



Extended list of chemical resistance

About this document

The following tables cover the components of the wetted parts of ÄKTA process™ system, the most commonly used chemicals, and the chemical resistance of the wetted parts of ÄKTA process as well as other Cytiva bioprocessing systems composed of the same materials. Some of the chemicals listed may not be applicable for your system.

The listed organic solvents are included from a material point of view.
The tables are not exhaustive and are intended for guidance only.

Abbreviations

The abbreviations that appear in this document are explained below.

Abbreviation	Definition
EPDM	Ethylene propylene diene monomer
FPM/FKM	Fluorinated propylene monomer
PCV	Pressure control valve
PEEK	Polyether ether ketone
PP	Polypropylene
PTFE	Polytetrafluoroethylene
SS	Stainless steel
TC	Hygienic tubic connection

For further information, see www.cytiva.com or contact your local Cytiva office.

Component wetted materials

X = Component material

• = Component material for standard configuration

O = High resistance component material (optional - depends on configuration. Replaces the standard component material.)

Component	Wetted materials							Wetted materials (O-rings, gaskets, membrane)		
	Stainless steel, ASTM 316L	Hastelloy C-22	Titanium Grade 2	PEEK	PP	Glass	Oxide ceramics	EPDM	FPM/FKM	PTFE
Conductivity meter		X			X		X ¹		X	
Flow meter		X								
pH meter			X	X		X			X	
Pressure meter		X		X					X	
Air sensor					X					
UV flow cell			X	X		X			X	
Filter housing incl. top valve	X			X				•	O	
Cleaning-in-place (CIP) kit	X							•	O	O ²
SS valve block, inlet A, B, air trap, column, outlet	X							•	O	O ²
PEEK air trap				X		X		•	O	

Component	Wetted materials							Wetted materials (O-rings, gaskets, membrane)		
	Stainless steel, ASTM 316L	Hastelloy C-22	Titanium Grade 2	PEEK	PP	Glass	Oxide ceramics	EPDM	FPM/FKM	PTFE
SS pump	X							•	O	X ³
SS tubing	X									
SS PCV isocratic/gradient	X	X						•	X ⁴	O ²
PP valve block, inlet A, B, air trap, column, outlet					X			X		
PP air trap				X	X	X		X		
PP pump				X	X		X	X		X ³
PP tubing					X					
PP PCV isocratic/gradient		X			X			X	X ⁴	
TC gasket kit								•	O	

¹ Contains platinum.

² Valid for the valve diaphragm. The valve diaphragm material can be PTFE or FPM/FKM depending on the configuration.

³ Valid for the pump membrane. The pump membrane material is always PTFE.

⁴ Valid for the gasket in the pressure sensor. The gasket material is always FPM/FKM.

Chemical resistance list

- Green: Compatible
- Yellow: Use with caution - higher wear and tear to be expected
- Red: Not compatible

In the table below, the 'short term' exposure time is defined as up to 3 hours contact time at room temperature, and the 'long term' exposure time is defined as continous usage during system operation at 4°C to 35°C.

Chemical	CAS number	EC number	Concen- tration	Exposure time	Wetted materials							Wetted materials (O-rings, gaskets, membrane)		
					Stainless steel, ASTM 316L	Hastelloy C-22	Titanium Grade 2	PEEK	PP	Glass	Oxide ceramics	EPDM	FPM/FKM	PTFE
1-propanol	71-23-8	200-746-9	25%	Short term										
Acetic acid	64-19-7	200-580-7	25%	Short term										
Acetone	67-64-1	200-662-2	1%	Long term										
			10%	Short term										
Ammonia	7664-41-7	231-635-3	30%	Short term										
Ammonium bicarbonate	1066-33-7	213-911-5	1 M	Long term										
Ammonium chloride	12125-02-9	235-186-4	2 M	Short term										
				Long term ¹										
Ammonium sulfate	7783-20-2	231-984-1	3 M	Long term ²										

Chemical	CAS number	EC number	Concentration	Exposure time	Wetted materials							Wetted materials (O-rings, gaskets, membrane)		
					Stainless steel, ASTM 316L	Hastelloy C-22	Titanium Grade 2	PEEK	PP	Glass	Oxide ceramics	EPDM	FPM/FKM	PTFE
Arginine	74-79-3	200-811-1	2 M	Long term										
Benzyl alcohol	100-51-6	202-859-9	2%	Long term ²										
Citric acid	77-92-9	201-069-1	pH 2–2.5	Long term ³										
Decon 90	N/A	N/A	10%	Short term										
Dimethyl sulphoxide (DMSO)	67-68-5	200-664-3	5%	Long term ²										
Dithioerythritol (DTE)	6892-68-8	229-998-8	100 mM	Long term										
Dithiothreitol (DTT)	3483-12-3	222-468-7	100 mM	Long term										
DTE/DTT	N/A	N/A	100 mM	Long term										
Ethanol	64-17-5	200-578-6	70%	Short term										
			20%	Long term										
Ethanol/Acetic acid	N/A	N/A	20% /10%	Short term										
Ethylenediamine-tetraacetic acid (EDTA)	60-00-4	200-449-4	100 mM	Long term										
Ethylene glycol	107-21-1	203-473-3	50%	Long term ²										
Glycine	56-40-6	200-272-2	20 mM	Long term ²										

Chemical	CAS number	EC number	Concentration	Exposure time	Wetted materials							Wetted materials (O-rings, gaskets, membrane)		
					Stainless steel, ASTM 316L	Hastelloy C-22	Titanium Grade 2	PEEK	PP	Glass	Oxide ceramics	EPDM	FPM/FKM	PTFE
Glycerol	56-81-5	200-289-5	50%	Long term										
Guanidine hydrochloride	50-01-1	200-002-3	6 M	Long term ^{1,2}										
Hydrochloric acid	7647-01-0	231-595-7	0.1 M	Short term										
Hydrogen peroxide	7722-84-1	231-765-0	3%	Short term										
Imidazole	288-32-4	206-019-2	20 mM	Short term										
Isopropanol	67-63-0	200-661-7	70%	Short term										
			30%	Long term										
Mercaptoethanol	60-24-2	200-464-6	20 mM	Long term										
Nitric acid	7697-37-2	231-714-2	30%	Short term										
Peracetic acid	79-21-0	201-186-8	15%	Short term										
Phosphoric acid	7664-38-2	231-633-2	10%	Short term										
			5%	Long term ³										
Potassium carbonate	584-08-7	209-529-3	100 mM	Short term ^{2,4}										
				Long term ^{1,2}										

Chemical	CAS number	EC number	Concentration	Exposure time	Wetted materials							Wetted materials (O-rings, gaskets, membrane)		
					Stainless steel, ASTM 316L	Hastelloy C-22	Titanium Grade 2	PEEK	PP	Glass	Oxide ceramics	EPDM	FPM/FKM	PTFE
Potassium chloride	7447-40-7	231-211-8	4 M	Short term ⁴										
				Long term ¹										
Potassium phosphate	7778-77-0	231-913-4	100 mM	Short term										
Sodium acetate	127-09-3	204-823-8	1 M	Short term										
Sodium carbonate	497-19-8	207-838-8	100 mM	Short term ^{2,4}										
Sodium chloride	7647-14-5	231-598-3	4 M	Short term ²										
			1 M	Short term										
Sodium citrate	6132-04-3	612-118-5	100 mM	Short term										
Sodium dedecyl sulfate (SDS)	151-21-3	205-788-1	1%	Long term										
Sodium hydroxide	1310-73-2	215-185-5	0.1 M	Long term										
			2 M	Short term										
Sodium hydroxide/ ethanol	N/A	N/A	1 M/40%	Short term										
Sodium hypochlorite	7681-52-9	231-668-3	10%	Short term ¹										
Sodium sulfate	7757-82-6	231-820-9	100 mM	Short term										

Chemical	CAS number	EC number	Concentration	Exposure time	Wetted materials							Wetted materials (O-rings, gaskets, membrane)		
					Stainless steel, ASTM 316L	Hastelloy C-22	Titanium Grade 2	PEEK	PP	Glass	Oxide ceramics	EPDM	FPM/FKM	PTFE
Trichloroacetic acid	76-03-9	200-927-2	30 mM 1%	Short term										
Trifluoroacetic acid	76-05-1	200-929-3	1%	Short term										
Triton X-100	9002-93-1	618-344-0	1%	Long term										
Tween 20	9005-64-5	500-018-3	1%	Long term										
Tween 80	9005-65-6	500-019-9	1%	Long term										
Urea	57-13-6	200-315-5	8 M	Long term ²										

¹ Only for polypropylene (PP) systems.

² Do not leave the chemical in the system, flush after use/purification.

³ Maximum 12 hours usage for passivation of stainless steel.

⁴ Corrosion of stainless steel (SS) below pH 5.



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