



Illustrative table of chemical resistance for our product range

Below is a summarized overview regarding the **chemical resistance** of Radici Group High Performance Polymers products, categorized by polymer types. Each **column** represents a different **base polymer**, while each **row** lists a common **chemical agent** in its typical form and concentration that can come into contact with the polymer. The resistance against each chemical agent is assessed for the base polymer alone and, unless otherwise specified, at room temperature and for short-term exposure (up to some hours).

Chemical resistance is qualitatively evaluated by rating each polymer/chemical agent combination as follows:

● ● ● = Excellent

The material is not attacked by the medium which causes no irreversible damage to the polymer. There may be little change in weight, small effect on dimensional or mechanical properties.

● ● = Good

The exposure to the medium may cause a slight change in properties and/or surface aesthetics of the polymer, but in general it remains suitable for most practical uses.

● = Fair/Limited

Limited resistance; according to actual exposure conditions there may be noticeable changes in properties and/or surface aesthetics; prolonged exposure to the medium can lead to irreversible damage.

X = Not resistant/Soluble

The chemical agent attacks the polymer, causing degradation, dissolution and/or major damaging phenomena such as stress cracking; typically, irreversible damage can occur even with a short time exposure.

Chemical resistances here reported must be considered as a mere preliminary indication and used only for screening purposes.

Polymers behaviour

Generally, compounds (reinforced, heat stabilized, impact modified or otherwise formulated grades) based on the same polymer matrix will exhibit similar behaviour. However, depending on the specific case, **differences are also possible**, even to a significant extent.

The actual behaviour of a material in contact with a chemical agent can vary considerably **depending on multiple factors** such as temperature, duration of exposure, concentration of the medium, surface roughness and integrity, contacting parts shape and design, etc.

Additionally, the suitability for a specific purpose of a component made in polymeric material may or may not be significantly affected by **secondary effects of chemical exposure**, such as swelling, absorption, modification or loss of weight and mechanical properties, discoloration, etc. according to the nature and function of the component itself.

For all these reasons, it is always strongly recommended to **conduct specific tests** on the actual parts in contact with the medium of interest under real working conditions, or in conditions as close as possible to the expectable ones.



		radilon [®] A torzen [®]		radilon [®] S		radilon [®] D		radilon [®] DT		radilon [®] Aestus		raditer [®] B		raditeck [®] P	
		PA66		PA6		PA610		PA612		PPA		PBT		PPS	
Substance	Concentration	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes
ACIDS (INORGANIC)															
Sulfuric Acid	Diluted (<10%)	●	01	●	01	●		●		●		●●●		●●●	
	Concentrated (<38%)	X		X		X		X		X		●●		●●	
	Concentrated	X		X		X		X		X		X		●●	
Nitric Acid	Diluted (<10%)	X		X		X		X		●		●●●		●●●	
	Concentrated	X		X		X		X		X		X		●	
Boric Acid	10%	●		●		●		●●		●●●		●●●			
Chromic Acid	Diluted (<1%)	●		●		●		●		●●		●●●		●●●	
	Concentrated (<40%)	X		X		X						●		●	
Hydrochloric Acid	Diluted (<10%)	X		X		X		●		●		●●●		●●●	
	Concentrated	X		X		X		X		X		X			
Phosphoric Acid	10%	X		X		X		X		●		X		●●●	

		radilon® A torzen®		radilon® S		radilon® D		radilon® DT		radilon® Aestus		raditer® B		raditeck® P	
		PA66		PA6		PA610		PA612		PPA		PBT		PPS	
Substance	Concentration	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes
ACIDS (ORGANIC)															
Acetic Acid	5%	●●	02	●●	02	●●		●●		●●		●●●		●●●	
	10%	●		●		●●		●●		●●		●●●		●●●	
	Concentrated	X		X		X		X		●		●		●●●	
Citric Acid	10%	●●	03	●●	03	●●		●●●				●●●		●●●	
	Concentrated (>50%)	●	04	●	04	X									
Formic Acid	Diluted	●	01	●	01	●●		●●		●●		●●●		●●●	
	Concentrated (>10%)	X		X		X		X		X		●		●●	
Benzoic Acid (aqueous sol)	Saturated	X		X		●		●●		●●		●●●			
Acrylic Acid	Concentrated	X		X		X									
Oleic Acid		●●●		●●●		●●●		●●●		●●●		●●●		●●●	
Lactic Acid	Diluted (<10%)	●●●		●●●		●●●		●●●		●●		●●●		●●●	
	Concentrated (>90%)	X		X		●		●		●●		X		●●●	
Stearic Acid		●●●		●●●		●●●		●●●		●●●		●●●			
Uric Acid	20%	●●●		●●●		●●●				●●●		●●●			

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		PA66		PA6		PA610		PA612		PPA		PBT		PPS	
Substance	Concentration	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes
BASES															
Ammonia	10%	● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
Sodium Hydroxide	1%	● ● ●				● ● ●						●		● ● ●	
	10%	● ● ●	05	● ● ●	05	● ● ●		● ● ●		● ● ●		●		● ● ●	
	50%	●		●		● ● ●		● ● ●		● ● ●		X		● ● ●	
Potassium Hydroxide	10%	● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		●		● ● ●	
	50%	●		●		● ●		● ●		● ● ●		X		● ● ●	
Ammonium Hydroxide	10%	●		●						● ●		●		● ● ●	
Calcium Hydroxide	Saturated	● ● ●		● ● ●		● ● ●						● ● ●			
Lithium Hydroxide	10%	● ● ●		● ● ●		● ● ●						● ● ●			
Chloramines	<10%	●	06	●	06	●	06	●	06	● ● ●		●			

Substance	Concentration	radilon [®] A torzen [®]		radilon [®] S		radilon [®] D		radilon [®] DT		radilon [®] Aestus		raditer [®] B		raditeck [®] P	
		PA66	Notes	PA6	Notes	PA610	Notes	PA612	Notes	PPA	Notes	PBT	Notes	PPS	Notes
INORGANIC SUBSTANCES															
Zinc Chloride	10%	●	07	●●	07	●●●		●●●		●●●		●●●		●●●	
	>30%	X		●		●●		●●		●●●				●●●	
Magnesium Chloride	10%	●●●	08	●●●	08	●●●		●●				●●●		●●●	
Calcium Chloride	10%	●●	07	●●	07	●●●		●●●		●●●		●●●		●●●	
Calcium Chloride (alcoholic sol.)	20%	X		X		●		●		●					
Potassium Bromide	10%	●●	09	●●	09	●●						●●●			
Sodium Chloride	10%	●●●	08	●●●	08			●●●		●●●		●●●		●●●	
	Saturated	●●	07	●●	07	●●●		●●●		●●●				●●●	
Sodium Carbonate	Diluted (<10%)	●●●		●●●		●●●		●●●	17			●●●		●●●	
Sodium Hypochlorite	10%	●	01	●	01	●	01	●	01	●		●●		●●●	
Oxygen (gas, low pressure)		●●●		●●●		●●●		●●●		●●●		●●●			
Ozone (gas)	<5ppm	●●●		●●●		●●●		●●●		●●●		●●●			
Hydrogen Peroxide	1%	●●	06	●●	06					●●●		●●●		●●●	
	3%	●	06	●	06	●	06	●●	06	●●		●●●			
	30%	X		X		X		X		X		●●●		●●	

Substance	Concentration	radilon® A torzen®		radilon® S		radilon® D		radilon® DT		radilon® Aestus		raditer® B		raditeck® P	
		Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes
HYDROCARBONS															
Cyclohexane		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
Benzene		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
Toluene		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ●	
Methane (gas)		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
Iso-octane		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
n-Hexane		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
Xylene		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
FUELS															
Diesel		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
Bio-Diesel		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
Gasoline		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	
Gasoline with EtOH	10-15%	● ●	10												
Kerosene		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●		● ● ●	

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		PA66		PA6		PA610		PA612		PPA		PBT		PPS	
Substance	Concentration	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes
AUTOMOTIVE FLUIDS															
Transmission Oil		●●●				●●●				●●●				●●●	
Aqueous Urea Solution	Commercial %	●●●	11			●●		●●		●●●		●●●		●●●	
Cooling Liquids based on Glycols	50%	●	12	●	12	●●		●●		●●●				●●●	
Lubricants - mineral oils		●●●		●●●		●●●		●●●		●●●		●●●		●●●	
Brake Fluid		●●●		●●●		●●●		●●●		●●●		●●●		●●●	
ALCOHOLS															
Ethanol	Diluted	●●●						●●●							
	Concentrated	●●	13	●●	13			●●		●●●		●●●		●●●	
Methanol	Concentrated	●●	13	●●	13	●●		●●		●●		●●●		●●●	
Benzyl Alcohol		●		●		●		●		●					
Phenol	Concentrated	X		X		X		X		●		X		●●●	
Butanol	Concentrated	●●●		●●●		●●●		●●●		●●●		●●●		●●●	
Cyclohexanol		●●		●●		●●●		●●●				●●●		●●●	
Glycerol		●●	14	●●	14	●●	14					●●●			
Isopropanol		●●		●●		●●		●●		●●●		●●●			

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		Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes
OTHER ORGANIC SUBSTANCES															
Acetone		●●	15	●●	15	●●●		●●●		●●●		●●		●●●	
Ethyl Acetate		●●●	15	●●●	15	●●●		●●●		●●●		●		●●●	
MEK (Methyl Ethyl Ketone)		●●●		●●●		●●●		●●●		●●●		●●		●●●	
Chloroform		●		●		●		●		●●		●		●●●	
Cyclohexanone		●●●		●●●		●●●		●●●				●●●		●●●	
Formaldehyde		●●●		●●●		●●		●●				●●●		●●●	
Diethyl ether		●●●		●●●		●●●		●●●		●●●		●●●			
Perchloroethylene		●●		●●								●		●●●	
MISCELLANEOUS															
Fruit juices	Concentrated	●●●		●●●		●●●		●●●		●●●		●●●		●●●	
Sanitizers/Biocides for plumbing	Diluted	●●	16	●●	16	●●	16	●●	16					●●●	16
Heating system fluids (water+glycols)	20%	●●		●●		●●		●●		●●●		●●●		●●●	
Soap (aqueous solution)		●●●		●●●		●●●		●●●		●●●		●●●		●●●	
50% Oleic acid + 50% Olive Oil (23°C)		●●●		●●●		●●●		●●●		●●●				●●●	

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		PA66		PA6		PA610		PA612		PPA		PBT		PPS	
Substance	Concentration	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes	Rank	Notes
OTHER															
Deionized water (90°C)		•••		•••		•••		•••		•••				•••	
Phenol solution (5% by mass) (23°C)		•		•		•		•		•		•		•••	

Legend of Specifications (Notes)

- | | |
|---|---|
| <p>01 = at low conc. <10% may be suitable for limited exposure.</p> <p>02 = only for short term exposure (<30 days) at room T at conc. below 5%.</p> <p>03 = only for short term exposure (<60 days) at room T at conc. below 10%.</p> <p>04 = poor resistance; loss of mechanical properties; swelling.</p> <p>05 = only for short term exposure (<5 days) at room T then it gets worse.</p> <p>06 = at very low concentration a proper stabilization can improve the resistance.</p> <p>07 = subject to environmental stress cracking when under load.</p> <p>08 = for short to mid term exposure (<300 days).</p> <p>09 = at room T and not for prolonged contact.</p> | <p>10 = limited change in properties.</p> <p>11 = for continuous contact with diluted urea solution special grades are available.</p> <p>12 = glysantin/water 1/1 a 106°C (special grades are available).</p> <p>13 = swelling is possible.</p> <p>14 = polymer dissolves at 170°C.</p> <p>15 = avoid prolonged contact.</p> <p>16 = check carefully the actual content of the specific product.</p> <p>17 = diluted (20%).</p> |
|---|---|



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