Table 5 1: Alloys with high resistance to stress-corrosion cracking

(a) Steel	Condition
Carbon steel (1000 series)	Below 1 225 MPa (180 ksi) UTS
Low alloy steel (4130, 4340, etc.)	Below 1 225 MPa (180 ksi) UTS[1]
(E) D6AC, H-11	Below 1 450 MPa (210 ksi) UTS
Music wire (ASTM 228)	Cold drawn
HY-80 steel	Quenched and tempered
HY-130 steel	Quenched and tempered
HY-140 steel	Quenched and tempered
1095 spring steel	Quenched and tempered
300 series stainless steel (unsensitized)[2]	All
400 series Ferritec stainless steel (404, 430, 431, 444, etc.)	All
21-6-9 stainless steel	All
Carpenter 20 Cb stainless steel	All
Carpenter 20 Cb-3 stainless steel	All
A286 stainless steel	All
AM350 stainless steel	SCT 1000[4] and above
AM355 stainless steel	SCT 1000 and above
Almar 362 stainless steel	H1000[5] and above
Custom 450 stainless steel	H1000 and above
Custom 455 stainless steel	H1000 and above
15-5 PH stainless steel	H1000 and above
PH 14-8 Mo stainless steel	CH900 and SRH950 and above[6,7]
PH 15-7 Mo stainless steel	CH900
17-7 PH stainless steel	CH900
Nitronic 33[3]	All
(E) Maraging steel MARVAL X12	All

1. A small number of laboratory failures of specimens cut from plate more than 2 inches thick have been observed at 75 % yield, even within this ultimate strength range. The use of thick plate should therefore be avoided in a corrosive environment when sustained tensile stress in the short transverse direction is expected.
2. Including weldments of 304L, 316L, 321 and 347.
3. Including weldments.
4. SCT 1000 = sub-zero cooling and tempering at 538 °C (1 000 °F).
5. H1000 hardened above 538 °C (1 000°F).
6. CH900 cold worked and aged at 480 °C (900 °F).
7. SRH950 = solution treated and tempered at 510 °C (950 °F).

(E) ESA classification not in NASA MSFC-SPEC-522A.

(b) Nickel Alloy	**Condition**
Hastelloy C	All
Hastelloy X	All
Incoloy 800	All
Incoloy 901	All
Incoloy 903	All
Inconel 600[3]	Annealed
Inconel 625	Annealed
Inconel 718[3]	All
Inconel X-750	All
Monel K-500	All
Ni-Span-C 902	All
René 41	All
Unitemp 212	All
Waspaloy	All
3. Including weldments	

(c) Aluminium alloys:			
Wrought[1,2]		**Cast**	
Alloy	**Condition**	**Alloy[3]**	**Condition**
1000 series	All	355.0, C355.0	T6
2011	T8	356.0, A356.0	All
2024, rod bar	T8	357.0	All
2219	T6, T8	B358.0 (Tens-50)	All
(E) 2419	T8	359.0	All
(E) 2618	T6, T8	380.0, A380.0	As cast
3000 series	All	514.0 (214)	As cast[5]
5000 series	All[4,5]	518.0 (218)	As cast[5]
6000 series	All	535.0 (Almag 35)	As cast[5]
(E) 7020	T6[6]	A712.0, C712.0	As cast
7049	T73		
7149	T73		
7050	T73		
7075	T73		
7475	T73		

1. Mechanical stress relieved (TX5X or TX5XX) where possible.
2. Including weldments of the weldable alloys.
3. The former designation is shown in parenthesis when significantly different.
4. High magnesium content alloys 5456, 5083 and 5086 should be used only in controlled tempers (H111, H112, H116, H117, H323, H343) for resistance to stress-corrosion cracking and exfoliation.
5. Alloys with magnesium content greater than 3,0 % are not recommended for high-temperature application, 66 °C (150 °F) and above.
6. Excluding weldments.

(E) ESA classification - not in NASA MSFC-SPEC-522A.

(d) Copper Alloy

CDA no. [1]	**Condition (% cold rolled)** [2]
110	37
170	AT, HT [3,4]
172	AT, HT [3,4]
194	37
195	90
230	40
422	37
443	10
510	37
521	37
619	40 (9 % B phase)
619	40 (95 % B phase)
688	40
706	50
725	50, annealed
280, 524, 606, 632, 655, 704, 710	0
715, (E) 917, (E) 937	0

1. Copper Development Association alloy number.
2. Maximum per cent cold rolled for which stress-corrosion-cracking data are available.
3. AT - annealed and precipitation hardened.
4. HT - work hardened and precipitation hardened.

(E) ESA classification not in NASA MSFC-SPEC-522A.

(e) Miscellaneous Alloy (wrought)	**Condition**
Beryllium, S-200C	Annealed
HS 25 (L605)	All
HS 188	All
MP35N	All
Titanium, 3Al-2.5V	All
Titanium, 6AI-4V	All
Titanium, 13V-11Cr-3AI	All
(E) Titanium OMI 685, IMI 829	All
Magnesium, M1A	All
Magnesium, LA141	Stabilised
Magnesium, LAZ933	All
(E) Cast alloy Magnesium ELEKTRON 21	T6
(E) ESA classification not in NASA MSFC-SPEC-522A.	