

MHS – Metal Hydride Storage Canisters

Compact and safe hydrogen storage at low pressure

ACADEMIA OFFERING

The metal hydride storage canisters from Heliocentris allow safe and compact storage of relatively large amounts of hydrogen at low pressures.

Heliocentris' metal hydride storage canisters can store a multiple amount of hydrogen in comparison to a pressure storage at low pressure.

The metal hydride storage canisters are available in three different dimensions with storage capacities of 200 NI and 800 NI hydrogen at 25 bar filling pressure.

The MHS 200 storage complies with the Art. 4.3 and the MHS 800 with the category 1 of the pressure equipment directive lowering the barriers of hydrogen usage in contrast to pressure storage devices.

Technology

The Heliocentris metal hydride storages are equipped with a low temperature AB2 metal alloy on a TiMg base:

- absorb the hydrogen in the alloy lattice after adsorption at the surface
- can store hydrogen at high volume- and low weight density (ideal for stationary application)
- has a low plateau pressures at about room temperature
- has a low thermal conductivity

The canister is designed as a passive surface cooled system. Heat ducting can be applied by the user with air ventilation or water cooling.

Temperature Handling

The nominal parameters of the canister are defined for a canister surface temperature of 20°C.

The absorption/ desorption performance of the storage can be sensitively influenced by thermalizing the canister surface by:

- cooling the storage surface for absorption (filling) by water or air with 5 ... 20°C
- heating the storage surface for a continuously desorption by water or air with 20 ... 50°C
- usage of the ambient air with passive or active ventilation

Integration, Usage and Safety

An integrated quick coupling allows an easy and safe connection to an individual hydrogen source.

The storage is equipped with a pressure and temperature relief valve to avoid dangerous conditions.



MHS 200
Art.-Nr.
K00-0648

MHS 800
Art.-Nr.
K00-0650

Technical Data

Metal Hydride Storage Canister	MHS 200		MHS 800
PS (max. filling pressure level according to PED) ¹	25 bar (362.6 psi)		
Max. coupling pressure of quick coupling	17.2 bar (250 psi)		
TN (Nominal temperature) ²	20 °C		
Operation temperature	-5 ... 55 °C		
Thermalization temperature ³	5 ... 50 °C		
H2-Purity	Min. 5.0 (99.999 %)		
H2 Capacity (@ 20 °C and 25 bar)	200 NI		800 NI
H2 Capacity (@ 20 °C and 15 bar) ⁴	150 NI		600 NI
H2 Capacity (@ 20 °C with HG) ⁵	60 NI		240 NI
Nominal discharge rate	1 NI/min		4 NI/min
Total weight	2.2 kg		7.3 kg
Overall length	310 mm		470 mm
Diameter	70 mm		102 mm
Bottle volume	0.5 l		2.0 l
Type of connectors	Parker 4M-Q4CY-SSP		

Parts of the system use hydrogen, a highly flammable gas. This requires compliance with local laws and safety regulations for transport, storage and operation. Read the operating manual carefully before setting up and operating the system.
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¹) PED – Pressure Equipment Directive

²) Nominal parameters are validated with 20°C water thermalization

³) allowed cooling or heating temperature with water or air

⁴) with Heliocentris H2 Connection Kit for compressed gas cylinders

⁵) with Heliocentris HG30/72/198 Hydrogen Generator