

# CHEMICAL RESISTANCE HYDRA

## LIST OF MATERIALS HYDRA

|                    |                     |               |                  |
|--------------------|---------------------|---------------|------------------|
| Tank:              | PP                  | Suction hose: | EVA              |
| Sewage pump:       | V2A stainless steel | Drain hose:   | PVC              |
| Check valve:       | PVC                 | Floor nozzle: | Aluminium/rubber |
| Screw connections: | PVC                 | Suction tube: | PVC              |
| C-couplings:       | Aluminium           | Suction head: | PA               |

## PLASTICS, MATERIAL CHARACTERISTICS | Overview of chemical resistance

|         |  |     |                               |      |                                  |
|---------|--|-----|-------------------------------|------|----------------------------------|
| EPDM    | Ethylene-propylene-diene rubber                      | PA  | Polyamide                     | PSU  | Polysulfone                      |
| FEP     | Tetrafluoroethylene-perfluoropropylene (teflon, FEP) | PC  | Polycarbonate                 | PTFE | Polytetrafluoroethylene (teflon) |
| PETG    | Polyethylene terephthalate                           | PFA | Perfluoroalkoxy (teflon, PFA) | PVC  | Polyvinyl chloride               |
| FPM/FKM | Fluorine rubber (Viton)                              | PMP | Polymethylpentene (TPX)       | PVDF | Polyvinylidene fluoride          |
| HDPE    | High-density polyethylene                            | PP  | Polypropylene                 | SAN  | Styrene-acrylonitrile            |
| LDPE    | Low-density polyethylene                             | PS  | Polystyrene                   | SI   | Silicone rubber                  |

| Plastic abbr. | Temperature           |                       | Sterilisation <sup>5)</sup> |                   |                   |                            | Transparency  | Flexibility | Specific weight g/cm <sup>3</sup> | Water absorption % |
|---------------|-----------------------|-----------------------|-----------------------------|-------------------|-------------------|----------------------------|---------------|-------------|-----------------------------------|--------------------|
|               | max. °C <sup>1)</sup> | min. °C <sup>2)</sup> | Steam <sup>4)</sup> 121 °C  | Gas ethylene oxid | Radiation 2,5 kGy | chemical formalin, ethanol |               |             |                                   |                    |
| EPDM          | + 120 °               | - 30 °                | yes                         | no                | yes               | yes                        | transparent   | excellent   | 0.88                              | 0.01               |
| FEP           | + 205 °               | - 255 °               | yes                         | yes               | no                | yes                        | transparent   | superb      | 2.15                              | < 0.01             |
| FPM/FKM       | + 200 °               | - 20 °                |                             |                   |                   |                            | black         | good        | 1.90                              |                    |
| HDPE          | + 110 °               | - 50 °                | no                          | yes               | yes               | yes                        | transparent   | stiff       | 0.95                              | 0.01               |
| LDPE          | + 95 °                | - 50 °                | no                          | yes               | yes               | yes                        | transparent   | excellent   | 0.92                              | 0.01               |
| PA            | + 90 °                | +/- 0 °               | no                          | yes               | yes               | yes                        | transparent   | stiff       | 1.13                              | 1.30               |
| PC            | + 135 °               | - 135 °               | yes                         | yes               | yes               | yes                        | clear         | rigid       | 1.20                              | 0.35               |
| PFA           | + 250 °               | - 270 °               | yes                         | yes               | no                | yes                        | transparent   | excellent   | 2.15                              | 0.03               |
| PMP           | + 175 °               | - 150 °               | yes                         | yes               | yes               | yes                        | crystal clear | rigid       | 0.83                              | 0.01               |
| PP            | + 135 °               | + 5 °                 | yes                         | yes               | no                | yes                        | transparent   | rigid       | 0.90                              | 0.02               |
| PS            | + 70 °                | - 20 °                | no                          | no                | yes               | yes                        | glasklar      | rigid       | 1.05                              | 0.05               |
| PSU           | + 165 °               | - 100 °               | yes                         | yes               |                   | yes                        | clear         | stiff       | 1.24                              | 0.30               |
| PTFE          | + 270 °               | - 270 °               | yes                         | yes               | no                | yes                        | opaque        | excellent   | 2.25                              | < 0.01             |
| PVC           | + 70 °                | - 30 °                | no <sup>3)</sup>            | yes               | no                | yes                        | clear         | rigid       | 1.35                              | 0.06               |
| PVDF          | + 160 °               | - 40 °                | yes                         | yes               | yes               | yes                        | transparent   | rigid       | 1.78                              | 0.04               |
| SAN           | + 95 °                | - 40 °                | no                          | yes               | no                | yes                        | crystal clear | rigid       | 1.03                              | 0.05               |
| SI            | + 180 °               | - 60 °                | yes                         | yes               | no                | yes                        | transparent   | excellent   | 1.10                              |                    |
| PETG          | + 70 °                | + 5 °                 | no                          | n.a.              | n.a.              | yes                        | crystal clear | rigid       | 1.78                              | 0.70               |

- 1) higher in a short term  
 2) embrittlement temperature  
 3) except PVC hoses, which are resistant to steam sterilisation up to 121 °C.  
 4) frequent steam sterilisation leads to loss of stability!

- 5) clean equipment with distilled water beforehand (avoid stress corrosion cracking).  
 In the case of closed containers remove the closure or open it slightly; do not screw it on until it has cooled down.

| Group of substances at 20 °C      | ABS | ECTFE | HDPE | LDPE | PA | PC | PMP | PP | PS | PTFE/FEP/PFA | PVC | SAN | SI |
|-----------------------------------|-----|-------|------|------|----|----|-----|----|----|--------------|-----|-----|----|
| <b>Aldehydes</b>                  | -   | +     | +    | +    | 0  | 0  | 0   | +  | -  | +            | -   | -   | 0  |
| <b>Alcohols aliphatic</b>         | +   | +     | +    | +    | 0  | +  | +   | +  | +  | +            | +   | +   | +  |
| <b>Esters</b>                     | -   | +     | 0    | 0    | +  | -  | 0   | 0  | -  | +            | -   | -   | 0  |
| <b>Ethers</b>                     | -   | +     | 0    | -    | +  | -  | -   | -  | -  | +            | -   | -   | -  |
| <b>Ketones</b>                    | -   | 0     | 0    | 0    | +  | -  | 0   | 0  | -  | +            | -   | -   | -  |
| <b>Hydrocarbons</b>               |     |       |      |      |    |    |     |    |    |              |     |     |    |
| aliphatic                         | -   | +     | +    | 0    | +  | 0  | 0   | +  | -  | +            | +   | -   | -  |
| aromatic                          | -   | +     | +    | 0    | +  | -  | -   | 0  | -  | +            | -   | -   | -  |
| halogenated                       | -   | +     | 0    | -    | 0  | -  | -   | 0  | -  | +            | -   | -   | -  |
| <b>Acids, weak/diluted</b>        | 0   | +     | +    | +    | 0  | 0  | +   | +  | 0  | +            | +   | 0   | 0  |
| <b>Acids, strong/concentrated</b> | -   | +     | +    | +    | -  | -  | +   | +  | 0  | +            | +   | -   | -  |
| <b>Acids, oxidising</b>           | -   | 0     | 0    | 0    | -  | -  | 0   | 0  | -  | +            | -   | -   | -  |
| <b>Alkalis</b>                    | 0   | +     | +    | +    | 0  | -  | +   | +  | +  | +            | +   | +   | +  |

**+ = excellent chemical resistance**  
 Permanent exposure to the substance does not damage the plastic within 30 days. The plastic can remain resistant for years.

**0 = good/conditional chemical resistance**  
 Permanent exposure to the substance causes minor damage from approx. 7 to 30 days, which is partly reversible (softening, swelling, reduction of mechanical strength, discolouration).

**- = low chemical resistance**  
 Permanent exposure may cause immediate damage to the plastic. (Reduction of mechanical strength, deformations, discolourations, cracks, dissolution, risk of breakage).

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