



Do's and Don'ts CO₂ in Cylinders

Safety information for R744 (CO₂) cylinder users

General information

Harp® R744 is Carbon dioxide (CO₂). It is only to be used in refrigeration systems specifically designed to use R744. Harp® R744 is a high pressure liquefied gas, at 21°C its pressure is 58.6 bar absolute. It is provided in cylinders designed to withstand the high pressures generated by CO₂ at normal ambient temperatures. Whilst CO₂ is generally not regarded as toxic, it is extremely dangerous even at low concentrations. It is odourless at low concentrations and at levels above 3% will cause difficulty in breathing, increased heart rate, headache, dizziness, sweating and disorientation. Concentrations above 10% by volume in the atmosphere can lead to loss of consciousness and death. It is heavier than air and will accumulate at low level.

Harp® 744 cylinders

Harp® R744 is supplied in cylinders with a fill weight of 22.5kg or 34.0kg. The 34.0kg cylinder is available with either a liquid off-take or vapour off-take valve. The 22.5kg cylinder is only available with a liquid off-take valve. All Harp® R744 cylinders are equipped with a pressure relief device to protect the cylinder against overpressure and rupture when subjected to excessive temperatures. The valve is equipped with a residual pressure device. The cylinder valve outlet thread is 0.86 inch major diameter, 14 threads per inch, BS Whitworth form. Female connection should be in accordance with BS 341: Part 1 outlet connection No.8. The cylinder should always be stored and used in the upright position.

Safe Handling & Storage

- Do** ensure the cylinder is always stored in the upright position and is secured and stable.
- Do** always wear impervious gloves and eye protection when handling Harp® R744.
- Do** transport cylinders in open vehicles where possible or ensure adequate ventilation if vehicle is closed.
- Do** ensure cylinders are correctly labelled before taking into store.

Using Harp® 744 cylinders

- Do** use the correct female connectors (BS 341: Part 1 outlet connection No.8), charging gauge and hose kit. Ensure that the connector has a sealing washer and that it and the hose kit are in good working condition before using. **If in doubt do not use.**
- Do** point the outlet valve away from you before opening valve and ensure the cylinder is fully upright and stable.
- Do** use only in refrigeration equipment designed for use with CO₂.
- Do**, before charging an evacuated refrigeration system with liquid CO₂, **always** break the vacuum with Harp® R744 vapour and raise the pressure to at least 5.18 bar absolute (4.17 bar gauge). Failure to do so may result in the formation of solid CO₂ (dry ice) and impede any further transfer of the liquid CO₂ into the refrigeration system.
- Do** connect a pressure regulator to a vapour off-take CO₂ cylinder before using the vapour off-take. High vapour flow rates can cause the cylinder to become cold and collapse the cylinder pressure.
- Do** use a vapouriser if gas to be generated from a liquid off-take CO₂ cylinder.
- Do** use the cylinder valve in the fully open position.
- Do** use a valve outlet cap to prevent the valve threads from becoming damaged and avoid any contamination.
- Do** close the cylinder valve and depressurise the circuit before disconnecting the hose kit.

- Don't** store near any source of heat. Ensure that the storage area is well-ventilated at low level with an ambient temperature ≤50°C. Keep out of direct sunlight.
- Don't** store in damp or corrosive atmosphere.
- Don't** drop cylinders or use them as work supports etc.
- Don't** store cylinder where it is not possible to cause mechanical damage to it e.g. by forklift truck etc.

- Don't** apply a flame or heat to increase cylinder pressure.
- Don't** interfere or tamper with the pressure relief device or the residual pressure device as this can be extremely dangerous and cause personal injury.
- Don't** use cylinders with faulty or damaged valves.
- Don't** use excessive force when operating cylinder valve. **Do not** use Stillson's/screwdrivers etc. to force valve hand wheels open or try to unblock/widen valve orifices under any circumstances.
- Don't** apply a naked flame to or heat the cylinder in an attempt to raise the pressure to aid transfer of CO₂ into a refrigeration system. This is **extremely dangerous** and may cause serious personal injury and damage to property and/or equipment.
- Don't** attempt to feed CO₂ back into the cylinder. Use non-return valves in circuits where there is a possibility of this happening.
- Don't** use the cylinder valve as a flow controller.
- High vapour flow rates can cause the cylinder to become cold and collapse the cylinder pressure. **Don't** apply a naked flame to or heat the cylinder in an attempt to raise the cylinder pressure.

**Emergency phone number:
+44(0) 1270 502891 (24 hour)**