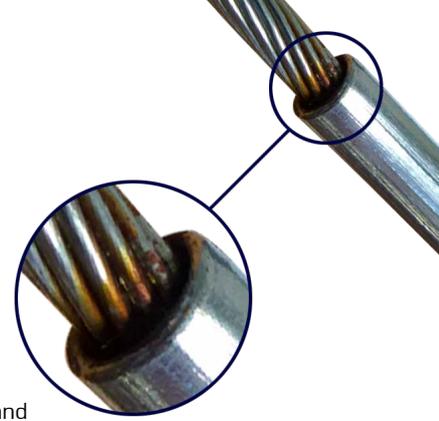


# How to Keep the Stainless Steel Stainless



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Stainless steel is a wonderful material, and treated properly, it will stay bright and stainless forever. Sadly, natural saltwater is one of the most aggressive and corrosive media towards stainless steel, and even the "acid resistant" 316L class requires a bit of maintenance in order to stay stainless.

In case of 316L above water, the main issue is time. Saltwater is very aggressive towards virtually any alloy, and the key issue is to keep the contact time as short as possible. In wet, temperate conditions, such as Scandinavia, the Canadian West Coast or the South Island of New Zealand, the all-too-common rain takes care of this, however, in warmer and drier conditions, such as Southern Europe and The Middle East, things are much different. Here, all saltwater sprayed onto the steel from below will tend to stick to the steel forever, with little chance of rain from above. Similar conditions are observed in dry season in the Caribbean, the tropical Pacific, or in South-East Asia. In the wet season, these places receive large amounts of rain, rendering any freshwater cleaning superfluous.

Very likely, the saltwater will cause superficial pitting corrosion, and although such attacks may not cause operational failure, it certainly looks unattractive and should be avoided. The best and cheapest way to avoid pitting corrosion is to keep the contact time low. Cleaning off the saltwater as quickly as possible keeps the contact time short, and the risk of corrosion correspondingly low. The more frequent the freshwater rinse, the better, and, presumably, a thorough rinse every fortnight should do the trick.

Be particularly aware that **fittings below a braided steel cable are particularly prone to collecting saltwater**, and so is the braided cable itself. Due to gravity, the upper fittings (pointing downwards) are less exposed to saltwater and may be rinsed less frequently.

If freshwater is not available, the second-best solution is to rinse with saltwater and dry the steel immediately afterwards. It is, still, preferable to use low-chloride water (i.e. freshwater) as often as possible.

## PREN Pitting Resistance Equivalent

$$PREN = \% Cr + (\% Mo \times 3,3) + (\% N \times 16)$$

PREN is a guideline formula for calculating the properties of stainless steel and there resist against pitting. You could say that the content of Molybdenum, has 3.3 times as great effect against corrosion, as the content of chrome, and Nitrogens has 16 times. To ensure the right quality of stainless steel, Blue Wave has invested in an X-ray gun for the control of raw materials, to ensure that customers always get the desired quality. Below is a table of the most frequently used types of stainless steel at Blue Wave.



Analytical			
Ready			
316 - Exact Match			
1_4401 - Exact Match			
1_4571 - MN: 0.4			
El	%	+/-	Comp
Cr	17.00	0.12	[16.00-18.00]
Mn	1.30	0.06	[0.00-2.00]
Fe	68.28	0.28	[58.00-77.00]
Ni	10.99	0.15	[10.00-14.00]
Cu	0.30	0.04	[0.00-0.75]
Mo	2.13	0.02	[2.00-3.00]
Start Info Standardize			
Mode Analysis Results Setup			



EN	STRUCTURE	C %	Cr %	Ni %	Mo %	N %	Si ≤%	Mn ≤%	S ≤%	P ≤%	PREN
1,4301	304	≤ 0,07	17,5 - 19,5	8,00 - 10,5	-	-	1,0	2,0	0,015	0,045	17,5
1,4401	316	≤ 0,07	16,5 - 18,5	10,0 - 13,0	2,00 - 2,50	-	1,0	2,0	0,015	0,045	23,1
1,4404	316 L	≤ 0,03	16,5 - 18,5	10,0 - 13,0	2,00 - 2,50	-	1,0	2,0	0,015	0,045	23,1
1,4571	316 Ti	≤ 0,08	16,5 - 18,5	10,5 - 13,5	2,00 - 2,50	-	1,0	2,0	0,015	0,045	23,1
1,4462	318 LN	≤ 0,03	21,0 - 23,0	4,50 - 6,50	2,50 - 3,50	0,1 - 0,22	1,0	2,0	0,015	0,035	30,9

Table showing the most frequently used stainless steel grades and their chemical composition