

Burst Plug Temperature Effects

A burst plug (aka rupture disk) is used to mitigate overpressure conditions. The burst plug is used as an intentional weak link in a process system. It is designed to rupture at a predetermined process pressure called the “burst pressure,” thereby protecting people, products, and processes.

The Dynisco Burst Plug (Model 420) body is made of 303 stainless steel and a rupture disk of Inconel that will withstand the rigors of plastic extrusion systems. The BP420 is available in several pressure ranges, lengths, and fittings. While the Inconel rupture disk has a 900°F/482°C max temperature rating, it is still influenced by temperature. In other words, the properties of the Inconel metal change slightly with changes in temperature. The burst pressure specification is actually established at room temperature (~72°F/22°C). However, as the process temperature increases, the burst pressure decreases, as a percentage of the burst pressure range. Since the burst pressure decreases with increasing temperature, it is important to select the right pressure range at the outset, especially if the process is on the higher end of the pressure range and temperature.

The following table details the effects of process temperature on the burst pressure range. The °F/C temperature is the process temperature. The %Effect is the additive or subtractive effect on the pressure range. For example, a burst plug selected at 10,000psi would be 94% effective at a process temperature of 580°F/304°C, meaning the burst plug would safely release at 94% of the specified pressure range, or 9,400psi. So if the customer’s process is at the high end of pressure and temperature, you might want to advise using a higher pressure range burst plug. However, you must also keep in mind that installing a burst plug at a burst pressure that is too high will defeat the purpose of installing this safety device. The burst plug selection is not complicated, but it does involve a few variables that need to be taken into consideration.

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Temperature Effects

°F	°C	% Effect		°F	°C	% Effect
30	-1	105		370	188	93
40	4	104		380	193	93
50	10	103		390	199	93
60	16	101		400	204	93
72	22	100		410	210	93
80	27	100		420	216	93
90	32	99		430	221	93
100	38	99		440	227	93
110	43	99		450	232	93
120	49	98		460	238	93
130	54	98		470	243	93
140	60	98		480	249	93
150	66	97		490	254	94
160	71	97		500	260	94
170	77	97		520	271	94
180	82	96		540	282	94
190	88	96		560	293	94
200	93	95		580	304	94
210	99	95		600	316	94
220	104	95		620	327	94
230	110	95		640	338	94
240	116	95		660	349	93
250	121	95		700	371	93
260	127	94		720	382	93
270	132	94		740	393	93
280	138	94		760	404	93
290	143	94		780	416	93
300	149	94		800	427	93
310	154	94		820	438	93
320	160	94		840	449	93
330	165	94		860	460	93
340	171	94		880	471	93
350	177	93		900	482	93
360	182	93				