**Note:** Read the corresponding technical documentation for handling and safety reasons.

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# Chemical compatibility of wetted materials of mikron 81

The user is responsible for the appropriate and safe handling of the liquids and chemicals. In case of doubt, the user should contact the manufacturer's technical support service.

## General

The instrument is very resistant to a wide range of common eluents. However, make sure that no eluents or water come into contact with or enter the instrument. Some organic solvents (e.g. chlorinated hydrocarbons, ethers) can cause coating damage or loosen bonded components if not handled properly. Small amounts of other substances, such as additives, modifiers or salts, can also affect the durability of the materials. Exposure time and concentration have a major influence on durability.

## Properties of wetted materials

This chapter contains information on the chemical compatibility of the materials wetted in the fluid path of the device. The information is based on literature research on the manufacturer's specifications of the materials.

### Polyetheretherketone (PEEK)

PEEK is a durable and resistant plastic and, along with stainless steel, the standard material in HPLC. It can be used at temperatures up to 100 °C and is highly chemical resistant to almost all common solvents in a pH range of 1-12.5. PEEK is potentially moderately resistant to oxidizing and reducing solvents.

Therefore, do not use the following solvents:

- Concentrated and oxidizing acids (such as nitric acid solution, sulfuric acid),
- halogenated acids (such as hydrofluoric acid, hydrobromic acid) ,
- gaseous halogens.

Hydrochloric acid is approved for most applications.

In addition, the following solvents can have a swelling effect and impair the functionality of the built-in components:

- Methylene chloride,
- THF and DMSO in any concentrations,
- acetonitrile in higher concentrations.

### Titanium, titanium alloy (TiAl6V4)

Titanium has a low weight and a high hardness and stability. It stands out due to its very high chemical compatibility and biocompatibility. Titan is used when neither stainless steel nor PEEK can be used.

## List of selected, suitable chemicals

All resistances mentioned in the following table are for use at room temperature unless otherwise specified. All chemicals listed are aqueous solutions unless otherwise stated.

| Liquid / Solution | pH | Exposure time |
|---|---|---|
| Acetic acid | 4.8–5.2 | long term |
| Acetate or citrate buffer (with up to 3.0 M NaCl) | 4.0 | long term |
| 25 % Acetonitrile, 85 °C | | 24 h |
| 100 % Acetonitrile, 85 °C | | 24 h |
| 1.7 M Ammonium sulfate | 2-12 | long term |
| Bicine | 7.6–9.0 | long term |
| Bis-Tris | 5.8–7.2 | long term |
| Boric acid | 5.1-6.2 | long term |
| 0.1 M Citric acid | 3.0 | long term |
| Citric acid | 4.2–5.2 | long term |
| Citrate buffer ($Na_2HPO_4$ + Citric acid) | 2.2-8 | long term |
| 10 % Decon 90 | | 2 h |
| Diethanolamine | 8.4–8.8 | long term |
| Diethylamine | 9.5–11.5 | long term |
| DTT (100 mM) | 2-12 | long term |
| 20 % Ethanol | | long term |
| 100 % Ethanol | | 2 h |
| 0.1 M Glycin | 2.5-3.0 | long term |
| 6.0 M Guanidine HCl | | long term |
| 0.1 M HCl | | short term |
| HEPES | 6.8–8.2 | long term |
| 0.1 M Hydrochloric acid | | 2 h |
| L-histidine | 5.5–6.0 | long term |
| Imidazole | 6.6–7.1 | long term |
| Isopropanol | | 2 h |
| Lactic acid | 2.4-3.6 | long term |
| 100 % Methanol | | 2 h |
| MES | 5.5–6.7 | long term |
| 0.02 M Mercaptoethanol | 2-12 | long term |
| MOPS | 6.5–7.9 | long term |
| Phosphate | 6.7–7.6 | long term |

| Liquid / Solution | pH | Exposure time |
|---|---|---|
| 0.1 M Phosphoric acid, 25 °C | | 24 h |
| 0.1 M Phosphoric acid, 50 °C | | 2 h |
| PIPES | 6.1–7.5 | long term |
| Pyridine | 4.9–5.6 | long term |
| 0.1 M EDTA | 2-12 | long term |
| Sodium acetate | 4.0 | long term |
| Sodium phosphate | 7.5 | long term |
| 4.0 M Sodium chloride | | 2 h |
| 0.2 M Sodium hydroxide | | 24 h |
| 0.5 M Sodium hydroxide | | 2 h |
| 1.0 M Sodium hydroxide | | 2 h |
| 2.0 M Sodium hydroxide | | 2 h |
| 1.0 M Sodium hydroxide, 40 % ethanol | | 2 h |
| 0.1 M Sodium hydroxide, 25 °C | | 24 h |
| 0.1 M Sodium hydroxide, 50 °C | | 2 h |
| 0.1 M Sodium hydroxide, 80 °C | | 2 h |
| 1.0 M Sodium hydroxide, 25 °C | | 2 h |
| 1.0 M Sodium hydroxide, 50 °C | | 2 h |
| 0.1 % Sodium hypochlorite, 25 °C | | 24 h |
| 0.1 % Sodium hypochlorite, 50 °C | | 2 h |
| 0.1 % Sodium hypochlorite, 80 °C | | 2 h |
| 1.0 % Sodium hypochlorite, 25 °C | | 2 h |
| 1.0 % Sodium hypochlorite, 50 °C | | 2 h |
| 10.0 % Sodium hypochlorite | | 2 h |
| 1.0 % Sodium dodecyl sulfate (SDS) | 2-12 | long term |
| TES | 7.2–7.8 | long term |
| Tricine | 7.8–8.9 | long term |
| Tricine | 7.4–8.8 | long term |
| Triethanolamine | 7.3–8.3 | long term |
| Tris | 7.5–8.0 | long term |
| 1.0 % TWEEN 20 | 2-12 | long term |
| 8.0 M Urea | | long term |