

Practise Safe Handling of Gas Cylinders to Ensure A Safe Onboard Environment



Gas cylinders (also called bottles, containers, or tanks) are part and parcel of every ship's operations and they come in all shapes and sizes – for example, industrial gases and refrigerants. The dangers of handling gas cylinders (based on filling under high pressures of up to 300 bar or 4350 psi) are well-documented through past incidences and many strict design, approval, and re-qualification rules have been put in place over time to ensure the safety of users. But besides legal requirements, users must also be aware of certain risks that can be mitigated in order to protect themselves.

Handling Heavy Cylinders

Cylinders weigh approximately 80kg and tip over easily due to their high centre of gravity. Without abiding by the proper procedures, crew members can easily injure themselves and impair their ability to work in labour-intensive environments in the future. Moving and handling these heavy cylinders the proper way reduces the risk of injury significantly.



Use approved trolleys or roll cylinders while holding them vertically upright. This ensures that the physically demanding task of lifting the cylinders is not required. It also ensures that the cylinder content such as liquid acetone is not accidentally released. When lifting cylinders, ensure that the right equipment is used.



The cylinders should be tightly secured using chains, straps, or special brackets, whether it is on board or in transportation vehicles like trucks. Sudden changes in speed, severe movement of vessels due to bad weather, or bends in the roads will cause these cylinders to move and potentially topple when not secured and fastened properly. Cylinders falling out of slings, nets, or baskets can have a big impact on the integrity of the cylinders, especially if the lifting height was high (hoisting cylinders onboard).

Handling High-Pressure Gas Cylinders

High-pressure gases, when released suddenly without control, can propel the cylinders and cause it to move and topple. This can occur when the valve gets damaged or accidentally opened during transport, especially with special quick release valves that are designed to open quickly. High-velocity gas flow from a high-pressure cylinder can also easily penetrate the skin and cause internal injuries even if the gas is considered non-toxic. Furthermore, some gases like oxygen can react violently with oil and grease, so do not use them on threads of the valves as ignition can be the result.



A valve protection safety cap must always be fitted unless a shroud or another form of protection is present. Oil and grease must not be used on the threads of the valve, safety caps, and neck rings.

Handling Cylinders And Understanding Gas Properties

Gases like oxygen have properties that sustain fire and nitrogen will increase the risk of asphyxiation respectively. It is crucial for crew members to understand the individual properties of the gas stored inside cylinders to ensure that they are not misunderstood and mishandled.



Study the Safety Data Sheets (SDS) to understand these gas properties. To prevent mixing up these gases, understand the specific threading on the valve outlets and colour-coding systems of the cylinders to distinguish between different gases in the cylinders. Wilhelmsen Ships Service uses Unitor™ cylinders which have different outlet threading to distinguish between flammable, oxidizing, and inert gases. Colour coding is specific for each gas and typical for the maritime industry.



General Cylinder Storage Guidelines

To ensure that cylinders are functional and safe to store and transport gas, users must always pay attention to the condition of the cylinders. Since they are made of low-alloyed steel, they can rust easily when stored under unfavourable conditions. Here are some storage guidelines to ensure that your cylinders are kept and maintained in the best conditions.



Store cylinders in separate gas-tight rooms when more than 8 cylinders are present to prevent gas from leaking into accommodation areas. Oxygen and acetylene are only stored together for smaller quantities. These gas-tight rooms are often part of a Gas Distribution System where the gases are piped into the workshop.



Always store cylinders in a dry environment. These can be dedicated storage rooms like gas-tight rooms found onboard. Ensure that they are not standing in pools of water as this would cause foot corrosion. Many flag/Class regulations have a requirement for the cylinders to be standing 10 cm above the deck.



Keep cylinders away from chemicals like acids as corrosion can occur to a severe degree.



Keep cylinders stored below 50°C using a covered storage. Extreme temperatures can activate safety devices and cause the uncontrolled release of gas content.



Cylinders should only be used for storing gas for which it was designed. Using cylinders for any other purpose can damage the integrity of the cylinder, reduce its strength, and render it useless for future gas filling.



Never weld on a cylinder. It is forbidden, and when discovered, will mean immediate scrapping of the cylinder.

Wilhelmsen Ships Service always puts safety first

When cylinders and their contents are handled properly, we can ensure the safety of the user. It is important to have a supplier who is aware of the risks and is able to assist the customers with safety instructions and offer the right products to handle cylinders in a safe manner.

Wilhelmsen Ships Service, with more than 100 years of experience in supplying gases and refrigerants in cylinders to marine market, has all the solutions to meet our customers' needs.

Our global exchange program has ensured the availability and constant quality of gases in safe cylinders for more than 100 years.

For more details, check out our Product Catalogue (<https://www.wilhelmsen.com/product-catalogue/>) and reach out to your local WSS representative.

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