



## Product certificate K21645/08

Issued 2023-06-15

Replaces K21645/07

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### Thermoplastics piping systems for the transport of liquid oil and related products and their vapours

#### 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

### TSE Fueling Supplies B.V.

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-K552/04 "Thermoplastics piping systems for the transport of liquid oil and related products and their vapours" dated 2022-12-02.

Ron Scheepers  
Kiwa

*Publication of this certificate is allowed.*

*Advice: consult [www.kiwa.nl](http://www.kiwa.nl) in order to ensure that this certificate is still valid.*

# CERTIFICATE

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Certification process  
consists of initial and  
regular assessment of:

- quality system
- product

## Thermoplastics piping systems for the transport of liquid oil and related products and their vapours

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### COMPONENTS FOR THE OPW FCS PIPING SYSTEMS

#### PRODUCT SPECIFICATION

Couplings for primary pipes with or without an integrated secondary containment of underground thermoplastics piping systems (Geoflex) for the transport of liquid oil and related products and their vapours.

Stainless steel couplings:

CSC-1515-O	1,5" pipe coupling with external taper according to EN 10241 for tapered seat
CSC-2020-O	2" pipe coupling with external taper according to EN 10241 for tapered seat
CSC-3030-O	3" pipe coupling with external taper according to EN 10241 for tapered seat
CSC-1515-I	1,5" pipe coupling with internal taper according to EN 10241 for tapered seat
CSC-2020-I	2" pipe coupling with internal taper according to EN 10241 for tapered seat
CSC-3030-I	3" pipe coupling with internal taper according to EN 10241 for tapered seat
TPC-1515	1,5" pipe coupling with external thread according to ISO 7-1
TPC-2020	2" pipe coupling with external thread according to ISO 7-1
TPC-3030	3" pipe coupling with external thread according to ISO 7-1.

Permeation Control Unit. (PCU) Type A for suction systems.

Permeation Control Unit. (PCU) Type B for pressure systems.

#### APPLICATION AND USE

The piping systems complying with Evaluation Guideline BRL-K552 are suitable for the transport of liquid oil and related products with a flash-point between of -20 and 50°C. The piping systems are to be installed in accordance with the requirements of Evaluation Guideline BRL SIKB 7800 (Tank installations) and are functional under positive or negative pressure with a maximum speed of the liquid of 5 m/s and with a lifetime expectancy of 20 years. In this guideline diesel oil, unleaded and leaded petrol are regarded as a liquid oil product. The piping system intended for the transport at negative pressure can be used with a minimum negative pressure of 0,8 bar (0,2 bar absolute). The piping system intended for the transport at positive pressure can be used with a maximum positive pressure of 5,0 bar.

NOTE 1: For liquid products other than diesel oil, unleaded and leaded petrol the test liquids and the requirements for the chemical resistance and resistance to permeation shall be adapted.

NOTE 2: At the moment of issue of this guideline the following pressures are common in pressure systems: working pressure: 2,5 bar rest pressure: 0,8 bar.

The above-mentioned stainless steel couplings are certified for the transport at negative (suction) or positive pressure (pressure system to a maximum pressure of 5 bar) for Geoflex piping systems of OPW Fueling Containment Systems (FCS) according to product certificate K45726. In suction and in pressure applications only one bend at the tank end is allowed using above-mentioned couplings connected to Geoflex pipe. In bending, the radius of the pipe shall be according to the work instructions of OPW FCS. In this configuration the length of pipe in the tank excavation will be a minimum of 3 meter for DN 50 pipes and a minimum of 6 meter for DN 100 pipes and will have an above ground connection under the dispenser.

#### VENTILATION UNIT

##### Type A for suction systems

To prevent unacceptable soil contamination by permeation of liquid petrol through the piping system, the interstitial space between the primary and secondary pipe of the suction lines is ventilated. A permeation control unit (PCU) controls this ventilation. The PCU consist out of an electrical driven vacuum pump. This pump is developed, tested and approved for pumping air mixed with explosive vapours of liquid petrol.

The PCU is explosion proof and equipped with a 230 or 400 Volt phase explosion proof motor.

The unit can be placed in the dispenser, in the above ground filling point cabinet, in a separate box placed on the fluid tight pavement or in a separate box in which case the pump exhaust is connected to a 5 m high vent pipe with flame arrester above ground level. In all cases proper ventilation has to be ensured. The inlet of the PCU is connected to a system of nylon tubing meeting DIN 73378 of sufficient diameter to allow an adequate flow of environmental air into the interstitial space of the suction lines. Possible permeation vapours can be extracted at the pump outlet. It is an option to connect a gas operated leak detection system on the PCU.

The dimension of the PCU is functional to a requirement of minimal 20 litres of air with possible vapours per suction line. Suction lines for diesel need no PCU.

##### Type B for pressure systems

Type B for pressure systems is installed similar to Type A, but is extended with a leak detection facility.

This facility must meet the requirements of Guideline BRL-K910.

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### COMPONENTS FOR THE NUPIGECO S.P.A. PIPE SYSTEMS

#### PRODUCT SPECIFICATION

Couplings for primary pipes with or without an integrated secondary containment of underground thermoplastics piping systems (Smartflex) for the transport of liquid oil and related products and their vapours.

Stainless steel couplings:

STPC-32, coupling with external tapered thread according to ISO 7-1

STPC-50, coupling with external tapered thread according to ISO 7-1

STPC-63, coupling with external tapered male thread according to ISO 7-1

STPC-90, coupling with external tapered male thread according to ISO 7-1.

SCPC-32-0, pipe coupling with external taper according to EN 10241 for tapered seat

SCPC-50-0, pipe coupling with external taper according to EN 10241 for tapered seat

SCPC-63-0, pipe coupling with external taper according to EN 10241 for tapered seat

SCPC-90-0, pipe coupling with external taper according to EN 10241 for tapered seat.

SCPC-32-I, pipe coupling with internal taper according to EN 10241 for tapered seat

SCPC-50-I, pipe coupling with internal taper according to EN 10241 for tapered seat

SCPC-63-I, pipe coupling with internal taper according to EN 10241 for tapered seat

SCPC-90-I, pipe coupling with internal taper according to EN 10241 for tapered seat.

STPC-32S, pipe coupling with external tapered thread according to ISO 7-1, only available in stainless steel 316 (EN 1.44.04)

STPC-50S, pipe coupling with external tapered thread according to ISO 7-1, only available in stainless steel 316 (EN 1.44.04)

STPC-63S, pipe coupling with external tapered thread according to ISO 7-1, only available in stainless steel 316 (EN 1.44.04)

STPC-90S, pipe coupling with external tapered thread according to ISO 7-1, only available in stainless steel 316 (EN 1.44.04).

Anti-permeation ring:

SAPR-50 MKIII - pipe dimension 1½", material stainless steel 304 (EN 1.43.01)

SAPR-63 MKIII - pipe dimension 2", material stainless steel 304 (EN 1.43.01).

#### APPLICATION AND USE

##### General

The piping systems complying with this evaluation guideline are suitable for the transport of liquid oil and related products with a flash-point of -20 up to 50°C. The piping systems are to be installed according to Kiwa Guideline BRL SIKB 7800 (Tank installations) and are functional under positive or negative pressure with a maximum speed of the liquid of 5 m/s and with a lifetime expectancy of 20 years. In this guideline diesel oil, unleaded and leaded petrol are regarded as liquid oil products. The piping system intended for the transport at negative pressure can be used with a minimum negative pressure of 0,8 bar (0,2 bar absolute). The piping system intended for the transport at positive pressure can be used with a maximum positive pressure of 8,0 bar.

NOTE 1: For liquid products other than abovementioned liquids the test liquids and the requirements for the chemical resistance and resistance to permeation shall be adapted.

NOTE 2: At the moment of issue of this guideline the following pressures are common in pressure systems: working pressure: 2,5 bar rest pressure: 0,8 bar.

##### Anti-permeation ring

To prevent unacceptable soil contamination by permeation of the transported product through the lined pipe system of suction systems for K1 and K2 fuels, the space between pipe sections, where they are connected, is to be sealed by an anti-permeation ring. Anti-permeation rings are not required for diesel. For tank stations, in order to ensure uniformity, the use of anti-permeation rings shall be used in standard suction (1,5" en 2") piping systems. In case of pressure systems coaxial fittings are used. Coaxial fittings do not require an anti-permeation ring.

The anti-permeation ring is a device made of impermeable material that seals off on the barrier layer, thus preventing contact between the transported product and the unprotected/exposed material of the connecting fitting.

The anti-permeation ring fits inside the connecting electro-fusion welding fittings.

End-fittings, for pipe in constant contact with K1 or K2 product where the pipe-section ends into a metal threaded or flanged fitting are to be provided with either a lining made of the tested barrier material, a metal insert or an approved swaged metal coupling.

The metal insert seals off on the metal threaded or flanged part of the fitting on one side and to the anti-permeation ring on the other side.

These end-fittings are used to connect the pipe to the tank and to the dispenser or pump.

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### MARKING COMPONENTS FOR PIPING SYSTEMS

The couplings, anti-permeation rings and permeation control unit are not individually marked. Each individual components is subjected to 100% final inspection.

### INSTALLATION

The piping systems of OPW FSC and NUPIGECO S.P.A. are to be installed by certified installers according to Kiwa Evaluation Guideline BRL SIKB 7800 (Tank installations).

### INSTALLATION INSTRUCTIONS

NUPI S.P.A., OPW FCS and TSE Fueling Supplies B.V. are obligated to supply installation instructions where needed and should be available at each installation in process. The instructions are to be written in the language of the country of installation. The instructions must cover the installation, inspection and maintenance of the pipe system.

It is advised for Geoflex to prevent the piping systems to long-term exposure to direct sunlight (UV-light) and to install and bury the piping system within a couple of weeks after delivery. Smartflex can be stored outside when tape or end caps protect the liner from long term exposure to UV-light

The installation instructions have to be approved by the Board of Experts responsible for the Kiwa Evaluation Guideline BRL SIKB 7800.

### INSTALLATION

See the installation instructions for the details about storage, transport and installation.

The working of the PCU has to be controlled during installation by means of a flowmeter.

### PERFORMANCE

#### Working pressure of the suction piping system

The minimal working pressure of the suction piping system (primary pipe) under normal application is 0,8 bar negative pressure (0,2 bar absolute).

#### Rest pressure of the suction piping system

The maximum rest pressure of the suction piping system (primary pipe) under normal application is 0,5 bar positive pressure.

### PERMEATION

Permeation testing and supplemental calculations have proven that the permeation requirement per pipe length from dispenser till tank is fulfilled.

### MAINTENANCE

#### Maintenance and inspection

To determine proper functioning of the piping system of OPW FCS, and/or NUPIGECO S.P.A. in combination with the components of TSE Fueling Supplies B.V. is it in principal sufficient to inspect the piping system and components together with the re-qualification inspection of the total tank installation (in The Netherlands every 15 years). The leak tightness of the piping system included the components, shall be inspected during this re-qualification.

### RECOMMENDATIONS FOR CUSTOMERS

Check at the time of delivery whether:

- the supplier has delivered in accordance with the agreement;
- the mark and the marking method are correct;
- the products show no visible defects as a result of transport etc.

If you should reject a product on the basis of the above, please contact:

- TSE Fueling Supplies B.V.
- and, if necessary,
- Kiwa Nederland B.V.

Consult the supplier's processing guidelines for the proper storage and transport methods.