

CHEMICAL RESISTANCE CARD

CHEMICALS

	Concentration (%)	Temperature (°C)	QUADRANT EPP MATERIALS													
			ERTALON® / NYLATRON® (PA)	ERTACETAL® C (POM-C)	ERTACETAL® H (POM-H)	ERTALYTE® (PET)	PC 1000	TIVAR® 1000 / PE 500 (PE-(U)HMW)	KETRON® PEEK	TECHTRON® HPV PPS	RADEL® PPSU 1000	ULTEM® PEI 1000	PSU 1000	SYMALJT® PVDF 1000 (**)	FLUOROSINT® (PTFE)	
Hydrogen peroxide	1	RT	C	A	A	A	A	A	A	A	A	A	A	A	A	A
Nitric acid	1	RT	B	C	C	A	A	A	A	A	A	A	A	A	A	A
Nitric acid	5	80	C	C	C	C	C	B	B	B	A	B	A	A	A	A
Phosphoric acid	1	RT	B	B	B	A	A	A	A	A	A	A	A	A	A	A
Phosphoric acid	5	80	C	C	C	B	C	B	A	A	A	A	A	A	A	A
Sodium hydroxide	1	RT	A	A	B	A	B	A	A	A	A	A	A	A	A	A
Sodium hydroxide	5	80	C	A	C	C	C	B	A	A	A	B	A	C	A	A
Sodium hypochlorite (300 ppm active chlorine)		20	B	B	B	A	A	A	A	A	A	A	A	A	A	A
Steam sterilisation (single autoclaving)	UD	134	A	A	A	A	A	A	NA	A	A	A	A	A	A	A
Steam sterilisation (repeated autoclaving) (***)	UD	134	C	C	C	C	C	C	NA	A	A	A	A	A	A	A
Sulphuric acid	1	RT	B	A	C	A	A	A	A	A	A	A	A	A	A	A
Sulphuric acid	3	60	C	C	C	A	A	A	B	A	A	A	A	A	A	A
Water	UD	60	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Water	UD	80	B	A	B	B	B	B	A	A	A	A	A	A	A	A
Water	UD	95	C	B	C	C	C	C	A	B	A	A	A	A	A	A

Quadrant Engineering Plastic Products has products that can withstand different cleaning and sanitising procedures such as CIP (Clean-In-Place), COP (Clean-Out-of-Place) and SIP (Sterilisation-In-Place). The choice of the most suitable plastics material depends on available chemical resistance data and practical experience, but often preliminary testing of the finished plastics part under actual service conditions (right chemical, concentration, temperature and contact time, as well as loading conditions) is required to assess its final suitability for the given application.

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LEGEND TO THE TABLE

- (*) : for this material, the max. sterilisation temperature is limited to 121°C
- (**) : it has to be pointed out that stress cracking can occur on SYMALIT® PVDF 1000 parts when simultaneously exposed to mechanical stress and to an environment with $\text{pH} \geq 12$, or when operating in a medium which is likely to generate atomic chlorine
- (***) : considering the different inherent properties of these plastics, the influence of design of the plastic parts, cycle times and chemical environment (boiler feed water additives, etc.),... the allowable number of sterilisation cycles is to be determined by the user under practical operating conditions

Resistance ratings:

- A : Resistant. Little or no change in weight. Small effect on mechanical properties. In general acceptable service life.
- B : Partially resistant. In course of time, there is a distinct deterioration in mechanical properties and a change in weight. In many cases a short term exposure or limited number of cleaning cycles may be considered allowable (to be evaluated by practical testing).
- C : Non-resistant. After a short time, the material is seriously affected (considerable reduction of the mechanical strength and changes in weight). Using the material under these conditions is not recommended.
- NA : Not applicable for this material.

Concentration (%):

A number, e.g. 5, indicates "5 g of solute per 100 g of aqueous solution" (5 % by weight).

UD : Undiluted (technically pure chemical)

Temperature (°C):

RT : Room temperature (15 - 25°C)

Note: The ratings given in the table above - derived from raw material supplier data, literature related to the chemical resistance of plastics, and own experience - are intended as a guide only and refer to unstressed parts. It has to be pointed out that particularly the amorphous thermoplastics (PC, PSU, PEI and PPSU) are sensitive to "stress cracking", meaning that environments which are completely harmless to unstressed parts, may cause stress cracking when in contact with stressed parts.

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