

# Chemical resistance of Socorex<sup>®</sup> dispensers Calibrex<sup>™</sup> models 520 Acurex<sup>™</sup> models 501

Bottle-top dispensers are used daily for dispensing a wide range of chemicals. Therefore, instruments have to meet various requirements assuring safety of the laboratory staff and their work. Dispensers must not give off any substances which may interfere with trace analysis, have cytotoxic properties, distort optical tests or influence chromatographic methods and residue analysis.

## Materials

Special attention was paid to component materials (see charts below). All parts of the Acurex<sup>™</sup> and Calibrex<sup>™</sup> dispensers in contact with the liquid are made of robust and chemically inert materials providing for long instrument life.

Parts	Acurex <sup>™</sup> 501
Valve	Pyrex glass and synthetic ruby
Barrel	Neutral glass
Plunger	PTFE coated glass
Reservoir	Amber glass or borosilicate glass
Delivery jet and union	PTFE / ETFE / PFA

Parts	Calibrex <sup>™</sup> 520
Feed tube	PTFE
Intake valve	Ceramic
Valve balls	Pyrex glass
Valve springs	Platinum-Iridium
Barrel	Borosilicate glass
Barrel plate	PTFE
Plunger	PFA coated glass
Outlet valve	Ceramic
Body	ETFE
Delivery jet assembly	PTFE/ETFE

## Chemicals from A to Z

The following list includes most currently used chemicals. It provides useful information for the safe and adequate use of Acurex<sup>™</sup> 501 and Calibrex<sup>™</sup> 520 dispensers. However, safety precautions and recommendations in operating instructions must be followed carefully.

## Code explanations

++ = Good resistance

+ = Acceptable

Chemicals A - Z	Acurex™ 501	Calibrex™ 520
<b>A</b>		
Acetaldehyde (Ethanal)	+	++
Acetic acid 96%	+	++
Acetic acid 100% (Glacial)	++	++
Acetic anhydride	+	+
Acetone (Propanone)	++	+
Acetonitrile (MECN)	++	++
Acetophenone	+	+
Acetyl Chloride	+	+
Acetylacetone	++	++
Acrylic acid	++	++
Acrylonitrile	+	+
Adipic acid	+	++
Allyl alcohol	++	++
Aluminum chloride	+	++
Amino acids	+	++
Ammonia <20%	++	++
Ammonia 20-30%	++	++
Ammonium chloride	+	++
Ammonium fluoride	+	++
Ammonium hydroxide	++	++
Ammonium molybdate	++	++
Ammonium sulfate	+	++
Amyl alcohol (Pentanol)	++	++
Amyl chloride (Chloropentane)	+	++
Aniline	++	++
Antimony trichloride	+	++
Ascorbic acid	++	++
n-Amyl acetate	+	+
<b>B</b>		
Barium chloride	++	++
Benzaldehyde	++	++
Benzene	++	+
Benzine	++	++
Benzoyl chloride	+	+
Benzyl alcohol	+	++
Benzyl chloride	+	+
Benzylamine	+	+
Bis(2-ethylhexyl) phthalate	++	+
Boric acid 10%	++	++
Bromine	+	+
Bromobenzene	+	+
Bromonaphtalene	+	+
Butanediol	+	+
Butanol	++	++
Butanone (MEK)	++	
Butyl acetate	++	++
Butyl acrylate	++	++
Butyl methyl ether	+	+
Butylamine	+	+

Chemicals A - Z	Acurex™ 501	Calibrex™ 520
<b>B</b>		
Butyric acid	+	+
<b>C</b>		
Calcium carbonate	+	+
Calcium chloride	+	++
Calcium hydroxide	+	+
Calcium hypochlorite	+	+
Carbon disulfide	++	++
Carbon tetrachloride Thertracholomethane	++	++
Chlorine dioxide		+
Chloronaphthalene	+	+
Chloroacetaldehyde 45%	++	++
Chloroacetic acid	++	++
Chloroacetone	+	+
Chlorobenzene	++	++
Chlorobutane	++	++
Chloroethanol	++	++
Chloroform		+
Chloronitric acid 100%	+	+
Chlorosulfuric acid		+
Chlorosulfuric acid 100%	+	+
Chromic acid 100%	+	+
Chromosulfuric acid 100%	+	+
Citric acid	++	++
Copper fluoride	++	++
Copper sulfate	+	++
Cresol	+	++
Cumene (Isopropylbenzene)	+	+
Cyanoacrylate		
Cyclohexane	++	++
Cyclohexanone	++	++
Cyclopentane	+	+
<b>D</b>		
1,2-Diethylbenzene	+	+
1,4-Dioxane (Diethylene dioxide)	++	++
1-Decanol	+	++
Decane	+	++
Di-(2-ethylhexyl) peroxydicarbonate	+	+
Dibenzyl ether	+	+
Dichloroacetic acid	+	++
Dichlorobenzene	++	++
Dichloroethane (DCE)	+	+
Dichloromethane (DCM)	+	+
Dichloroethylene	+	+
Diesel oil (Heating oil)	++	++
Diethanolamine	+	+
Diethylamine	+	+
Diethylene glycol	++	++
Diethyl ether	++	++

Chemicals A - Z	Acurex™ 501	Calibrex™ 520
<b>D</b>		
Dimethyl sulfoxide (DMSO)	++	++
Dimethylaniline	+	++
Dimethylformamide (DMF)	++	+
Dimethylglycol / Dimethoxyethane (DME)	++	+
Dioxide chlorine	+	+
Diphenyl ether	+	+
<b>E</b>		
Essentials oils	+	+
Ethanol	++	++
Ethanolamine	+	+
Ether	++	+
Ethyl acetate	++	++
Ethylbenzene	+	+
Ethylene chloride	+	+
Ethylenediamine	++	++
Ethylene glycol	++	++
<b>F</b>		
Fluoroacetic acid	+	+
Formaldehyde (Formalin)	++	++
Formamide	++	++
Formic acid	++	++
<b>G</b>		
Gamma-butyrolactone	++	++
Gasoline	++	++
Glycerin <40%	++	++
Glycolic acid <50%	+	++
<b>H</b>		
Heating oil (Diesel oil)	++	++
Heptane	++	++
Hexane	++	++
Hexanoic acid	++	++
Hexanol	++	++
Hydriodic acid	+	+
Hydrobromic acid	+	++
Hydrochloric acid <20% (HCL) 10 to 100mL	+	++
Hydrochloric acid <20% (HCL) 1 to 5mL	+	+
Hydrochloric acid 20 to 37% (HCL) 10 to 100mL	+	++
Hydrochloric acid 20 to 37% (HCL) 1 to 5mL	+	+
Hydrofluoric acid (HF)		
Hydrogen peroxide	++	++
<b>I</b>		
Iodine	++	++
Iodine bromide		
Iodine chloride		

Chemicals A - Z	Acurex™ 501	Calibrex™ 520
<b>I</b>		
Isoamyl alcohol	++	++
Isobutanol	++	++
Isooctane	++	++
Isopropanol	++	++
Isopropyl ether	+	+
Isopropylamine	++	++
<b>K</b>		
Kerosene	+	+
<b>L</b>		
Lactic acid	++	++
<b>M</b>		
2-Methoxyethanol	++	++
Methanol	++	++
Methoxybenzene (Anisol)	+	+
Methyl benzoate	+	+
Methyl chloride (Chloromethane)	+	+
Methyl ethyl ketone peroxide (MEKP)		+
Methyl formate	+	++
Methyl iodine (Iodomethane)	++	++
Methyl methacrylate (MMA)	++	++
Methyl n-butyl keton (MBK)	++	+
Methyl propyl ketone (2-Pentanone)	+	+
Methyl tert-butyl ether (MTBE)	+	+
Methylene chloride (Dichloromethane) (DCM)	++	+
Methylpentanone	+	+
Mineral oil (engine oil)	++	++
<b>N</b>		
N-Butylamine	+	+
Nitric acid <30% - 10 to 100mL	++	++
Nitric acid <30% - 1 to 5mL	++	++
Nitric acid 30-70% - 10 to 100mL	+	+
Nitric acid 30-70% - 1 to 5mL	+	+
Nitric acid >70% - 10 to 100mL	+	
Nitric acid >70% - 1 to 5mL	+	
Nitro-hydrochloric acid (Aqua regia)	+	+
Nitrobenzene	+	+
Nitromethane	++	+
N-methyl-2-pyrrolidone (NMP)	++	++
<b>O</b>		
Octane	++	++
Octanol	++	++
Oil (vegetable, animal)	++	++
Oil of turpentine	++	++
Oleic acid	++	++
Oxalic acid	++	++

Chemicals A - Z	Acurex™ 501	Calibrex™ 520
<b>P</b>		
Pentane	+	+
Peracetic acid	+	++
Perchloric acid 100%	+	+
Perchloric acid diluted	++	++
Perchloroethylene		+
Petroleum	++	++
Petroleum ether / spirit	++	++
Phenol	++	++
Phenylethanol (2-phenylethanol)	+	+
Phenylhydrazine	++	++
Phosphoric acid <100%	++	++
Phosphoric acid <85%	++	++
Piperidine	+	+
Potassium chloride	+	++
Potassium dichromate	++	++
Potassium fluoride		
Potassium hydroxide	+	+
Potassium iodide	++	++
Potassium permanganate	++	++
Potassium peroxydisulfate (Potassium persulfate)	+	+
Potassium sulfate	+	+
Propionic acid (Propanoic acid)	++	++
Propylene glycol (Propane-1,2-diol)	++	++
Propylene oxide	++	++
Picric acid (Trinitrophenol)	++	++
Pyridine	+	+
Pyruvic acid	+	++
<b>R</b>		
Resorcin	+	+
<b>S</b>		
Salicylaldehyde	++	++
Scintillation fluid	++	++
Silver acetate	++	++
Silver nitrate	++	
Sodium acetate	++	++
Sodium chloride (Kitchen salt)	+	++
Sodium dichromate		++
Sodium fluoride		+
Sodium hydroxide 30%	+	++
Sodium hypochlorite	++	++
Sodium thiosulfate	++	++
Sulfonitric acid 100%	+	+
Sulfochromic acid 100%	+	+
Sulfur dioxide	+	+
Sulfuric acid <60% - 10 to 100mL	++	+
Sulfuric acid <60% - 1 to 5mL	++	+
Sulfuric acid >60% - 10 to 100mL	+	+
Sulfuric acid >60% - 1 to 5mL	+	+

Chemicals A - Z	Acurex™ 501	Calibrex™ 520
<b>T</b>		
Trichlorotrifluoroethane	+	+
Terebentine oil	++	++
Tartaric acid	+	++
Tetrachloroethane		+
Tetrachloroethylene / methylene	+	+
Tetrahydrofuran (THF)	+	+
Tetramethylammonium hydroxide		+
Tetramin	++	++
TKN Digest	+	+
Toluene	++	+
Trichlorethylene	+	+
Trichloroacetic acid	++	++
Trichlorobenzene	+	+
Trichloroethane / Methane	+	+
Trichloromethane (Chloroform)	+	+
Triethanolamine	+	++
Triethylene glycol	++	++
Trifluoroacetic anhydride (TFAA)	+	+
Trifluoroacetic acid (TFA)	+	+
Trifluoromethane (Fluoroform)	+	+
<b>U</b>		
Urea	+	++
<b>X</b>		
Xylene	++	+
<b>Z</b>		
Zinc chloride 10%	+	++
Zinc sulfate 10%	+	++

The above guidelines have been carefully reviewed prior to publication. Should you require information on chemicals not listed or contribute to some comments, please feel free to contact us.