

CODE & STANDARD	ISO 9809-1
FAMILY GROUP NO.	ISO-20-300-232-CM-01
FAMILY RANGE volume/length/weight	20 - 32.5 L, 685 - 1000 mm, 30 - 42 kg
MODEL NO.	ISO1-51B
WATER VOLUME Liters (+10%)	50
GAS CAPACITY m ³ , or kg	12.7
LENGTH(L) mm (C-20)	1465
WEIGHT kg (+5%)	58.5

1. TECHNICAL DATA

- Filling ratio(kg/liters) : -
- Max. filling pressure : 200 bar (2900 psi)
- Hyd. test pressure : 300 bar (4350 psi)
- Service application : Compressed, Liquefied gases
- Outer diameter(øD) : 232 mm
- Tare Weight(approx.) : 30 kg
- Dimensional tolerance : Outer diameter ; ± 1 %
Wall thickness ; +25 %

2. MATERIAL : Cr-Mn steel similar CrMo(Q & T) or 34CrMo4

3. CHEMICAL COMPOSITION(%)

Compo-sition	C	Si	Mn	P	S	Cr	Mo
Max.	0.40	0.4	1.0	0.02	0.010	1.2	0.40
Min.	0.25	0.1	0.4	-	-	0.8	0.15

P+S : 0.025% max

4. MECHANICAL PROPERTIES

- Tensile strength : Min.890 N/mm²(890 MPa)
- Yield strength : Min.755 N/mm²(755 MPa)
- Elongation : ≥ 14 %

5. CALCULATION FOR MINIMUM DESIGN WALL THICKNESS

5.1 Calculation formula

$$t = \frac{D}{2} \left(1 - \sqrt{\frac{10 F_{Re} - \sqrt{3} Ph}{10 F_{Re}}} \right)$$

- t : Calculated thickness of cylindrical shell, mm
- Ph : Hydraulic test pressure, bar
- D : Outer diameter, mm
- Re : Yield strength, N/mm²
- According to ISO/DIS 9809

5.2 According to above calculation formula minimum design wall thickness shall is as follow.

$$t = \frac{232}{2} \left(1 - \sqrt{\frac{10 \times 0.77 \times 755 - \sqrt{3} \times 300}{10 \times 0.77 \times 755}} \right) = 5.305 \text{ mm}$$

Therefore, calculated minimum wall thickness is 5.4 mm.

INSPECTED BY
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REV.	DATE	HISTORY	DWN.	CHK.	APP.
0	06-09-14	1st Issued - New Issued.			
Gas Cylinder O.D 232 mm			APP	J. S. SHIM	DWG NO.
			CHK		0210-007
			CHK		2005. 09. 14
			DWN	T.J.HWANG	1 of 1 (REV.10)

NK-0430/94.09.07 V. S. PARK President