

Marking

CAS

Characterization acc. ADR

Cylinder Marking

1333-74-0
UN 1049 HYDROGEN,
COMPRESSED, 2.1, (B/D)



Shoulder color: red

Essential properties

compressed gas, lighter than air, colorless, odorless, flammable

Symbols of risks



Physical Properties

molecular weight	2,0158 kg/kmol
gas density at 0°C and 1,013 bar	0,0899 kg/m ³
density ratio to air	0,0695

For additional safety information see safety data sheet *-H2-067A

Valves / Manifolds

Valve connection

200 bar: acc. to national standards
300 bar: acc. to ISO 5145: W 30 x 2 LH

Recommended Manifolds

Spectrolab FM 51 / FM 52exact
Spectrocem FE 51 / FE 52exact



Specification / receptacles						
		Hydrogen 5.0	Hydrogen 5.6 *	Hydrogen ECD	Hydrogen 6.0	
Composition						
H ₂	≥	99.999	99.9996	99.9996	99.9999	Vol.-%
Impurities						
O ₂	≤	1	1	1	0.2	ppmv
N ₂	≤	5	2	2	0.2	ppmv
HC (as CH ₄)	≤	0.1	0.1	0.1	0.1	ppmv
CO + CO ₂	≤	0.1	0.1	0.1	0.1	ppmv
H ₂ O	≤	5	2	2	0.5	ppmv
halogenated HC	≤	-	-	1	-	ppbv
Cylinder / Contents						
F 10 200 bar		1.8	-	-	1.8	m ³
F 50 200 bar		8.9	-	-	-	m ³
F 50 300 bar		12.6	-	-	-	m ³
F 50*12 200 bar		107.0	-	-	-	m ³
F 50*12 300 bar		151.3	-	-	-	m ³

Remarks

Applications:

Carrier gas in gas chromatography and fuel gas for flame ionisation detectors (FID).
Shielding gas and cooling gas in metallurgy and glass industries.

Contents in m³ at 15°C, 1 bar

*: not in each country available

MESSER 
Gases for Life

Messer Group GmbH
Messer-Platz 1
65812 Bad Soden

<https://www.messergroup.com>

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Description

Colourless, odorless, flammable gas. Very much lighter than air. Forms highly explosive mixtures with oxygen or chlorine (detonating gas!). At high emanating velocities danger of self-ignition. The arising flame is nearly invisible.

Materials

Cylinders and valves: any usual materials.

Normalized / annealed steel only under observance of the required max. strength properties; danger of hydrogen embrittlement.

Seals: PCTFE, PVDF, PA PE

Physical Properties			
molecular weight	2,0158 kg/kmol	vapour pressure at 20°C	
critical point		gas density at 0°C and 1,013 bar	0,0899 kg/m ³
temperature	33,19 K	density ratio to air	0,0695
Pressure	13,15 bar	gas density at 15°C and 1 bar	0,08409 kg/m ³
density	0,03012 kg/l	conversion factor	
triple point		liquid at Ts to m ³ gas (15°C, 1 bar)	
temperature	13,957 K	virial coefficient	
Pressure	0,072 bar	Bn at 0°C	0,6*10 ⁻³ bar ⁻¹
boiling point		B30 at 30°C	0,58*10 ⁻³ bar ⁻¹
temperature	20,39 K	gaseous state at 25°C and 1 bar	
liquid density	0,07079 kg/l	specific heat capacity cp	14,3 kJ/kg K
evaporation heat	445,6 kJ/kg	thermal conductivity	1861 10 ⁻⁴ W/m K
		dynam. viscosity	8,92*10 ⁻⁶ Ns/m ²