production site self-reliant (witnessed by **PM**) **SAS** • 4 inspection visits conducted self-reliant (witnessed by **PM**)
Skills in performing witnessing	**PM** Internal training witness testing

Legenda:
- Certification assessor (**CAS**)
- Decision maker (**DM**)
- Product manager (**PM**)
- Reviewer **(RV)**
- Site assessor (**SAS**)

7.2.2 Qualification Certification staff
The qualification of the Certification staff shall be demonstrated by means of assessing the knowledge and experience to the above mentioned requirements. In case staff is to be qualified on the basis of deflecting criteria, written records shall be kept.

7.3 Report initial investigation and surveillance assessments
The certification body records the results of the initial investigation and surveillance assessment in a report.
This report shall comply with the following requirements:
- completeness: the report provides a verdict about all requirements included in the evaluation guideline;
- traceability: the findings on which the verdicts have been based shall be recorded and traceable;
- basis for decision: the **DM** shall be able to base his decision on the findings included in the report.

7.4 Decision for granting the certificate
The decision on the granting a certificate or the imposition of measures regarding to the certificate must be based on results recorded in the dossier
The results of an initial evaluation and a surveillance assessment (in case of a critical (Major) non-conformities) must be assessed by a reviewer.
Based on the review performed, the decision maker determines whether:
• The certificate can be issued,
• Sanctions are imposed,
• The certificate must be suspended or withdrawal.
The decision for granting the certificate shall be made by a qualified Decision maker which has not been involved in the pre-certification tests.
The decision shall be recorded in a traceable manner.

7.5 Nature and frequency of third party assessments
The certification body shall carry out surveillance assessments on site at the supplier at regular intervals to check whether the supplier complies with his obligations. The Board of Experts decides on the frequency of assessments.

At the time this BRL entered into force, the frequency of assessments amounts 2 assessment(s) per year.

The assessment program on site shall cover at least:
- the product requirements;
- the production process;
- the suppliers IQC scheme and the results obtained from inspections carried out by the supplier;
- the correct way of marking certified products;
- compliance with required procedures;
- handling complaints about products delivered.

The results of each assessment shall be recorded by Kiwa in a traceable manner in a report.

7.6 Non conformities

When the certification requirements are not met, measures are taken by Kiwa in accordance with the sanctions policy as written in the Kiwa Regulation for Certification.
The Sanctions Policy is available through the “News and Publications” page on the Kiwa website "Kiwa Regulation for Certification".

7.7 Report to the Board of Experts

De certification body shall report annually about the performed certification activities. In this report the following aspects are included:
- mutations in number of issued certificates (granted/withdrawn);
- number of executed assessments in relation to the required minimum;
- results of the inspections;
- required measures for established Non-Conformities;
- received complaints about certified products.

7.8 Interpretation of requirements

The Board of Experts may record the interpretation of requirements set out in this evaluation guideline in one or more interpretation document(s). This(The) interpretation document(s) is/are available for the members of the Board of Experts, the certification bodies and the certificate holders on this evaluation guideline. This interpretation document(s) is/are published on the Kiwa website.

7.9 Specific rules set by the Board of Experts

No specific rules has been defined by the Board of Experts. If specific rules are defined these rules shall be followed by the certification body.

8 Titles of standards

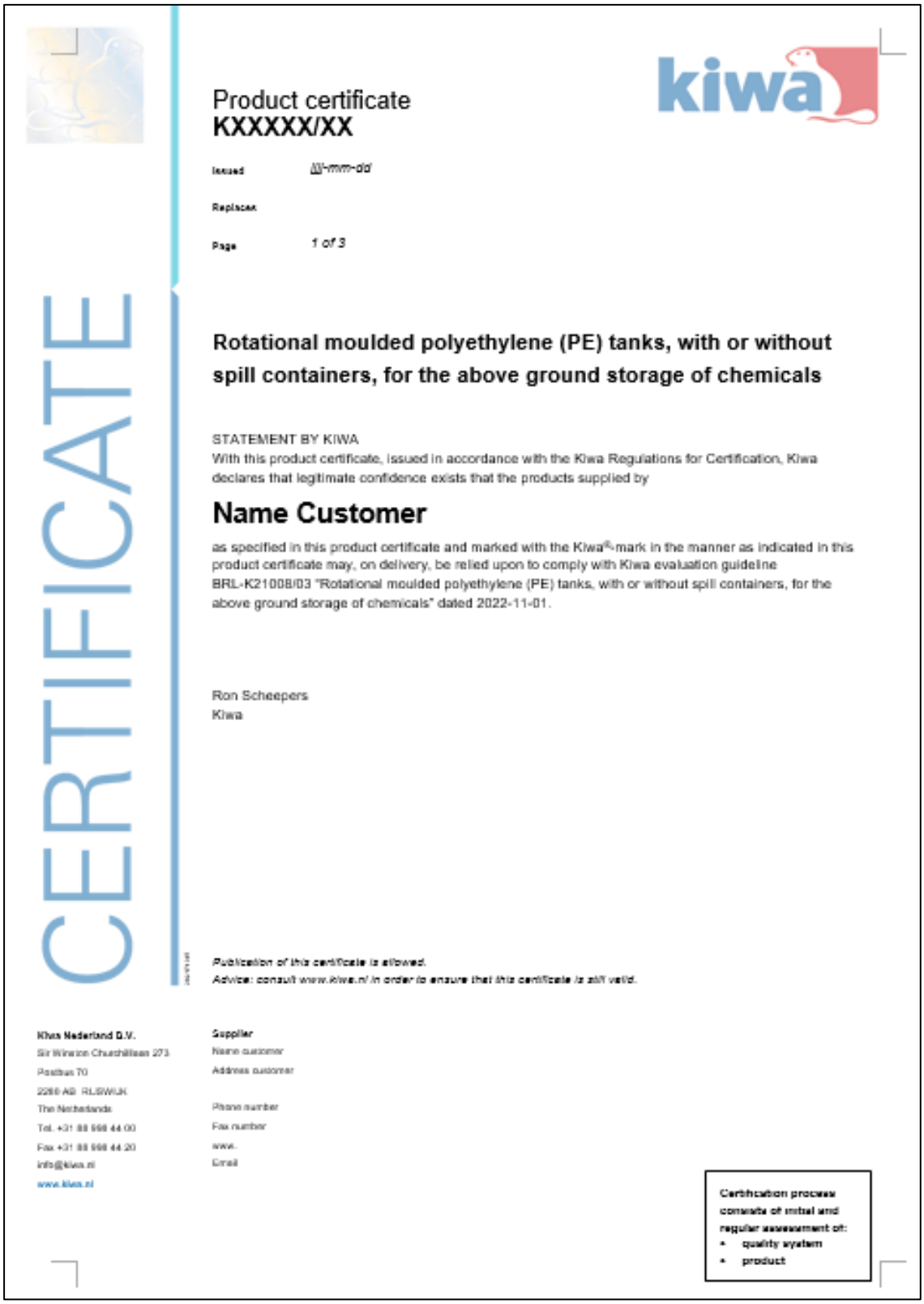
8.1 Standards / normative documents

Number	Title	Version*
NEN-EN ISO/IEC 17020	Conformity assessment - General criteria for the operation of various types of bodies performing inspection	
NEN-EN ISO/IEC 17021	Conformity assessment - Requirements for bodies providing audit and certification of management systems	
NEN-EN ISO/IEC 17024	Conformity assessment - General requirements for bodies operating certification of persons	
NEN-EN ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories	
NEN-EN ISO/IEC 17065	Conformity assessment - Requirements for bodies certifying products, processes and services	
BRL SIKB 7800	Tankinstallaties	
DIBt Medienlisten 40	Medienlisten 40 für Behälter, Auffangvorrichtungen und Rohre aus Kunststoff	
ISO 2859-1	Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection	
ISO 4433-1	Thermoplastic pipes – Resistance to liquid chemicals – Classification – Part 1: Immersion method	
ISO 4433-2	Thermoplastic pipes – Resistance to liquid chemicals – Classification – Part 2: Polyolefin pipes	
NEN-EN 681-1	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber	
NEN-EN 13575	Thermoplastic tanks made from blow or rotational moulded polyethylene – Tanks for the above ground storage of chemicals – Requirements and test methods	
NEN-EN-ISO 293	Plastics -- Compression moulding of test specimens of thermoplastic materials	
NEN-EN-ISO 527-2	Plastics — Determination of the tensile properties — Part 2: Test conditions for moulding and extrusion plastics	

NEN-EN-ISO 1133	Plastics – Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics
NEN-EN-ISO 1183-1	Plastics -- Methods for determining the density of non-cellular plastics -- Part 1: Immersion method, liquid pyknometer method and titration method
NEN-EN-ISO 1183-2	Plastics -- Methods for determining the density of non-cellular plastics -- Part 2: Density gradient column method
NEN-EN-ISO 1872-2	Plastics -- Polyethylene (PE) moulding and extrusion materials -- Part 2: Preparation of test specimens and determination of properties
NEN-EN-ISO 4892-1	Plastics -- Methods of exposure to laboratory light sources -- Part 1: General guidance
NEN-EN-ISO 4892-2	Plastics -- Methods of exposure to laboratory light sources -- Part 2: Xenon-arc lamps
NEN-EN-ISO 11357-6	Plastics — Differential scanning calorimetry (DSC) — Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT)
NEN-EN-ISO 15494	Plastics piping systems for industrial applications — Polybutene (PB), polyethylene (PE) and polypropylene (PP) — Specifications for components and the system – Metric series
NEN-ISO 11357-5	Plastics — Differential scanning calorimetry (DSC) — Part 5: Determination of characteristic reactioncurve temperatures and times, enthalpy of reaction and degree of conversion
IEC/TS 60079-32-1	Electrostatics — Code of practice for the avoidance of hazards due to static electricity
PGS 28	Publicatiereeks Gevaarlijke Stoffen: Vloeibare aardolieproducten – Afleverinstallaties en ondergrondse opslag
PGS 30	Publicatiereeks Gevaarlijke Stoffen: Vloeibare aardolieproducten – Buitenopslag in kleine installaties
PGS 31	Overige gevaarlijke vloeistoffen: opslag in ondergrondse en bovengrondse tankinstallaties

*) When no date of issue has been indicated, the latest version of the document is applicable.

Annex I Model certificate (example)



CERTIFICATE

Product certificate
KXXXXX/XX

kiwa

Issued dd-mm-dd

Replaces

Page 1 of 3

Rotational moulded polyethylene (PE) tanks, with or without spill containers, for the above ground storage of chemicals

STATEMENT BY KIWA
With this product certificate, issued in accordance with the Kiwa Regulations for Certification, Kiwa declares that legitimate confidence exists that the products supplied by

Name Customer

as specified in this product certificate and marked with the Kiwa®-mark in the manner as indicated in this product certificate may, on delivery, be relied upon to comply with Kiwa evaluation guideline BRL-K21008/03 "Rotational moulded polyethylene (PE) tanks, with or without spill containers, for the above ground storage of chemicals" dated 2022-11-01.

Ron Scheepers
Kiwa

Publication of this certificate is allowed.
Advice: consult www.kiwa.nl in order to ensure that this certificate is still valid.

Kiwa Nederland B.V.
Sir Winston Churchilllaan 273
Postbus 70
2280 AB RIJSWIJK
The Netherlands
Tel. +31 88 998 44 00
Fax +31 88 998 44 20
info@kiwa.nl
www.kiwa.nl

Supplier
Name customer
Address customer

Phone number
Fax number
www.
Email

Certification process consists of initial and regular assessment of:
- quality system
- product

Kiwa® product certificate KXXXXX/01

Rotational moulded polyethylene (PE) tanks with spill containers for the above ground storage of chemicals

PRODUCT SPECIFICATION

Type 2200 tank with spill container

APPLICATION AND USE

The tanks are designed for the above ground atmospheric storage of chemicals at a normal operating temperature of 30 °C. The maximum filling capacity is 95% of the nominal capacity. The tanks are not suitable for:

- a combined installation such as a battery arrangement;
- storage under pressure in excess of approximately 5 kPa;
- storage of flammable fluids such as domestic heating oil, kerosene and diesel fuels;
- transport and distribution of fluids.

The spill containers are designed for the above ground secondary containment of the chemicals contained in the storage tanks. The spill containers have a volume of 110% of the nominal volume of the tank.

The tanks and spill containers are rotational moulded from polyethylene (PE).

All tanks shall be installed with a secondary containment for retaining the chemicals stored. The approval of the secondary containment construction on site is the responsibility of the local authorities or the certification body involved with the tank installation. When no approved construction on site fulfils this requirement, a spill container as specified in this Evaluation Guideline shall be used. The tank manufacturer is responsible for the correct functioning of the tank and spill container as a combined unit. The operation of the combined unit shall be documented and approved by the manufacturer of the tank.

Installation and user instructions

The manufacturer shall provide proper written installation and users' instructions in the language of the country where the tank is to be installed and used. These instructions shall reference compliance with the national environmental regulations pertaining to the storage of chemicals. National regulations can stipulate requirements for preventing accidental impact to the tank and spill container and requirements for the overfill prevention and anti siphon devices. National regulations stipulate that the installation be carried out by certified installers. The Evaluation Guideline BRL SIKB 7800 provides additional information pertaining to the installation of the tank and spill container.

In all cases the appendages used shall be resistant to the chemical stored and this shall be suitably demonstrated by the tank

manufacturer.

Rotational moulded polyethylene (PE) tanks with spill containers for the above ground storage of chemicals

MARKING

The products are marked with the Kiwa mark

Place of the mark:
Each PE tank and spill container shall be indelibly marked.

Compulsory indications:

- Manufacturer's name and/or trade name;
- Kiwa certification mark;
- Serial number of the tank and spill container;
- Month and year of manufacture;
- Maximum filling of tank in litres or m^3;
- Location of the storage tank: Inside and/or outside;
- Factory tested: With air at 0,1/0,3 bar/at full hydrostatic pressure with water for 24 hours;
- Maximum operating temperature of chemical to be stored;

The realization of the marks is as follows:

- indelible;
- clearly visible on the outside of the tank or spill container.

When this information is provided on an identification label, provisions shall be made to ensure that this label cannot be removed from the tank / spill container

RECOMMENDATIONS FOR CUSTOMERS:

1. Check at the time of delivery whether:
   1.1 the products are in accordance with the agreement;
   1.2 the mark and marking method are correct;
   1.3 the products show no visible defects as a result of e.g. transport.
2. If you should reject a product on the basis of the above, please contact:
   2.1 <<Organisation>> <<Department>>
   and, if necessary:
   2.2 Kiwa Nederland B.V.
3. Consult the supplier's processing guidelines for a proper storage and transport of the products.
4. Check whether this certificate is still valid by consulting the list of certified companies at www.kiwa.nl.

Annex II Model Compliance document

Tank/Spill Container compliance document

BRL-K21008

Rotational moulded polyethylene (PE) tanks and spill containers for the above ground storage of chemicals

Client
(name)
(address)
(town)

Location
(name)
(address)
(town)

Manufacturer
(name)
(address)
(town)
(telephone)
(telefax)
(e-mail)

Registration Number **Registration date**

Data	Volume (litre)	Diameter (mm)	Length (mm)	Height (mm)	Year of mfr.	Serial no.	Design no.	Material
Tank								PE
Spill Container								PE

Remarks
The tank and spill container are suitable for outside/inside storage of << name of chemical with CAS number>>. The tank has been tested with air at 0,1/0,3 bar/at full hydrostatic pressure with water for 24 hours << Stipulate as applicable>>.

Declaration of Kiwa Nederland B.V.

Based on pre-certification tests as well as periodic inspections by Kiwa, the product referred to on this certificate and constructed by above mentioned manufacturer, may, on delivery, be relied upon to comply with the Kiwa Evaluation Guideline BRL-K21008.

Declaration of Construction Company

The manufacturer declares that the tank and spill container have been produced according to the requirements specified in the Kiwa Evaluation Guideline BRL-K21008.

Recommendations for Customers:
Check on receipt of the tank/spill container certificate whether:
- The serial number on the tank and spill container complies with this certificate
- The tank and spill container show no visible defects as a result of transport

If you should reject this product on the basis of the above, please contact:
1. The manufacturer
2. Kiwa Nederland B.V.

A tank installation can only be in compliance with the Dutch legislation (BARIM/RARIM) when, in addition to this tank/spill container certificate, a certificate for the complete installation has been issued.

kiwa certified
BRL K21008
ROTATION MOULDED
PE STORAGE TANKS

Kiwa Nederland B.V.
Sir W. Churchill-laan 273
P.O. Box 70
2280 AB Rijswijk
The Netherlands

Telephone +31 70 41 44 400
Telefax +31 70 41 44 420
Internet www.kiwa.nl
E-mail certif@kiwa.nl

A copy of this certificate shall be given to the: Legislative authorities, Client, Manufacturer, Kiwa Nederland B.V.

Validation date:

Registration Number:

Annex III Model IQC-scheme (example)

Inspection subjects	Inspection aspects	Inspection method	Inspection frequency	Inspection registration
Raw materials or incoming goods: • PE Granulates • Incoming goods				
Production process/ production equipment/ material: • Procedures • Work instructions • Equipment • Release of product				
Finished-products • Pressure testing				
Measuring and testing equipment • Measuring equipment • Calibration				
Packaging and transport • Internal transport • Storage • Preservation • Packaging • Identification or marking of semi-finished and finished products				