

# Hydrogen Peroxide Material Compatibility Chart

All wetted surfaces should be made of materials that are compatible with hydrogen peroxide. The wetted area or surface of a part, component, vessel or piping is a surface which is in permanent contact with or is permanently exposed to the process fluid (liquid or gas).

Less than 8% concentration  $H_2O_2$  is considered a non-hazardous substance. Typically encountered versions are baking soda-peroxide toothpaste (0.5%), contact lens sterilizer (2%), over-the-counter drug store Hydrogen Peroxide (3%), liquid detergent non-chlorine bleach (5%) and hair bleach (7.5%).

At 8% to 28%  $H_2O_2$  is rated as a Class 1 Oxidizer. At these concentrations  $H_2O_2$  is usually encountered as a swimming pool chemical used for pool shock treatments.

In the range of 28.1% to 52% concentrations,  $H_2O_2$  is rated as a Class 2 Oxidizer, a Corrosive and a Class 1 Unstable (reactive) substance. At these concentrations,  $H_2O_2$  is considered industrial strength grade.

Concentrations from 52.1% to 91% are rated as Class 3 Oxidizers, Corrosive and Class 3 Unstable (reactive) substances.  $H_2O_2$  at these concentrations are used for specialty chemical processes. At concentrations above 70%,  $H_2O_2$  is usually designated as high test peroxide (HTP).

Concentrations of  $H_2O_2$  greater than 91% are currently used as rocket propellant. At these concentrations,  $H_2O_2$  is rated as a Class 4 Oxidizer, Corrosive and a Class 3 Unstable (reactive) substance.

Material	Compatibility 10% $H_2O_2$	Compatibility 30% $H_2O_2$	Compatibility 50% $H_2O_2$	Compatibility 100% $H_2O_2$ (HTC)
<b>Chemical resistance data is based on 72 ° F (22 ° C) unless otherwise noted</b>				
<b>A- Suitable</b>				
<b>B - Good, minor effect, slight corrosion or discoloration</b>		<b>1 - Satisfactory to 120°F (48° C)</b>		
<b>F - Fair, moderate effect, not recommended for continuous use; softening, loss of strength, and/or swelling may occur</b>		<b>2 - Satisfactory for O-rings, diaphragms or gaskets</b>		
<b>X - Do Not Use - severe effect, not recommended for ANY use</b>		<b>3 - Temporary use only</b>		
304 stainless steel	B <sup>1</sup>	B <sup>1</sup>	B <sup>1</sup>	B <sup>1</sup>
316 stainless steel	B	B	A <sup>1</sup>	A <sup>1</sup>
416 stainless steel	B	B	F	X
440C stainless steel	B	B	A	X
ABS plastic	A	A	A	A
Acetal (Delrin®)	X	X	X	X
Alloy 20 (Carpenter 20)	F	B	B	X
Aluminum	A	A	A	A
Brass	X	X	X	X
Bronze	B	B	B	B
Buna N (Nitrile)	X	X	X	X
Carbon graphite	F	F	F	F
Carbon steel	X	X	X	X
Cast iron	F	X	X	X
Ceramic $Al_2O_3$	A	A	A	A

*It is the sole responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or product damage.*

# Hydrogen Peroxide Material Compatibility Chart

Material	Compatibility 10% H <sub>2</sub> O <sub>2</sub>	Compatibility 30% H <sub>2</sub> O <sub>2</sub>	Compatibility 50% H <sub>2</sub> O <sub>2</sub>	Compatibility 100% H <sub>2</sub> O <sub>2</sub> (HTC)
<i>Chemical resistance data is based on 72 ° F (22 ° C) unless otherwise noted</i>				
<b>A- Suitable</b> <b>B - Good, minor effect, slight corrosion or discoloration</b> <b>F - Fair, moderate effect, not recommended for continuous use; softening, loss of strength, and/or swelling may occur</b> <b>X - Do Not Use - severe effect, not recommended for ANY use</b>				
Ceramic magnet	A	A	A	A
Copper	X	X	X	X
CPVC	A	A	A	A
EPDM	A	B	B	X
Epoxy (epoxide polymers)	F	B	B	X
Hastelloy-C®	A	A	A	A
HDPE	A	A	A	X
Hypalon®	X	X	X	X
Hytrell® (polyester elastomer)	X	X	X	X
LDPE	A	F <sup>1</sup>	F <sup>1</sup>	F <sup>1</sup>
Natural rubber	B	F	F	F
Neoprene	X	X	X	X
NORYL®	A <sup>1</sup>	A <sup>1</sup>	A	A
Nylon (polyamides)	F	X	X	X
PCTFE (Kel-F® and Neoflon®)	A <sup>1</sup>	A <sup>1</sup>	A <sup>1</sup>	X
PFA (perfluoroalkoxy alkanes)	A	A	A	A
Polycarbonate	A <sup>1</sup>	A <sup>1</sup>	A <sup>1</sup>	A
Polypropylene	A	B	B	B
PP-363 (plasticized vinyl) <sup>2</sup>	A	A	A	X
PPS (Ryton®)	A	A	F	F
PTFE (Garlock Glyon® 3500) <sup>2</sup>	A	A	A	X
PTFE (Teflon®), virgin <sup>2</sup>	A	A	A	A
PVC <sup>4</sup>	A	A	A	A
PVDF (Hylar®)	A <sup>1</sup>	A <sup>1</sup>	X	X
PVDF (Kynar®)	A	A	A	A
PVDF (Solef®)	A <sup>1</sup>	A <sup>1</sup>	X	X
Silicone	A	B	B	B
SPR (styrene butadiene rubber)	X	X	X	X
Thiokol™ (polysulfide polymers)	X	X	X	X
Titanium <sup>3</sup>	A	B	B	B
TPE (thermoplastic elastomers)	X	X	X	X
TPU (thermoplastic polyurethanes)	X	X	X	X
Tygon®	B	B	B	B
Tungsten carbide	X	X	X	X
Viton® A <sup>2</sup>	A	A	A	A

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