



VARIBOX®

User Guide

Packaging chemicals made safer!



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VARIBOX IBC

A part of  rotovia

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Safety and liability

Important safety instructions

Read this user guide carefully to learn about liability and the usage of the VARIBOX FC. When setting up and using your VARIBOX FC, remember the following:

- Read all the instructions carefully before you use the VARIBOX FC
- Keep these instructions at hand for reference by you and others.
- Follow all instructions and warnings regarding your VARIBOX FC
- Always use personal protective equipment
- Maintenance on the VARIBOX FC should only be done in line with UN ADR regulations.
- Use only original spare parts for the VARIBOX FC

CAUTION: Service and maintenance on the VARIBOX FC must always be done in line with UN ADR regulations.

Cleaning

CAUTION: Residues may be found in the product. We therefore advise you, before putting the VARIBOX FC into use, to clean or disinfect according to your company standard or that of competent authorities.

See chapter “Cleaning the VARIBOX FC” for additional recommendations.

Restrictions

Although the product has many advantages, some restrictions must be considered. Important is the cleaning temperature, it may not exceed 60°C to prevent the VARIBOX FC from deformation. Make sure not to fill the VARIBOX with hot liquid. The maximum filling temperature is 30°C.

VARIBOX components warranty

The VARIBOX has a lifetime of 10 years. The inner container must be replaced after 5 years to comply with ADR regulations (for some applications after 2 years, see page 8). All (Optional) components offered by VARIBOX fall under the VARIBOX components warranty.

Limitation on shelf life and warranty

This document outlines the terms and conditions of the limited warranty and shelf life for our VARIBOX components. Please read this document carefully as it explains the scope and limitations of the warranty.

1. Warranty and Shelf Life

We acknowledge that providing an unconditional shelf life and warranty for our VARIBOX components is challenging due to numerous factors that are beyond our control. These factors include but are not limited to the handling, transportation, filling, storage, and usage of the VARIBOX. Additionally, the acceptance criteria and perceptions manufacturers, fillers, and users can vary significantly. Furthermore, the nature of the filling product can also substantially impact the VARIBOX components lifespan.

2. Shelf life of VARIBOX components

- VARIBOX Safeline Performance extractor tubes
- VARIBOX Safeline Precision extractor tubes
- VARIBOX Safeline Food extractor tubes
- VARIBOX Safeline counter couplers
- NS4 extractor tube
- CDS extractor tubes
- Overpressure vents
- VARIBOX Screwcaps
- Level sensors
- Counter connectors

Provided that our products are transported, stored, applied, and handled responsibly, we estimate that they should remain suitable for their intended use for at least the following periods:

Shelf life of VARIBOX components before application is up to 24 months.

Shelf life of VARIBOX components fitted in/on a VARIBOX/in-use is up to 12 months.

Shelf life before application assumes that the components are stored in their original package in a dry place without extreme temperature variations. In practice, the shelf life may exceed the indicated durations. However, tropical (humid) storage conditions may result in a shorter shelf life of the components.

The shelf life of VARIBOX components depends on product selection. Under typical conditions, it can exceed 12 months. Nonetheless, improper handling, exposure to highly corrosive substances, or harsh environments like tropical conditions can significantly shorten the shelf life.

Damage will occur due to wear and tear, including chemical degradation, improper use, abuse, alterations to the components, or unauthorized repairs.

Introduction

Liability

Rotovia Deventer B.V. has developed the VARIBOX FC with the utmost care. Subject to the provisions of other agreements Rotovia Deventer B.V. and the user have entered into, Rotovia Deventer B.V. shall not be liable for any incidental or consequential damages or other damages including but not limited to, loss of profits, loss of revenue, loss of use of the product or any associated equipment, downtime and purchaser's time or for breach of any express or implied warranty, breach of contract, negligence, strict liability or any other legal theory related to this product.

Congratulations on purchasing your VARIBOX FC

The VARIBOX FC is a unique IBC developed for safe packing and transport of dangerous materials. It has a capacity of 800 or 1,000 litres and has been tested extensively on durability and intensive usage. The VARIBOX FC features double containment: The inner bottle is surrounded by a second containment box.

Product description

The UN approved VARIBOX® Full Containment is double walled. This ensures that your products stay safely inside. There's no need to use additional spill pallets. Certified by the German DIBt.

The VARIBOX FC is shaped like a bathtub. Extractor tubes with leak free NS4s for top discharge are available as an option. With the extractor tube in a sink this minimizes residues and waste.

The ergonomic positions of the fill opening and optional extractor tube improve safe handling throughout the supply chain.

Multiple label fields are available for your obligatory product information on all sides of the VARIBOX FC. These label fields are recessed to protect your product labels and keep them readable for your customer.

The VARIBOX FC is discharged from the top. Users safely connect to a leak-free extractor. No need to open caps or closures, no risk of contact with chemicals. The VARIBOX® creates a closed system.

The automatic venting avoids errors by your customers when discharging your product. A pressure release system is available for products that build up pressure.

The pallet has three runners for a smooth transport on roller conveyors. The rounded pallet runners are designed to withstand the impact imposed by hand pallet trucks.

All main parts of the VARIBOX FC are made of Polyethylene; the pallet is manufactured from recycled material. These parts are made by the rotational moulding process; this production process ensures a tension free product with high mechanical impact strength.

VARIBOX and the environment

At VARIBOX, we recognize our responsibility to minimize the environmental impacts of our operations and products. Visit our website for more information.

Approvals

The VARIBOX FC is UN approved

- The UN certification number of the VARIBOX FC is:
- UN 31HH1/Y/**-- /NL/TCPI- PROMENS3-140531/3750/2028
- Packaging groups : 2 and 3
- Sea transport : According IMDG specification
- Road transport : According ADR specification
- Railway transport : According RID specification

Standard liquid approvals	Maximum density	Hydraulic test pressure
Water	1900 kg/m3	110 kPa
Wetting solution	1600 kg/m3	110 kPa
n-Butyl acetate	1600 kg/m3	110 kPa
White spirit	1600 kg/m3	110 kPa
Acetic acid	1600 kg/m3	110 kPa
Nitric acid 55%	1600 kg/m3	110 kPa
Approved: Nitric acid 62% (max. 2 years)	1400 kg/m3	110 kPa
Approved: Sopuroxid 15* (contains 15 % Peracetic acid)	1200 kg/m3	100 kPa
* Tradename of SOPURA, Rue de Trazegnies 199, 6180 Courcelles, België		

Request your copy of the UN approval for your evaluation.

The VARIBOX FC has the DIBt approval.

Deutsches Institut für Bautechnik (DIBt) is an authority of the German *Länder* Governments for a uniform fulfilment of technical tasks in the field of public law. *Allgemeine bauaufsichtliche Zulassungen* are granted for amongst others *Auffangvorrichtungen* (Spill containment) within the scope of the building laws of the *Länder* (federal states in Germany). *Allgemeine bauaufsichtliche Zulassungen* are issued by DIBt for all German *Länder*.

The VARIBOX FC has the DIBt approval:

- DIBt certification number: Allgemeine bauaufsichtliche Zulassung (abZ) Z-40.21-534

Request your copy of the DIBt approval for your evaluation.

VARIBOX Serial number



Every VARIBOX and every inner container has a unique serial number. This number (SN) is stated on a sticker: on the front of the VARIBOX and on the top of the inner container.

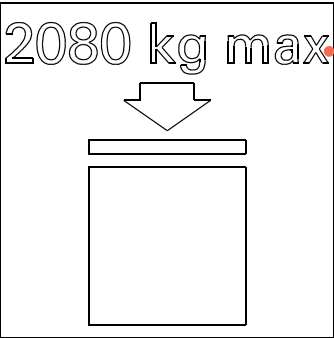


The barcode also displays this SN.

The QR code refers to the VARIBOX website for more information.

Approvals

UN mark and DIBT of the VARIBOX FC

The UN mark and the DIBt mark are on the front of the VARIBOX FC. These are in accordance with the regulations of the ADR and the DIBt. Below an explanation of the information provided.

	Capacity at 20° C	1025 L	UN-information:
	Tare mass	122 kg	Capacity in liters at 20°C
	Test pressure	110 kPa	Tare mass in kg
	Date of last leakproofness test	[][][][]	Test pressure in kPa
	Date of last inspection	[][][][]	Highest permitted stacking weight in kilos
	Date of repair	[][][][]	Date of the last leak proofness test (month and year)
	Herstellungsnummer	Serial number	Date of the last inspection (month and year)
	Herstellungsdatum		Date of the last repair (month and year)
	31HH1/Y/ /NL/		Serial number (SN, on a label elsewhere)
	TCPI-PROMENS3-140531/3750/2028		UN mark and month and year (last two digits) of manufacture
	Nenninhalt 1000 L		DIBt information:
	Werkstoff PE-LMD K53		In accordance with the DIBt authorization
Zulässige Betriebstemperatur 30° C			
Drucklos betreiben			
Entnahmebehälter - Befüllung am Aufstellort nicht zulässig			
Außenauflistung nicht zulässig			
Nur für Lagermedien gemäß allgemeiner bauaufsichtlicher Zulassung Nr. Z-40.21-534			
www.varibox-ibc.com			

What does the UN mark on the VARIBOX mean?

- UN: The UN mark starts with the packaging symbol of the United Nations, the letters UN (United Nations) in a circle. We hereby declare that this VARIBOX meets the relevant requirements of ADR chapter 6.5
- 31HH1 stands for the IBC type code according to 6.5.1.4
- Y stands for packing groups II and III for which the VARIBOX is approved
- The month and year (last two digits) of manufacture
- NL stands for the State that grants the approval, in this case the Netherlands
- TCPI-PROMENS3 is our manufacturer's mark followed by a number that is the identification mark of this VARIBOX established by the competent authority
- The next to last number is the load in kg with which the stacking test was carried out, but note: the highest permitted stacking load is indicated elsewhere
- The last figure is the largest permissible gross mass in kg

This mark indicates that the VARIBOX corresponds to the successfully tested design type and that the conditions stated in the certificate are met.

The mark may not be changed! Only the date of a leak proofness test, inspection or repair may be applied by authorized parties. This must be applied in such a way that the basic characteristics are properly recognizable.

Every VARIBOX inner container is also marked in accordance with ADR

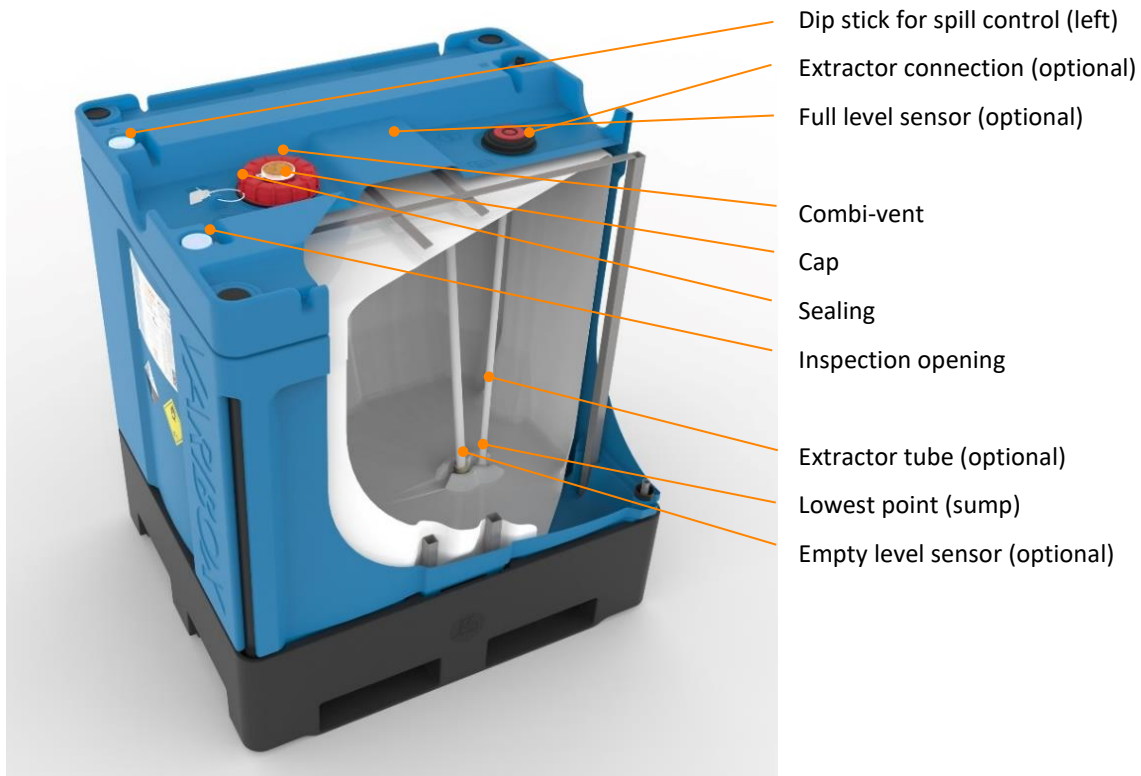
- 31HH1 stands for the IBC type code according to 6.5.1.4
- Y stands for packing groups II and III for which the VARIBOX is approved
- Month and year (last two digits) of manufacture in the form of a date clock

- NL stands for the State that grants the approval, in this case the Netherlands
- TCPI-PROMENS3 is our manufacturer's mark followed by the number

Components

The VARIBOX FC components

- 800 or 1,000 litre container with a high chemical resistance
- Inner container with a sloped bottom and top for optimal drainage and cleaning
- Outer box, fully closed, second containment.
- Pallet that can be replaced when damaged.
- 150 mm screw lid with EPDM or Viton gaskets
- Vacuum vent for equalizing pressure during emptying (Combi-vent)
- Membrane filter for de-aeration during pressure build-up (Combi-vent)
- Steel stacking tubes for extra rigidity when supporting a stacked load.
- Marking with UN ADR information
- Marking with DIBt information
- Optional: VARIBOX Connect
- Optional: different types of extractor tubes
- Optional: empty level and/or full level sensors



CAUTION: This packaging advice is intended for evaluation by the customer and does not relieve the customer of the ultimate responsibility for the determination of the appropriate container. It is the customer's responsibility to select the appropriate container based upon all information at their disposal including the specific application, regulatory compliance, product compatibility and shipping requirements.

VARIBOX Connect

Your VARIBOX Full Containment can be equipped with VARIBOX Connect. VARIBOX Connect is integrated UN-approved connectivity solution option, built-in in the VARIBOX FC and not visible from the outside.

Connect provides you with a personalized dashboard to get the most out of your VARIBOX IBC fleet. Every day you will have the latest data about the location, level, and empty date of each of your IBCs.

VARIBOX Connect Retrofit

It is possible to build in VARIBOX Connect after the purchase. Contact our VARIBOX Customer Service for the possibilities.

VARIBOX Connect Specifications

The VARIBOX Connect Box has a radar based remote fill level monitoring sensor for VARIBOX containers with global connectivity, location tracking and easy setup.

- High precision radar-based fill degree measurements
- Movement, tilt, vibration, free-fall detection
- Enclosure; heat resistant, impervious, resistant to chemicals, food safe.
- Smart energy efficient location tracking by determining actual movement.
- Location tracking based on Multi-GNSS /DGPS /SBAS
- Automatic emptying detection.
- Detection of a tilted sensor (if device is not directed perpendicular to the (reflective) surface to measure)
- Temperature measurement with every fill level measurement
- Futureproof, Firmware Over the Air. (FOTA)
- NFC based service interface.
- Capacity to store data internally, for data integrity. (e.g., cell service is down)
 - o 240 status messages and
 - o 682 fill level messages and
 - o 819 temperature messages and
 - o 240 GPS messages
- Communication based on NB-IoT (LTE) or CAT-M1(LTE)



CE

The Connect Box meets the legal requirements of the applicable EC guidelines. These are listed in the corresponding EC Declaration of Conformity together with the standards applied. Successful testing of the device is confirmed by affixing the CE mark to it.

The Connect Box is tested according to generic industrial standards:

Generic Immunity standard industrial EN61000-6-2 (2019)		
EN61000-4-2/IEC1000-4-2	Electrostatic Discharge	8kV air & 4kV contact
EN61000-4-3/IEC1000-4-3	Radiated Susceptibility	80MHz – 1GHz 10V/m mod.
Generic emission standard industrial EN61000-4 (2019)		
EN55011 Class A	Radiated emission, E-field	30MHz – 1GHz

Additionally, the unit passed the 'Electrostatic Discharge' tests:

- Up to and including 15kV air discharge
- Up to and including 10kV contact discharge

Any changes or modifications made to this equipment not expressly approved by VARIBOX may void the CE authorization to operate this equipment.

Chemical resistance

Choose the correct sealing material.

The VARIBOX FC is available with seals in either EPDM or Viton materials. Check the resistance of these seals against the product that you want to fill into the VARIBOX FC. A general guidance on regularly filled chemical products is listed in the table below.

Product	Conc.	Formula	UN number(s)	Gasket material	Duration
Ammonia	<20%	NH ₃	UN 2672	EPDM	5 years
Acetic acid	All	CH ₃ COOH	UN 2789; UN 2790 **	EPDM	5 years
Citric acid	All	C ₆ H ₈ O ₇	UN 3265	EPDM	5 years
Hydrofluoric acid ≤60%	All	HF	UN 1790	Viton	2 years
Phosphoric acid	All	H ₃ PO ₄	UN 1805	EPDM	5 years
Ferric Chloride	All	FeCl ₃	UN 2582	Viton	5 years
Potassium hydroxide	All	KOH	UN 1814	EPDM	5 years
Sodium chlorite	All	NaClO ₂	UN 1908	Viton	5 years
Sodium hydroxide	All	NaOH	UN 1824	EPDM	5 years
Sodium hypochlorite	All	NaOCl	UN 1791*	Viton	5 years
Peroxyacetic acid	≤5%	C ₂ H ₄ O ₃	UN 3149*	Viton	5 years
Peroxyacetic acid	15%	C ₂ H ₄ O ₃	UN 3109*	Viton	2 years
Nitric acid	≤55%	HNO ₃	UN 2031	Viton	5 years
Nitric acid	55-62%	HNO ₃	UN 2031	Viton	2 years
Hydrogen peroxide	≤60%	H ₂ O ₂	UN 2014*; UN 2984*	Viton	5 years
Hydrochloric acid	All	HCl	UN 1789	Viton	5 years
Sulfuric acid	All	H ₂ SO ₄	UN 1830	Viton	5 years

*: overpressure relief vent is required or advised

** : We do not recommend the use of non-conductive plastic packaging for products with a flash point of 60°C or lower

CAUTION: The VARIBOX has been developed and tested for intensive use. Each VARIBOX can be reused multiple times for similar liquids. Do not reuse any PE packaging for products with an oxidizing effect on PE causing molecular degradation, after it has been used for products that cause PE to swell (like hydrocarbons) or that have a stress-cracking effect on PE (surface-active wetting agents such as alcohols, soaps, surfactants).

CAUTION: Chemicals at temperatures over 30°C can cause faster degradation of materials. Make sure not to use the VARIBOX with chemicals at higher temperatures.

Venting

Choose the correct venting

The VARIBOX FC has as standard a vacuum vent and an overpressure relief vent, levelling under and over pressure during use.

The VARIBOX FC can also be equipped without an overpressure relief vent. This version can be used when vapor that may be released leads to danger on account of, for example, its toxicity, flammability, or the quantity of gas released. This is described in ADR 4.1.1.8.

Some products can build up pressure. The ADR requires an overpressure relief for specific substances like Hypochlorite solutions and Hydrogen peroxides. This is described in ADR 4.1.4.2, IBC02, B5.

IBCs should be fitted with a device to allow for venting during transport for amongst others:

- UN1791 hypochlorite solution (chlorine bleach, sodium hypochlorite)
- UN2014 hydrogen peroxide, 20-60% solution
- UN2984 hydrogen peroxide, 8-20% solution
- UN3109 organic peroxide type F, peracetic acid 15%
- UN3149 hydrogen peroxide and peracetic acid, mixture, not more than 5% peracetic acid

CAUTION: Overpressure may develop in the VARIBOX FC due to warming of the air or the emission of gas from the contents, because of a temperature rise or other cause. To avoid warming of the air, the VARIBOX FC needs to be shielded from direct sunlight during outside storage.

The VARIBOX FC may be equipped with an overpressure relief vent to avoid a pressure build-up.

If you use the VARIBOX FC without overpressure relief vent, overpressure may be visible by bulging up of the top of the VARIBOX.

When this overpressure is visible, remove the overpressure before you connect or open the VARIBOX. You can do so by loosening the lid by 30°. This will avoid a sudden relief of pressure and possible spill of content. Make sure to wear appropriate personal protective equipment.

When overpressure builds up, the extractor tube and/or empty level sensor may lift out of its designated recess. If this occurs, the extractor tube and/or empty level sensor may float and will therefore not function as intended anymore. After the overpressure has been released and the box is emptied, the tube and/or sensor may have to be repositioned in the designated recess.

Full containment

Using the full containment outer box

CAUTION: It's prohibited to add a connection or hole to the outer box.

This VARIBOX FC (full containment) comes with a fully closed outer box. The volume of this outer box is the volume of the inner bottle +10%, in line with typical regulations.

Use of the outer box

- Users of the VARIBOX FC need to be trained before using the product
- The product needs to be placed on an even and stable floor
- When the product is placed outside, it needs to be protected from wind and shielded against direct sunlight
- Protect the product from collisions with vehicles
- Do not apply forces to the outer box
- Placement has to be in line with fire regulations
- Check the spill container weekly on leakage, by checking the dipstick in the top cover (see picture)
- Max. application temperature: 30°C
- When detecting fluid between inner bottle and outer box, remove fluid immediately
- Do not use the product in places where earthquakes may occur
- Products which are damaged, so they cannot function any longer cannot be used
- Repairing the product can only be done by authorized personnel
- The outer box needs to be inspected and (if necessary) cleaned on a regular basis (i.e. annually or sooner if necessary); this inspection needs to be documented
- All legal requirements need to be met on local, national and international level



Handling

Closure tools

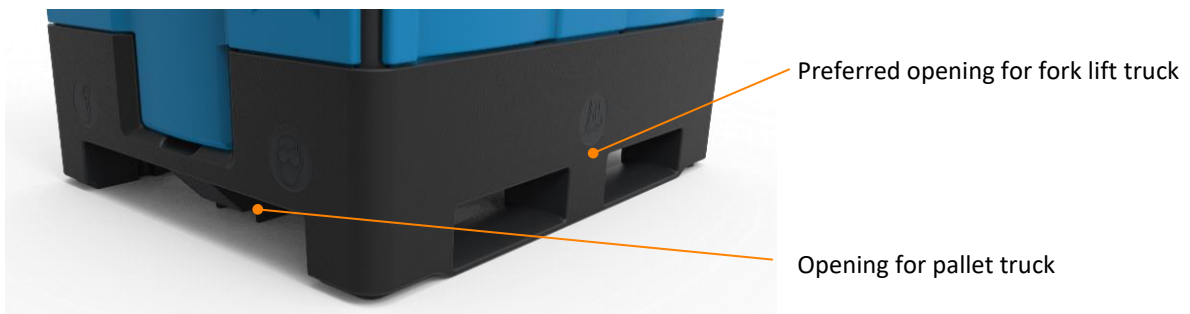
The VARIBOX FC needs to be closed during handling. Appropriate closure tools are to be used and closure torques are to be respected. Examples of closure tools are shown below.

Wrench for extractor tube **Key for 150mm screwcap** **Wrench for the vent housing**



The closure tools are available in the [VARIBOX webshop](#) for spareparts.

Lifting the VARIBOX FC



When stacking, put the VARIBOX on top of another VARIBOX, do not shove it when stacking.

Transport of the VARIBOX FC

Follow local, national and international regulations for securing the VARIBOX FC for transport.

During transport, the UN marking is visible at the front of the outer container. The UN marking of the inner container can be checked through the inspection opening at the top.

Filling

Preparing for filling

The inside of the VARIBOX FC has been cleaned to remove polyethylene chips that result from production. Afterwards, polyethylene residues may still be found in the product. We therefore recommend that you always clean and, if necessary, disinfect in accordance with your internal regulations and / or that of competent authorities before using new products.

Filling the VARIBOX FC

Use the 150 mm opening to fill the VARIBOX FC. The maximum filling temperature is 30°C.

CAUTION: Ensure that the optional extractor tube is vented during filling. As a result, air can escape from the extractor tube and possible floating of the suction pipe is prevented. Open the extractor tube by connecting it with the corresponding connector.

Make sure that potentially dangerous gases are sucked away.

Closing the VARIBOX FC

Verify the correct placement of the vacuum vent. Inspect the optional membrane filter for de-aeration; this should be dry and clean to prevent pressure build-up.

CAUTION: Membrane filters for de-aeration are developed for one-time use. When contaminated or when wet, the filters may block and lose their capacity to prevent pressure build-up. Replace the membrane filter after use to secure venting.

Use the original 150 mm screw lid and vent to close the VARIBOX FC. Close the lid with a torque of 60 Nm. The vent is closed with a torque of 18 Nm. Put a cap on the vent. The optional VARIBOX Safeline extractor tube is closed with a torque of 14 Nm. Optional level sensors are closed with a torque of 18 Nm.

CAUTION: Always put a cap on the vent to prevent blocking or entering of (rain-) water. Do not remove the threaded vent housing from the screw lid as the membrane filter will release from the housing and drop into the container.

Sealing

The 150 mm screw lid can be sealed. A tamper evidence cable can be fed through holes in the lid and the hole in the top cover of the VARIBOX FC. The vent can be sealed by using a common cap. For example: [Tri-Sure SambaCap TSF-505040](#). The extractor tube can be sealed with a corresponding cap; consult the extractor tube supplier for advice.



Connecting

Emptying using VARIBOX Safeline Performance

The VARIBOX FC is available with Safeline Performance in an EPDM and Viton version. These versions have different designs to avoid confusion and prevents incorrect unsafe connection. The Safeline system automatically closes after disconnection.

Tube and housing are made of Polyethylene. The EPDM version has a stainless-steel spring. The Viton version has a Hastelloy spring. The Safeline Performance extractor tube has an inner diameter of 24 mm. The capacity is 20 litres/minute.

After emptying about 0,1 litre remains in the VARIBOX FC. In the extractor tube itself about 0,4 litre will remain. These indications are based on water and will vary upon condition and type of chemical. The Safeline Performance may be protected by a Tamper-evident dust cap that needs to be removed before connecting.

The expected lifetime of the extractor tube is one year. Inspect the extractor tube on a regular basis (i.e. annually or sooner if necessary) and replace if necessary.



The Safeline Performance EPDM coupler is red and has a round design.

The Safeline Performance EPDM is red and has a round design.

The Safeline Performance Viton coupler is green and has a dodecagon design.

The Safeline Performance Viton extractor tube is green and has a dodecagon design.

The Safeline parts are available in the [VARIBOX webshop](#).

Visit the website for videos on connecting and disconnecting.

CAUTION: If there was 0.2 bar or more pressure in the VARIBOX always check if the Safeline system still reaches the lowest point in the VARIBOX.

Make sure that the coupler closes off correctly when put on the extractor, to avoid any false air entering the tube. Use the metal clip to secure the coupler in place.

Do not connect the coupler when overpressure is visible, remove the overpressure before you connect or open the VARIBOX. You can do so by loosening the lid by 30°. This will avoid a sudden relief of pressure and possible spill of content. Make sure to wear appropriate personal protective equipment.

The tube on the coupler should be fixed on a 90° elbow and should point away from you.

Connecting

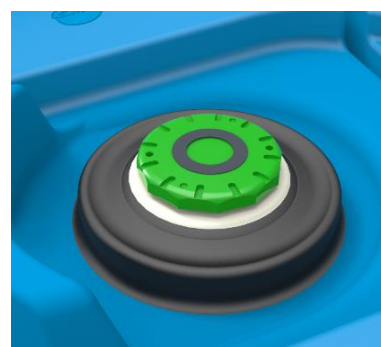
Emptying using VARIBOX Safeline Precision

The VARIBOX FC is available with Safeline Precision in an EPDM and Viton version. These versions have different designs to avoid confusion and prevents incorrect unsafe connection. The Safeline system automatically closes after disconnection.

Tube and housing are made of Polyethylene. The EPDM version has a stainless-steel spring. The Viton version has a Hastelloy spring. The Safeline Precision extractor tube has an inner diameter of 14 mm. The capacity is 50 litres/ hour.

After emptying about 0,1 litre remains in the VARIBOX FC. In the extractor tube itself about 0,4 litre will remain. These indications are based on water and will vary upon condition and type of chemical. The Safeline Precision may be protected by a Tamper-evident dust cap that needs to be removed before connecting.

The expected lifetime of the extractor tube is one year. Inspect the extractor tube on a regular basis (i.e. annually or sooner if necessary) and replace if necessary.



The Safeline Precision EPDM coupler is red and has a round design.

The Safeline Precision EPDM is red and has a round design.

The Safeline Precision Viton coupler is green and has a dodecagon design.

The Safeline Precision Viton extractor tube is green and has a dodecagon design.

The Safeline parts are available in the [VARIBOX webshop](#).

Visit the website for videos on connecting and disconnecting.

CAUTION: If there was 0.2 bar or more pressure in the VARIBOX always check if the Safeline system still reaches the lowest point in the VARIBOX.

Make sure that the coupler closes off correctly when put on the extractor, to avoid any false air entering the tube. Use the metal clip to secure the coupler in place.

Do not connect the coupler when overpressure is visible, remove the overpressure before you connect or open the VARIBOX. You can do so by loosening the lid by 30°. This will avoid a sudden relief of pressure and possible spill of content. Make sure to wear appropriate personal protective equipment.

The tube on the coupler should be fixed on a 90° elbow and should point away from you.

Connecting

Emptying using VARIBOX Safeline Food EPDM

The VARIBOX FC is available with Safeline Food EPDM. The Safeline system automatically closes after disconnection.

Tube and housing are made of Polyethylene. The EPDM version has a stainless-steel spring. The Safeline Food EPDM extractor tube has an inner diameter of 24 mm. The capacity is 20 litres/minute.

After emptying about 0,1 litre remains in the VARIBOX FC. In the extractor tube itself about 0,4 litre will remain. These indications are based on water and will vary upon condition and type of chemical. The Safeline Food EPDM may be protected by a Tamper-evident dust cap that needs to be removed before connecting.

The expected lifetime of the extractor tube is one year. Inspect the extractor tube on a regular basis (i.e., annually, or sooner if necessary) and replace if necessary.



The Safeline Performance EPDM coupler is light blue and has a round design.

The Safeline Performance EPDM is light blue and has a round design.

The Safeline sparts are available in the [VARIBOX webshop](#).

Visit the website for videos on connecting and disconnecting.

CAUTION: If there was 0.2 bar or more pressure in the VARIBOX always check if the Safeline system still reaches the lowest point in the VARIBOX.

Make sure that the coupler closes off correctly when put on the extractor, to avoid any false air entering the tube. Use the metal clip to secure the coupler in place.

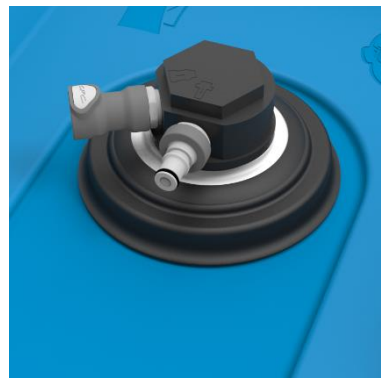
Do not connect the coupler when overpressure is visible, remove the overpressure before you connect or open the VARIBOX. You can do so by loosening the lid by 30°. This will avoid a sudden relief of pressure and possible spill of content. Make sure to wear appropriate personal protective equipment.

The tube on the coupler should be fixed on a 90° elbow and should point away from you.

Connecting

Emptying using a NS4 extractor tube

The VARIBOX FC is available with NS4 extractor tube in an EPDM and Viton version and NS4 for spill-free connecting to a pump as well as for connecting an optional return line. The NS4 extractor tubes automatically close after disconnection. Tube and housing are made of Polyethylene, connectors are made of Polypropylene and springs are made of Hastelloy. The extractor tube has an inner tube diameter of 6 mm and is equipped with a non-return valve at the bottom. The capacity of this extractor tube is 50 litre/hour. After emptying about 0,1 litre remains in the VARIBOX FC. In the extractor tube itself about 0,05 litre will remain. These indications are based on water and will vary upon condition and type of chemical.



CAUTION: The non-return valve blocks the return stream but cannot guarantee a full sealing.



- Housing (Polyethylene)
- Out: Extractor connection (Polypropylene)
- In: Return connection (Polypropylene)

The expected lifetime of the extractor tube is one year. Inspect the extractor tube on a regular basis (i.e. annually or sooner if necessary) and replace if necessary. Visit the website for videos on connecting and disconnecting.

The NS4 extractor tube and counter parts are available in the [VARIBOX webshop](#) for spareparts.

- Body goes on extractor connection
- Insert goes in return connection
- Outer protection tube (Polyethylene)
- Extractor tube (inner tube, Polyethylene)
- Non-return valve (foot valve, housing PVC, ball ceramic)
- Extractor tube foot (Polyethylene)

CAUTION: If there was 0.2 bar or more pressure in the VARIBOX always check if the NS4 system still reaches the lowest point in the VARIBOX.

The connections are small parts. These parts can break off. Limit the forces on them, e.g. when coupling or the weight of a hose.

The connection's O-ring (Out: Extractor connection and Insert) is a part that can wear out during coupling. Check this O-ring and replace it if necessary with the same O-ring of the correct material (EPDM or Viton) and the correct size (8x1.8).

NS4 is manufactured from Polyethylene, PP and other materials. Verify the chemical compatibility of your product with these materials or ask our Customer Service.

Connecting

Emptying using other extractor tubes

Next to the Safeline extractor tubes, the VARIBOX FC is also approved for the extractor tubes:

- Quick Connect QC, from [AS Strömungstechnik](#)
- Drum valve DV, from [Micromatic](#)
- Composite Drum valve CDV, from [Micromatic](#)
- Drumquick Pro, from [Colder](#)

Level sensors

Full-level sensor (right side)

The VARIBOX FC is available with level sensors, which indicate the VARIBOX FC is almost full or is almost empty. The level sensors are two-core cable and fail-safe. Max. switching voltage is 48 V; max. switching current is 0,5 A. The connector of the full sensor (option) has a 3-pin plug. The circuit of the full sensor is opened when the VARIBOX FC is almost full: approximately 25 liter capacity is left, or the cable of the switch is damaged. The correct socket for this plug is: Bulgin Standard Buccaneer PX0731/S (screw termination). The sockets are available in the [VARIBOX webshop](#) for spareparts.



Low-level sensor (left side)



The connector of the low-level sensor (option) has a 2-pin plug. The circuit of the low-level sensor is opened when the level in the VARIBOX FC is low: at approximately 50 litres of remaining content. The sensor opens also when the cable of the switch is damaged. Max. switching voltage is 48 V; max. switching current is 0,5 A. The correct socket for this plug is: Bulgin standard Buccaneer PX0736/S (screw termination, see picture). The sockets are available in the [VARIBOX webshop](#) for spareparts.

The low-level sensor cannot be combined with the empty sensor.



Empty sensor (left side)



The connector of the empty sensor (option) has a 2-pin plug. The circuit of the empty sensor is opened when the VARIBOX FC is almost empty: at approximately 1 litre of remaining content. The sensor opens also when the cable of the switch is damaged. Max. switching voltage is 48 V; max. switching current is 0,5 A. The correct socket for this plug is: Bulgin standard Buccaneer PX0736/S (screw termination). The sockets are available in the [VARIBOX webshop](#) for spareparts.

The empty sensor cannot be combined with the low-level sensor.

CAUTION: If there was 0.2 bar or more pressure in the VARIBOX always check if the empty level sensor still reaches the lowest point in the VARIBOX.

Overpressure may develop in the VARIBOX FC due to warming of the air or the emission of gas from the contents, because of a temperature rise or other cause. To avoid warming of the air, the VARIBOX FC needs to be shielded from direct sunlight during outside storage.

Level sensors are manufactured from Polyethylene, PVC and other materials. Verify the chemical compatibility of your product with these materials or ask our Customer Service.

Maintenance

Routine maintenance

The VARIBOX FC is a UN ADR Certified product. Because of this, repair and maintenance on the product must be executed in line with UN ADR regulations. Routine maintenance means operations such as:

- Cleaning
- Removal and reinstallation or replacement of body closures (including associated gaskets), or of service equipment, confirming to our original specifications, provided that the leak tightness of the VARIBOX FC is verified
- Restoration of structural equipment not directly performing a dangerous goods containment function to conform to the design provided that the containment function of the VARIBOX FC is not affected.

Replacement of extractor tubes

Replacement of extractor tubes is considered routine maintenance. A replacement needs to be an original equipment manufacturer part. When replacing an extractor tube, verify the correct seating of the foot in the recess in the bottom of the inner receptacle. Tighten with a torque of 14 Nm.

(De-) assembling the VARIBOX FC

This is a limited de-assembly instruction. Every repair or maintenance that involves work on the inner container (including extractor tube or vent) may be carried out by authorised personnel only and is not in this instruction.

For the support during replacement of the inner container, there is a comprehensive checklist available at the VARIBOX Customer Service.

CAUTION: Make sure the VARIBOX FC is empty and has been cleaned before de-assembling.

Stacking bars



To replace the stacking bars, remove the four flange caps in the corners on top of the cover.



Use an Allen key (size 12mm) to unscrew the stacking bar 90 degrees in counter-clockwise direction.



Pull the four stacking corners upwards out of the cover.

To re-assemble the stacking bars, follow the same procedure in reverse order.

Maintenance

Cover



To remove the cover of the VARIBOX FC, start by removing the stacking bars (See Stacking bars).

Unscrew the lid from the tank.



Remove the seal ring around the filling opening.



Remove the seal ring around the extractor tube.



Remove the dipstick



Lift the top cover from the outer body.

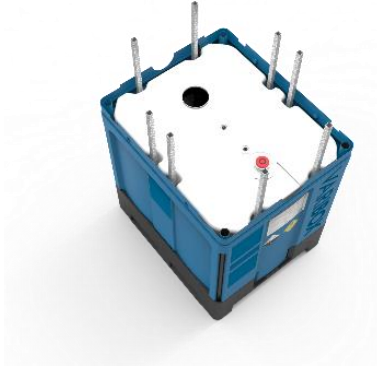
Disconnect the electrical plug(s) (optional).



Remove the 4 top connectors (metal strips) from the outer body.

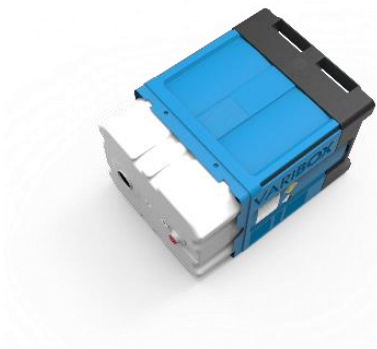
Maintenance

Inner receptacle



Lift the 8 wall support bars out of the outer body.

CAUTION: Wall support bars are no longer held in place when lifting the cover and can come out.

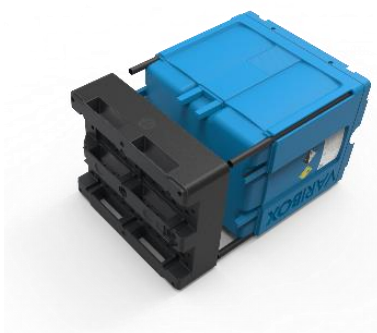


Remove the inner receptacle. You could turn the Varibox FC on its side when lifting tools are not available.

To re-assemble the cover, follow the same procedure in reverse order.

Pallet

To replace the pallet, first make sure the container is empty. The pallet is a hollow product; rain- or cleaning water may have entered the core of the pallet and may drip out when tilting.



Start with removing the stacking bars (See Stacking bars) and the cover (See Cover)

Lift the container from the pallet. You could turn the Varibox FC on its side when lifting tools are not available.

To re-assemble the pallet, follow the same procedure in reverse order.

Cleaning

Cleaning inside

Residues may be found in the product. We therefore advise you, before putting the VARIBOX FC into use, to clean or disinfect according to your company standard or that of competent authorities.



Cleaning the inside can be done by means of a high-pressure water jet with a maximum temperature of 60°C. The tank can be cleaned internally with a special nozzle. Nozzle type, temperature, pressure, volume and other conditions should be adapted to the specific situation.

Picture: examples of high-pressure water jet nozzles.

CAUTION: Make sure not to fill the VARIBOX with hot water (or any other hot liquid). When cleaning with hot water, continuously pump out the water.

Cleaning outside



CAUTION: Cleaning angle min. +45° from horizontal.

Do not use high pressure on the overlap between top cover and outer container.

Do not use water on the cap: the membrane filter for de-aeration may block when wet.

Professional cleaning companies can provide this cleaning service, like:

Company	Adress	Phone	E-mail
Alpak bvba	Nieuwlandlaan 141 B-3200 Aarschot Belgium	Tel. +32 (0) 16 50 20 05	info@alpak.be
Sens Interclean BV	Onyxstraat 12 NL-7554 TP Hengelo The Netherlands	Tel. +31 (0) 742 424 381	info@sensinterclean.nl
Rhein-Fass GmbH & Co. KG	Großpartstraße 2a D-67071 Ludwigshafen Germany	+49 (0) 62 16 70 33 10	kontakt@rhein-fass.de
Gerhard Klein Verpackungen GmbH & Co. KG	Brackstraße 11 D-38159 Vechede Germany	+49 (0) 53 029 17 00 30	info@gk-pack.de

Periodic inspection and test

UN / ADR regulation

The VARIBOX FC is a UN / ADR Certified product. Inspections and tests of the product must be executed periodically, at intervals of not more than 2½ years, in line with UN / ADR regulations.

Inspection unit

An inspection unit carrying out inspections and tests must be authorised by the competent authority, in line with UN / ADR regulations. You can use your own authorised inspection unit, or from a company offering this service.

The national competent authorities can inform which companies can offer this service. This information is typically available on the website of the national competent authority. A list of these competent authorities is included in the ADR regulations: www.unece.org.

A report of each inspection and test is to be sent to the owner of the VARIBOX FC who shall keep this at least until the next inspection or test.

For the support during inspections, there is a comprehensive checklist available at the VARIBOX Customer Service.

Labeling

Boxes

All sides of the VARIBOX FC have boxes for the application of labels. These boxes have a smooth texture so that labels adhere. The dimensions of the label boxes are (width x height):

- 230x230 mm (short sides)
- 300x775 mm (1000 FC, short sides)
- 300x610 mm (800 FC, short sides)
- 230x320 mm (long sides)

Technical data

VARIBOX FC		
Material inner container	Polyethylene, recyclable	
Material outer container	Polyethylene, with steel reinforcement, recyclable	
Material cover	Polyethylene, recyclable	
Material pallet	Recycled polyethylene, recyclable	
Gross capacity	1025 l	835 l
Nominal capacity	1010 l	820 l
Width	1000 mm	1000 mm
Length	1200 mm	1200 mm
Height	1325 mm	1160 mm
Nett height (stacking)	1310 mm	1145 mm
Inlet height	1290 mm	1125 mm
Stacking height	2635 mm	2305 mm
Stacking load	2080 kg	1700 kg
Weight	122 kg	113 kg
Transport quantity	52 per truck	
DIBt approval number	Allgemeine bauaufsichtliche Zulassung (abZ) Z-40.21-534	
UN certification number	UN 31HH1/Y/**--NL/TCPI-PROMENS3-40531/3750/2028	UN 31HH1/Y/**--NL/TCPI-PROMENS3-140531/3060/1700
Standard liquid approvals	Maximum density / hydraulic test pressure	
Water	1900 kg/m ³ / 110 kPa	
Wetting solution	1600 kg/m ³ / 110 kPa	
n-Butyl acetate	1600 kg/m ³ / 110 kPa	
White spirit	1600 kg/m ³ / 110 kPa	
Acetic acid	1600 kg/m ³ / 110 kPa	
Nitric acid 55%	1600 kg/m ³ / 110 kPa	
Nitric acid 62% (max. 2 years)	1400 kg/m ³ / 110 kPa	
Sopuroxid 15* (contains 15% Peracetic acid)	1200 kg/m ³ / 100 kPa	
Vacuum relief vent capacity	120 l/min	
Overpressure vent capacity	80 l/h at ΔP 12 mbar	
Optional level sensors	max. 48 V max. 0,5 A max. 10 W max. 10 VA	

* Tradename of SOPURA, Rue de Trazegnies 199, 6180 Courcelles, Belgium

Learning More, Service and Support

More information about using the VARIBOX FC

For the latest information about the VARIBOX FC and for service and support, please visit www.varibox-ibc.com. You will also find instructional videos about using the VARIBOX FC. A quick way to access the website is to scan the QR code below. This code is also present at the VARIBOX FC.



Getting in touch with us

For spare parts you can use the VARIBOX Webshop for spare parts. For your personal account, warranty related questions or for more information please feel free to contact the:

VARIBOX Customer Service
Tel.: +31 (0)570 660711
info@varibox-ibc.com

Obtaining warranty service

If the product appears to be damaged or does not function properly, please follow the advice in this booklet and the online resources.

If the product still does not function, contact VARIBOX Customer Service for instructions how to obtain warranty service.

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