Chemical Resistance of Protection Tube Material

Corrosives	Concentration	Temp. (℃)	304SS	321SS	316SS	316LSS	316JILSS	310S SS	347SS	Carpenter 20	Inconel 600	Nimonic	Hastelloy B	Hastelloy C-276	Hastelloy X	Titanium	Monel	Tantalum	Teflon	Copper	Zirconium	Nickel	PVC	Cupro-nickel	Aluminium	Brass	Lead	Common steel	50Co-30Cr	Haynes alloy 25
	5%	30	B	B	B	B	B	B	B	A	B	B	A	A	One of the Hastelloy series and excellent in heat resistance.	B	B	A	A	B	A	B	A	B	C	C	A	C	Cobalt-base alloy and excellent in heat and abrasion resistance.	A
	〃	B.P	C	C	C	C	C	C	C	B	C	C	A	B		C	C	A		C	A	C		C	C	C	A	C		B
H_2SO_4	10%	30	B	B	B	B	B	B	B	A	B	B	A	A		B	B	A	A	B		B	A	B	C	C	A	C		A
	〃	B.P	C	C	C	C	C	C	C	A	C	C	A	B		C	C	A		C		B		C	C	C	A	C		B
	50%	30	C	C	C	C	C	C	C	A	B	B	A	A		B	B	A	A	B		B	A	B	C	C	A	C		A
	〃	B.P	C	C	C	C	C	C	C	A	C	C	A	B		C	C	A		C		B		C	C	C	B	C		B
	90%	30	B	B	B	B	B	B	B	A	B	B	A	A		B	B	A	A	B	B	B	A	B	C	C	A	C		A
	〃	B.P	C	C	C	C	C	C	C	A	C	C	A			C	C	A		C	B	B		C	C	C	B	C		B
	5%	30	C	C	C	C	C	C	C	B	B	B	A	A		A	B	A	A	B	B		A	C	C	C	B	C		B
	〃	B.P	C	C	C	C	C	C	C	B	B	B	A	A		B	B	A						C	C	C	B	C		C
2HCL	10%	30	C	C	C	C	C	C	C	B	B	B	A	A		A	B	A	A	B	B		A	C	C	C	B	C		B
	〃	B.P	C	C	C	C	C	C	C	B	B	B	A	A		B	B	A						C	C	C	B	C		C
	20%	30	C	C	C	C	C	C	C	B	B	B	A	A		A	B	A	A	B	B		A	C	C	C	B	C		B
	〃	B.P	C	C	C	C	C	C	C	C	B	B	A	A		B	B	A						C	C	C	B	C		C
	20%	30	A	A	A	A	A	A	A	A	A	A	C	A		A	C	A	B	C		C	B	C	B	C	C	C		B
	〃	B.P	A	A	A	A	A	A	A	A	A	A	C	A		A	C	A		C		C		C	C	C	C	C		C
HNO_3	40%	30	A	A	A	A	A	A	A	A	A	A	C	A		A	C	A	A	C		C	B	C	B	C	C	C		B
	〃	B.P	A	A	A	A	A	A	A	A	A	A	C	A		A	C	A		C		C		C	C	C	C	C		C
	75%	30	A	A	A	A	A	A	A	A	A	A	C	A		A	C	A	A	C		C	B	C	B	C	C	C		B
	〃	B.P	A	A	A	A	A	A	A	A	A	A	C	A		A	C	A		C		C		C	C	C	C	C		C
	10%	30	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A	A	B	A	B	A	B	A	B	B	C		A
	〃	B.P	A	A	A	A	A	A	A	A	A	A	A	A		A	B	A	A	B	A	B		B	B	B	B	C		A
CH_3CO_2H	50%	30	A	A	A	A	A	A	A	A	A	A	A	A		A	B	A	A	B	A	B	A	B	A	B	B	C		A
	〃	B.P	A	A	A	A	A	A	A	A	B	A	A	A		A	B	A	A	B		B		B	B	B	B	C		A
	80%	30	B	A	A	A	A	A	A	A	B	A	A	A		A	B	A	A	B	A	B	A	B	A	C	B	C		A
	〃	B.P	B	A	A	A	A	A	A	A	B	A	A	A		A	B	A	A	B		B		B	C	C	B	C		A
	5%	30	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A	A	B	A	B	A	B	C	B	B	A		A
	〃	B.P	B	B	A	A	A	A	A	A	B	A	A	A		A	A	A	A	B	A	B		B	C	C	B	A		A
H_3PO_4	50%	30	B	B	B	B	B	B	B	A	A	A	A	A		A	A	A	A	B	A	B	A	B	C	C	B	A		A
	〃	B.P	B	B	B	B	B	B	B	A	B	B	A	A		A	B	A	A	B	A	B		C	C	C	B	A		B
	85%	30	B	B	B	B	B	B	B	A	B	B	A	A		A	A	A	A	B	A	B	A	B	C	C	B	A		B
	〃	B.P	B	B	B	B	B	B	B	A	B	B	A	A		A	B	A	A	B	A	B		C	C	C	B	A		B
H_2F_2	30%	30	C	C	C	C	C	C	C	C	A		A	A		C	A			A		A	A	C	C	B	B	C		C
	〃	B.P	C	C	C	C	C	C	C	C	B		C	C		C	B			C		C		C	C	B	C	C		C
	70%	B.P	C	C	C	C	C	C	C	C	B		C	C		C	B			C		C		C	C	C	C	C		C
HCl		30	B	B	B	B	B	B	B	B	B	B	A	A					A		A							A		A
		200	B	B	B	B	B	B	B	B	B	B	A	A					A		A							A		A
		400	B	B	B	B	B	B	B	B	B	B	A	A							A							A		B
	10%	30	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A	A	B	A	A	A	A	B	B	B	B		
	〃	B.P	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A		B	A	A		A	B	B	B	B		
NaOH	50%	30	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A	A	B	A	A	A	A	B	B	B	B		
	〃	B.P	B	B	B	B	B	B	B	A	A	A	A	A		A	A	A		B	A	A		B	B	B	B	B		
	70%	30	A	A	A	A	A	A	A	A	A	A	A	A		A	A	A	A	B	A	A	A	B	B	B	B	B		
	〃	B.P	B	B	B	B	B	B	B	A	A	A	A	A		A	A	A		B	A	A		B	B	B	B	B		
KOH	25%	B.P	A	A	A	A	A	A	A	A	A	A	A	A		C	A	C		C	A	B		B	C	C	B	B		
	50%	B.P	B	B	B	B	B	B	B	A	A	A	A	A		C	A	C		C	A	B		B	C	C	B	B		
HCl (dry)		30	C	C	C	C	C	C	C	C			A	A		A	A		A	A				A	A	C	B	C		A
〃 (wet)		30	C	C	C	C	C	C	C	C			C	C		A	A		A	C				C	C	C	B	C		A
HCl vapor			C	C	C	C	C	C	C	B									A					C	C	B	C			
HF			C	C	C	C	C	C	C	A	C						B	C	A			B	A	C	C	C	B	C		C
$H_2(SiF_6)$	5%	20	C	C	C	C	C	C	C	A	A		A	A			B	C	A			C	A	C	C	C	B	C		
F	10%	30	C	C	C	C	C	C	C	A	A		A	A			B	C	A			C	A	C	C	C	B	C		
NaOH	10%	B.P	B	A	A	A	A	A	A	A									A					A	C	C	B	C		
	75%	100	B	A	A	A	A	A	A	A									A					A	C	C	B	C		
CO_2	10%	200	A	A	A	A	A	A	A	A			A	A			A	A	A											
SO_2			A	A	A	A	A	A	A	A						A	A	A	A			A		A		C		C		
$Na_5P_3O^{10}$	10%	30	B	B	B	B	B	B	B	B	C	C	C	A			C			C	B	C	C		B	C			C		
CHCl		30	C	C	C	C	C	C	C							C				C				B	C	C		C		
AlF_3	50%	30	B		B												B			A		B		A	C					
Fatty Acids		100	A	A	A	A	A	A	A	A	A		A	A		A	A	A				A		A						
NH_3			A	A	A	A	A	A	A	A									A											
NaCl			A	A	A	A	A	A	A	A	A									B		A		A	C	B		B		
CrO_4										A									A											
H_2O_2			A	A	A	A	A	A	A	A	A		A	A		A	A	A													
S (liguid)			A	A	A	A	A	A	A	A	A					A	A		A					A						
$CaCl_2$			A	A	A	A	A	A	A	A	A		A	A		A	A		A	B		A	A	A		B		B		

Note: A = Almost no corrosion in critical conditions. B = Small corrosion but permissible in general use other than specific parts. C = Heavy corrosion and unsuitable.