

# CORROSION RESISTANCE

against high corrosive process media

Media			Wetted parts							Seal					
Corrosive media	% Concentration	Temperature °C	99.9% Al <sub>2</sub> O <sub>3</sub> ceramic**	316L / 1.4435	Hastelloy (C-276)	Monel (400)	Tantalum	Titanium (poss. +2% Pd)	Nickel TSP-option	PTFE	Kalrez / Chemraz	EPDM (synt.rubber)	Viton FPM	Neoprene CR	Perbuan NBR
			<b>Ketones</b>												
Acetone CH <sub>3</sub> -CO-CH <sub>3</sub>	100	RT	A	A	A	A	A	A	A	A	A	A	C	C	C
(Dimethylceton)	100	S	A	A	A	A	A	A	A	A	A	A	C	C	C
Ammonia gas	conc.	Rt	A	A	A	C	A	A	C	A	A	A	C	A	A
Ammonia liquid NH <sub>3</sub>	conc.	100	A	A	A	C	A	A	C	A	A	B	C	B	C
Ammonia Solution NH <sub>3</sub>	10	Rt	A	A	A	C	A	A	C	A	A	C	B	A	B
<b>unorg. lyes</b>	10	s	A	C	A	C	C	A	C	A	A	C	B	A	B
	20	s	A	C	A	C	C	A	C	A	A	C	B	A	B
	25	s	A	C	A	C	C	A	C	A	A	C	B	A	B
	conc.	Rt	A	A	A	C	A	A	C	A	A	C	B	A	B
	conc.	100	A	C	A	C	A	A	C	A	A	C	B	A	B
<b>org.acid</b>															
Acetic acid CH <sub>3</sub> -COOH	10	Rt	A	A	A	A	A	A	C	A	A	C	C	A	C
	10	s	A	A	A	A	A	A	C	A	A	C	C	A	C
	50	Rt	A	A	A	A	A	A	C	A	A	C	C	A	C
	50	s	A	A	A	A	A	A	C	A	C	C	C	A	C
	conc.	Rt	A	A	A	A	A	A	C	A	C	C	C	A	C
	conc.	s	A	C	A	A	A	A	C	A	C	C	C	A	C
Chlorine gas wet Cl <sub>2</sub>	100	Rt	A	C	A	C	A	B	A	A	N	N	A	C	C
Chlorine Cl <sub>2</sub>	100	Rt	A	A	A	C	A	C	A	A	C	C	A	C	C
		70	A	C	A	A	A	C	A	A	C	C	A	C	C
Chloracetic acid CH <sub>2</sub> Cl-COOH	50	20	A	C	A	A	A	A	A	A	C	C	C	C	C
	70	s	A	C	A	B	A	A	B	A	C	C	C	C	C
	100	Rt	A	C	A	B	A	A	B	A	C	C	C	C	C
	100	s	A	C	A	B	A	A	B	A	C	C	C	C	C
Chlorosulfonic acid SO <sub>2</sub> (OH)Cl	100	Rt	A	A	A	B	A	C	B	A	C	A	C	C	C
			A	C	A	C	A	C	C	A	C	C	C	C	C
Formic acid H-COOH	10	Rt	A	A	A	A	A	A	A	A	C	A	B	B	C
	10	65	A	A	B	B	A	A	B	A	C	B	B	B	C
	10	s	A	A	C	C	A	A	C	A	C	B	B	B	C
	20-40	65	A	A	B	C	A	A	C	A	C	B	B	B	C
	50	65	A	A	A	A	A	A	A	A	C	C	B	B	C
	50	s	A	A	C	C	A	C	C	A	C	C	B	B	C
	80	Rt	A	A	A	A	A	A	A	A	C	A	B	B	C
	80	65	A	C	B	C	A	B	C	A	C	C	B	B	C
	80	20	A	C	C	C	A	C	C	A	C	A	B	B	C
	conc.	Rt	A	A	A	A	A	A	A	A	C	A	B	B	C
	conc.	s	A	C	C	C	A	C	C	A	C	C	B	B	C
<b>unorg.acid</b>															
Hydrofluoric acid HF	1	Rt	A	C	A	A	C	C	A	A	A	C	A	B	C
	40	Rt	A	C	A	A	C	C	A	A	A	C	A	B	C
	40	50	C*	C	A	A	C	C	B	A	A	C	A	C	C
	50	Rt	A	C	A	A	C	C	A	A	A	C	A	B	C
Hydrogen fluoride HF gas	100	Rt	C*	C	A	A	C	C	A	A	A	C	A	C	C

According to Philips (1/88) to ASV Stübbe and to Du Pont (Kalrez:

\* recommended option: Sapphire membrane (A = fully resistant)

\*\* for 96% ceramic see Philips table

A	fully resistant
B	sufficient resistant
C	not resistant
N	no data available

Rt : room temperature

s : boiling

conc. : concentrated

sat. : saturated

This list constitutes a non-binding recommendation from which no warranty claims whatsoever can be derived !

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Corrosive media	% Concentration	Temperature °C	99.9% Al <sub>2</sub> O <sub>3</sub> ceramic**	316L / 1.4435	Hastelloy (C-276)	Monel (400)	Tantalum	Titanium (poss. +2% Pd)	Nickel TSP-option	PTFE	Kalrez / Chemraz	EPDM (synt.rubber)	Viton FPM	Neoprene CR	Perbuan NBR
			Sodium hydroxide (Caustic soda) NaOH unorg.lyes	10 10 20 20 50 50 sat.	Rt s Rt s Rt s s	A A A A A A A	A A A A A A A	A A A A A A B	A A A A A A C	A A A B B B C	A A A A A B A	A A A A A A A	A A A A A A A	A A A C C C C	C C C C C C C
Oleum H <sub>2</sub> SO <sub>4</sub> + SO <sub>3</sub> (vitriolic acid) unorg.acid	conc. conc.	Rt 50	A A	B B	A B	A B	A C	C C	A B	A N	N C	C A	A C	C C	C C
Phosphoric acid H <sub>3</sub> PO <sub>4</sub> unorg.acid	10 10 45 45 conc. conc.	Rt s Rt s Rt 100	A A A A A A	A C A C C C	A A A A B C	A C C C A C	A A A A B C	A C C C B C	A A A A A A	A A A A A A	A A A C A A	A A A C A A	A A A A A A	A A A A A A	B C B B B C
Nitric acid HNO <sub>3</sub> unorg.acid	25 25 50 50 70	Rt s Rt s 100	A A A A A	A A A A C	A C A C C	C C C C C	A A A A A	A B A B A	C C C C C	A A A A A	C C C C C	C C C C C	B B B B B	C C C C C	C C C C C
Hydrochloric acid HCl unorg.acid	10 10 10 20 20 37 37	Rt 50 s Rt s Rt 100	A A A A A A A	C C C C C C C	A C C A C C C	C C C C C C C	A A A A A A A	A A C A A C C	B C C B C C C	A A A A A A A	A C C A C C C	A A A A A A A	B B C B B B C	C C C C C C C	
Hydrochloric acid+nitric acid HCl : HNO <sub>3</sub> (3:1) Aqua Regia) unorg.acid	conc.	Rt	A	C	B	C	A	A	C	A	B	B	B	C	C
Sulfuric acid H <sub>2</sub> SO <sub>4</sub> unorg.acid	10 10 50 50 96 96	Rt s Rt s Rt 100	A A A A A A	A C B B C C	A B A C A C	A A A C C C	A A A A C C	A B B C C C	A C C C C C	A A A A A A	A B A C C C	A A A A A A	C C C C C C	C C C C C C	
Sulfuric acid+nitric acid H <sub>2</sub> SO <sub>4</sub> : HNO <sub>3</sub>	10 90 50 50 90 10	35 35 35	A A A	N N N	A A A	C C C	A A A	A A B	C C C	A A A	N N N	N N A	B B A	C C C	C C C
Zinc chloride ZnCl <sub>2</sub>	10 10 60 60 sat.	Rt s Rt s s	A A A A A	A A A A C	A A A B B	A A A B B	A A A A A	A A A B C	A B B B B	A B A A A	B B A A A	A A A A A	A A A A A	A A A A A	B B B B B

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