

TANK-SAFE

FORWARD ACTING COMPOSITE RUPTURE DISC

Reliable corrosion-resistant protection for rail cars and intermodal containers. Unique design to meet international requirements for the transportation of dangerous goods.



Tank-Safe is specifically designed for rail cars and intermodal/tank containers. It is non-fragmenting for installation below the relief valve. It can withstand full vacuum, and complies with safety measures for transporting dangerous goods in arduous conditions.

Tank-Safe is available as either a flat or domed design (TSF/TSD). The composite construction features a slotted top section, a seal membrane and a vacuum support. Full bore relief is achievable on burst as the disc petals open fully. A holderless version with a gasket allows for direct installation between industry-standard flanges.

Size	2", 2.5", 3"
Burst Pressure	1 - 261 psig
Temperature	-328°F to 842°F
Operating Ratio	Domed: 85%; Flat: 40%
Performance Tolerance	+/-5%
Manufacturing Range	0%

Let us help you with all your pressure relief questions.

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**REQUEST A QUOTE FOR
TANK-SAFE**



TECHNICAL SPECIFICATIONS



Size range	1" - 32" (25 - 800mm) Standard sizes for railcar protection: 2", 2.5", 3" (50, 65, 80mm)
Burst pressure range	1 - 261 psig (0.07 - 18 barg) Standard range for railcar protection: 3.75 barg - 4.4 barg (54.4 psig - 63.8)
Temperature range	-328°F to 842°F (-200°C to 450°C)
Standard materials	316 Stainless Steel, Nickel, Inconel. Fluoropolymer seals.
K _R Value	n/a
Max. Operating Ratio	Domed: 85% of minimum burst pressure Flat: 40% of minimum burst pressure
Performance Tolerance	+/-5%
Manufacturing Range	0%
Fragmentation	Non-fragmenting design
Vacuum Service	Additional vacuum support required to withstand full vacuum
Fluid compatibility	Liquid or gas service
Torque requirements	Not torque sensitive
Cycling or static service	Domed: Cycling service Flat: Static service
Protective linings	Available on flat discs
Relief Valve Isolation	Designed for installation below relief valves
Design Standards	Designed to meet ISO 4126-2:2019

Certifications

SIL

Related Products

Holders

STANDARD (FORWARD) HOLDER

Burst Pressure Ranges

Tank-Safe Min/Max Burst Pressure @ 15-30°C (59-86°F)



SIZE		TOP SECTION MATERIAL (all with fluoropolymer seal)	FLAT (TSF)		DOMED (TSD)	
inches	DN (mm)		MIN psig (barg)	MAX psig (barg)	MIN psig (barg)	MAX psig (barg)
1	25	Nickel Stainless Steel/Inconel	3 (0.21) 6 (0.42)	15 (1.04) 30 (2.07)	15 (1.04) 30 (2.1)	100 (6.9) 200 (13.8)
1.5	40	Nickel Stainless Steel/Inconel	2 (0.14) 4 (0.28)	10 (0.7) 20 (1.38)	10 (0.7) 20 (1.4)	100 (6.9) 200 (13.8)
2	50	Nickel Stainless Steel/Inconel	2 (0.14) 4 (0.28)	10 (0.7) 20 (1.38)	10 (0.7) 20 (1.4)	100 (6.9) 200 (13.8)
2.5	65	Nickel Stainless Steel/Inconel	2 (0.14) 4 (0.28)	10 (0.7) 20 (1.38)	10 (0.7) 20 (1.4)	100 (6.9) 200 (13.8)
3	80	Nickel Stainless Steel/Inconel	2 (0.14) 4 (0.28)	10 (0.7) 20 (1.38)	10 (0.7) 20 (1.4)	75 (5.2) 261 (18)
4	100	Nickel Stainless Steel/Inconel	2 (0.14) 4 (0.28)	10 (0.7) 20 (1.38)	10 (0.7) 20 (1.4)	75 (5.2) 247 (17)
6	150	Nickel Stainless Steel/Inconel	1 (0.07) 2 (0.14)	5 (0.35) 10 (0.7)	5 (0.35) 10 (0.7)	75 (5.2) 189 (13)
8	200	Nickel Stainless Steel/Inconel	1 (0.07) 2 (0.14)	5 (0.35) 10 (0.7)	5 (0.35) 10 (0.7)	75 (5.2) 145 (10)
10	250	Nickel Stainless Steel/Inconel	1 (0.07) 2 (0.14)	5 (0.35) 10 (0.7)	5 (0.35) 10 (0.7)	50 (3.45) 123 (8.5)
12	300	Nickel Stainless Steel/Inconel	1 (0.07) 2 (0.14)	5 (0.35) 10 (0.7)	5 (0.35) 10 (0.7)	50 (3.45) 80 (5.5)
14	350	Nickel Stainless Steel/Inconel	- 1 (0.07)	- 8.7 (0.6)	5 (0.35) 10 (0.7)	58 (4) 80 (5.5)
16	400	Nickel Stainless Steel/Inconel	- 1 (0.07)	- 7.25 (0.5)	4.4 (0.3) 8 (0.55)	55 (3.8) 80 (5.5)
18	450	Nickel Stainless Steel/Inconel	- 1 (0.07)	- 7.25 (0.5)	4.4 (0.3) 8 (0.55)	55 (3.8) 80 (5.5)
20	500	Nickel Stainless Steel/Inconel	- 1 (0.07)	- 7.25 (0.5)	4.4 (0.3) 8 (0.55)	55 (3.8) 80 (5.5)
24	600	Nickel Stainless Steel/Inconel	- 1 (0.07)	- 7.25 (0.5)	4.4 (0.3) 7.3 (0.5)	44 (3) 80 (5.5)
28	700	Nickel Stainless Steel/Inconel	- 1 (0.07)	- 7.25 (0.5)	4.4 (0.3) 7.3 (0.5)	39 (2.7) 68 (4.7)
32	800	Nickel Stainless Steel/Inconel	- 1 (0.07)	- 7.25 (0.5)	4.4 (0.3) 7.3 (0.5)	36 (2.5) 62 (4.3)

Free Flow Area / Minimum Net Flow Area (MNFA)



Flat Tank-Safe (TSF)

NOMINAL BORE		MNFA with no vacuum support (XXX)		MNFA with non-opening vacuum support (NVS)	
inches	DN (mm)	Sq. Inch	mm ²	Sq. Inch	mm ²
1	25	0.607	448	0.42	270
1.5	40	1.655	1,164	1.12	721
2	50	2.774	1,908	1.86	1,199
2.5	65	4.678	3,166	2.96	1,912
3	80	7.216	4,839	5.29	3,412
4	100	11.81	7,869	7.34	4,736
6	150	26.246	17,319	14.34	9,253
8	200	47.19	30,946	26.63	17,182
10	250	74.22	48,500	43.53	28,084
12	300	107.4	69,980	-	-
14	350	146.5	64,569	-	-
16	400	191.9	12,3785	-	-
18	450	243.2	15,6929	-	-
20	500	292.3	18,8574	-	-
24	600	422.6	27,3397	-	-
28	700	578.9	37,3928	-	-
32	800	764.77	49,0167	-	-

Burst Tolerance

+/- 0.375 psig ≤ 3.5 psig
 +/- 0.75 psig > 3.5 – ≤ 7.25 psig
 +/- 5% > 7.25 psig

+/- 0.026 barg ≤ 0.24 barg
 +/- 0.053 barg > 0.24 - ≤ 0.5 barg
 +/- 5% > 0.5 barg

Free Flow Area / Minimum Net Flow Area (MNFA)



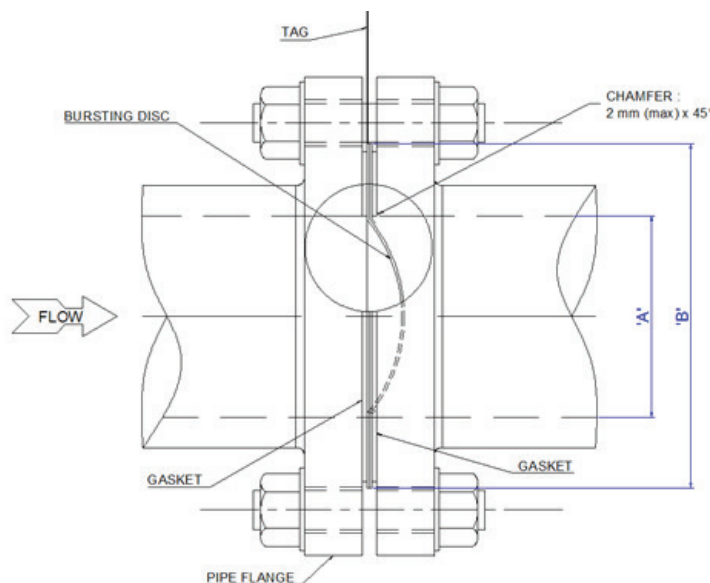
Domed Tank-Safe (TSD)

NOMINAL BORE		MNFA with no vacuum support (XXX)		MNFA with non-opening vacuum support (NVS)		MNFA with opening vacuum support (OVS)	
inches	DN (mm)	Sq. Inch	mm ²	Sq. Inch	mm ²	Sq. Inch	mm ²
1	25	0.607	448	0.42	270	0.58	376
1.5	40	1.655	1,164	1.12	721	1.62	1,046
2	50	2.774	1,908	1.86	1,199	2.49	1,611
2.5	65	4.678	3,166	2.96	1,912	4.30	2,780
3	80	7.216	4,839	5.29	3,412	6.75	4,359
4	100	11.81	7,869	7.34	4,736	11.24	7,253
6	150	26.246	17,319	14.34	9,253	25.41	16,399
8	200	47.19	30,946	26.63	17,182	46.05	29,711
10	250	74.22	48,500	43.53	28,084	72.77	46,951
12	300	107.4	69,980	-	-	105.6	68,118
14	350	146.5	64,569	-	-	142.39	91,863
16	400	191.9	12,3785	-	-	187.07	120,687
18	450	243.2	15,6929	-	-	237.83	153,438
20	500	292.3	18,8574	-	-	286.36	184,745
24	600	422.6	27,3397	-	-	416.61	268,782
28	700	578.9	37,3928	-	-	571.22	368,528
32	800	764.77	49,0167	-	-	666.63	430,083

Burst Tolerance

+/- 1.45 psig ≤ 29 psig
+/- 5% > 29 psig

+/- 0.1 barg ≤ 2 barg
+/- 5% > 2 barg



NOMINAL BORE (A)		Disc thickness mm	Disc outside ø mm
inches	mm		
1	25	1.5 - 6	43
1.2	32		56
1.5	40		66
2	50		79
2.5	65		90
3	80		120
4	100		132.5
5	125		168
6	150		199.5
8	200		254.5
10	250		309.5
12	300		365
14	350		415
16	400		465
18	450		520
20	500		570
24	600		670
28	700		777
30	750		-
31	800		-
33	850		-
35	900		1,018
39	1,000		1,100