

Table 1 Analysis of Equivalent Safety for UN TDG Pressure Receptacles Compared to 49CFR

Line No.	Lading:	Sulfuryl Fluoride UN No. 2191 Class 2.3
1	DOT Cylinder Specification IAW 173.304	DOT-3A480
2	Gas Receptacle Specification IAW UN TDG	ISO 9809-1 50 bar Test Pressure
3	PST Receptacle Drawing IAW UN TDG	Model No. 262UN55L50BAR3/4NGT, PST Drawing No. A10BB-SF-ISO

	Safety control	49CFR citation	49CFR requirement	Exemption, UN TDG or ISO 9809-3 citation	UN TDG requirement
4	Filling Density	173.304	120%	UN TDG P200	110%
5	Cylinder Type	173.304	Seamless or welded	UN TDG P200, 6.2.2.1.3, ISO 9809-3	Seamless
6	Cylinder Material	173.304. 178.36	Steel	UN TDG P200, 6.2.2.1.3	Steel
7	Pressure relief device	173.34(d)	IAW CGA S-1.1 except 9.1.1.1.	Exemption	IAW CGA S-1.1 except 9.1.1.1.
8	Valve protection	173.301(g)(1)	Securely attached metal caps	UN TDG 4.1.6.1.7	Caps with vent holes required.
9	Valve protection			ISO 9809-3, 7.7	Necking attachment strength minimum 3875 N and torque resistance 100 N-m minimum.
10	Inspection at manufacture	178.35(b)(1)	Independent approved by DOT	UN TDG 6.2.2.5.2.5	Independent approved by DOT
11	Cylinder specification	178.36	DOT-3A480	UN TDG P200 & 6.2.2.1.3	ISO 9809-3 50 bar Ph
12	Steel composition	178.36(b)	0.55 % max Carbon	ISO 9809-3, 6.2.2	0.45 % max Carbon

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	Safety control	49CFR citation	49CFR requirement	Exemption, UN TDG or ISO 9809-3 citation	UN TDG requirement
13	Steel composition	178.36(b)	0.045 % max Phosphorus	ISO 9809-3, 6.2.2	0.020 % max Phosphorus
14	Steel composition	178.36(b)	0.050 % max Sulphur	ISO 9809-3, 6.2.2	0.020 % max Sulfur
15	Cylinder Service Pressure	173.304	480 psi	Not required	Not required for liquefied gas service
16	Minimum wall thickness	178.36(f)	0.146 inch	Exemption Drawing	0.146 inch
17	Heat Treatment	178.36(g)	Uniform and proper	ISO 9809-3, 6.3	Normalize (1650 F +-54F)
18	Openings and Connections	178.36(h)(2)	Taper thread length min=NPT	Exemption Drawing	3/4 NGT-CL1
19	Hydrostatic Test	178.36(l)	Test pressure 800 psi min	UN TDG P200	50 bar (725 psi min.)
20	Hydrostatic Test	178.36(l)	PE not exceeding 10 TE	Not required	
21	Lot size	178.36(j)&(k)(1)	200 maximum	ISO 9809-3, 3.4	200 maximum
22	Flattening test	178.36(j)&(l)(1)	Flatten to 6T w/o cracking	ISO 9809-3, 10.3.3	Flatten to 4T w/o cracking
23	Physical test	178.36(k)&(l)(1)	Test method IAW ASTM E8	ISO 9809-3, 10.2.2	Test method IAW ISO 6892
24	Physical test	178.36(k)&(l)(1)	Minimum 20% elongation	ISO 9809-3, 10.2.1	Minimum 30% based on estimated actual UTS = 60 ksi
25	Physical test	178.36(k)&(l)(1)	Y:T ratio 73% maximum	Not required	
26	Charpy impact test	Not required		ISO 9809-3, 10.4	Transverse specimen tested at -20C. Minimum average 20 J/cm2
27	Type approval	Not required		UN TDG 6.2.2.5.4 and ISO 9809-3, 9	Required for new designs
28	Design qualification tests	Not required		ISO 9809-3, 9.2.2	Minimum burst pressure 1180 psi
29	Design qualification tests	Not required		ISO 9809-3, 9.2.3	Minimum cycle life 12,000 cycles to 725 psi
30	Retest and inspection	178.34(e)	5 year Retest period	UN TDG P200	5 year Retest period

	Safety control	49CFR citation	49CFR requirement	Exemption, UN TDG or ISO 9809-3 citation	UN TDG requirement
31	Retest and inspection	178.34(e)	Retest pressure, 800 psi min	UN TDG 6.2.1.5 & ISO 6406, 11	725 psi min
32	Retest and inspection	178.34(e)	Maximum PE, 10% of TE	Not required	
33	Retest and inspection	178.34(e)(3)	Visual inspection internal and external IAW CGA C-6.1	UN TDG 6.2.2.4 and ISO 6406	Visual inspection internal and external IAW ISO 6406 Annex C
34	Retest and inspection	178.34(e)(7)	Retest date and RIN marked	ISO 6406, 13.4(b)	Retest date and RIN marked