

# 07

POCKET GUIDE  
SAFETY

Handling of cryogenic  
transport containers (dewars)

**MESSER**   
Gases for Life



# Dear users of Messer gases

Messer produces and supplies a broad portfolio of products and cylinder gases. Handling gases is safe - as long as you pay attention to their special properties.

The gas in gas cylinders is under high pressures of up to 300 bar. It can be flammable, combustible, inert, toxic, highly reactive or, in the case of dewars, cryogenically liquefied. It is essential that you familiarize yourself with the properties of cryogenic liquids and the associated hazards.

This pocket guide gives you tips and advice on how to handle dewars safely. The relevant legal regulations must always be observed. We recommend that you keep the pocket guide within reach at all times.

### Important

You will receive a safety data sheet with all important safety instructions for each product. Please familiarize yourself with this information.

Your Messer team

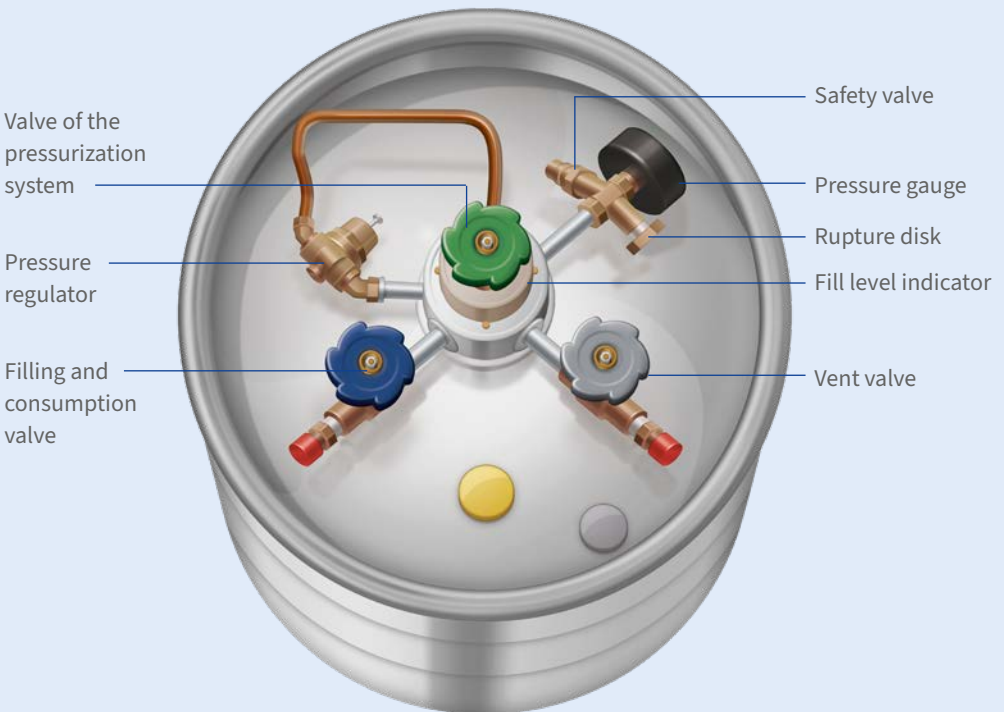


## Dewars: Design and components at a glance

The dewar shown here is a Taylor-Wharton model (XL-180 and XL-240 series). Models from other manufacturers have a similar design.

Dewars are protected against exceeding the permissible operating pressure by the following safety devices:

- **Safety valve**, set to 1.5 bar (optional).
- **Internal tank bursting diaphragm**, set to 12.8 bar.
- **External tank bursting diaphragm**, set to 0.5 bar (optional).



## High level of safety for cryogenic products

Messer supplies cryogenic transport containers (dewars) whose working pressure is adapted to the respective requirements. When handling dewars, particular attention must be paid to the specific properties of this type of container, such as the high daily evaporation/evaporation rate.

The following also applies:

- Always **wear personal protective equipment** (top with long sleeves, cold protection gloves, face protection/goggles).
- Do not store dewars **near heat sources or flammable materials**.
- **Check equipment daily for pressure/leaks**.
- If the detected tank pressure is higher than the required working pressure, **slowly open the gas phase vent valve** until the **tank pressure is below the working pressure** and watch out for escaping gas clouds.

- **Do not open** the gas phase valve **in closed and/or poorly ventilated rooms**.
- Before each use, check that the **safety valve is closed**. No product may escape.
- The **pressurization system** must be open to **maintain the required working pressure**.
- In the event of an unusual **increase in pressure**, contact **Messer technical customer service**.





## Unloading and storing dewars

When handling cryogenic transport containers, the following safety measures must also be observed:

- Never place the container on its side. Always place **upright on a firm, level surface** and **secure against tipping or sliding**.
- Use a forklift or pallet truck for unloading and transportation on site. **Never lift by hand**.
- When moving or lifting, use **suitable lifting points** and a **lifting device** (observe the operating instructions).
- Ensure that the container and equipment are **protected from overheating and mechanical damage**. Do not park in driveway areas or in places that have a high risk potential.





## Removing liquid product

The following steps must be taken to remove liquid product from a dewar:

- Use a **suitable container** for the liquid supply.
- **Connect** a suitable **transfer hose** to the LIQUID connection.
- **Open** the **LIQUID valve** next to it.

The pressure in the container causes the liquid product to flow out of the valve/transfer hose.

The operating personnel should be trained in the removal of liquid product.



## Possible signs of ineffective insulation

Dewars consist of an outer and an inner container. The space between the two containers serves as a thermal barrier, consisting of insulation and an effective vacuum.

**If the vacuum in the insulation space is no longer effective, the following symptoms may occur:**

- When the containers are full, the **outer jacket becomes much colder** than normal.
- The **container can "mist up"** if the air around it is warm and humid.
- The **safety valve opens continuously** until the container is empty.
- The container maintains pressure, but **liquid is still lost**.

**If one or more of these signs occur, proceed as follows:**

- **Put on personal protective equipment.**
- Transport the container **outside**, place it there and **secure the area**.
- **Contact Messer.**





You can access further **Pocket Guides Safety** on our website or obtain them directly from our experts.

### **Important**

This pocket guide only contains general information. It does not replace training and is not intended as such. Messer accepts no liability for the information contained in this brochure.



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