

# Chemical Resistance Card

Our partners, Quadrant Engineering 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 materials depends on available chemical resistance data and practical experience, but often preliminary testing of the finished plastic parts 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.

CHEMICALS	QUADRANT EPP MATERIALS														
	CONCENTRATION (%)	TEMPERATURE (°C)	ERTALON® / NYLATRON® (PA)	ERTACEAL® C (POM-C)	ERTACEAL® H (POM-H)	ERTALYTE® (PET)	PC 1000	TMAR® 1 000 / PE 500 (UHMW-PE)	KETRON® PEEK	TECHTRON® PPS	QUADRANT PPSU	DURATRON® U1 000 PEI	PSU 1000	SYMALIT® PVDF 1000(**)	FLUOROSINT® (PTFE)
Hydrogen peroxide	1	RT	C	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
Nitric acid	5	80	C	C	C	C	C	B	B	B	A	B	A	A	A
Phosphoric acid	1	RT	B	B	B	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
Sodium hydroxide	1	RT	A	A	B	A	B	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
Sodium hypochlorite (300 ppm active chlorine)		20	B	B	B	A	A	A	A	A	A	A	A	A	A
Steam sterilisation (single autoclaving)	UD	134	A	A	A	A	A(*)	NA	A	A	A	A	A	A	A
Steam sterilisation (repeated autoclaving) (***)	UD	134	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
Sulphuric acid	3	60	C	C	C	A	A	A	B	A	A	A	A	A	A
Water	UD	60	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
Water	UD	95	C	B	C	C	C	C	A	A	A	A	A	A	A

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 in first instance to unreinforced materials and 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. This brochure and any data and specifications presented on our website shall provide promotional and general information about the Engineering Plastic Products (the «Products») manufactured and offered by Quadrant Engineering Plastic Products («Quadrant») and shall serve as a preliminary guide. All data and descriptions relating to the Products are of an indicative nature only. Neither this brochure nor any data and specifications presented on our website shall create or be implied to create any legal or contractual obligation. Any illustration of the possible fields of application of the Products shall merely demonstrate the potential of these Products, but any such description does not constitute any kind of covenant whatsoever. Irrespective of any tests that Quadrant may have carried out with respect to any Product, Quadrant does not possess expertise in evaluating the suitability of its materials or Products for use in specific applications or products manufactured or offered by the customer respectively. 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 other conditions) is required to assess its final suitability for the given application. It thus remains the customer's sole responsibility to test and assess the suitability and compatibility of Quadrant's Products for its intended applications, processes and uses, and to choose those Products which according to its assessment meet the requirements applicable to the specific use of the finished product. The customer undertakes all liability in respect of the application, processing or use of the aforementioned information or product, or any consequence thereof, and shall verify its quality and other properties.

## LEGEND

(\*) 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 environment with pH ≤ 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.

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 \*5g of solute per 100g of aqueous solution > (5% by weight).

## TEMPERATURE

RT: Room Temperature (15 – 25°C)