

## **CHEMICAL RESISTANCE CHART**

FDM 3D-PRINT FILAMENTS

Filament

For advisory and reference use:
Temperatures, exposure times, chemical concentrations
may affect material performance.
On-site testing is strongly advised before use.

✓ Excellent or Good Resistance● Partial or Limited Resistance

X No Resistance

On-site testing is strongly advised before use.				T = ==								X No Res	1	
Blank spaces indicate that no data is available.	ABS	PA	PC	PEEK	PEI	PEN*	PETG	PLA	PMMA	PP	PPS	PPSU		TPU
Acetic acid (10%)	<b>V</b>	1	<b>V</b>	<b>/</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>~</b>	0	<b>V</b>	<b>V</b>	<b>V</b>	<b>/</b>	1
Acetic acid (40%)	0	X	X	<b>~</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	X	X	<b>✓</b>	<b>V</b>	<b>✓</b>	<b>~</b>	X
Acetone	×	<b>✓</b>	X	<b>/</b>	1	0	×	X	X	<b>✓</b>	<b>V</b>	×	X	1
Ammonium chloride (25%)				<b>✓</b>		<b>✓</b>	<b>✓</b>		<b>✓</b>		<b>V</b>		0	<b>✓</b>
Benzene	×	<b>/</b>	X	<b>/</b>	<b>~</b>	<b>✓</b>	0	0	X	0	<b>~</b>	0	<b>✓</b>	1
Cyclohexane	<b>✓</b>	<b>✓</b>	X	<b>V</b>	<b>✓</b>	<b>✓</b>	<b>V</b>		1	X	<b>V</b>	<b>~</b>	<b>✓</b>	<b>✓</b>
Cyclohexanol	×	<b>✓</b>	<b>V</b>	<b>/</b>	<b>✓</b>	<b>✓</b>			X	0	<b>~</b>		<b>✓</b>	1
Calcium chloride (10%)				<b>V</b>		<b>✓</b>	<b>V</b>		<b>✓</b>	<b>V</b>	<b>~</b>		<b>V</b>	<b>✓</b>
Chromic acid (10%)				<b>/</b>	<b>~</b>	<b>✓</b>	<b></b>		1	1	<b>~</b>		<b>✓</b>	1
Citric acid (10%)	<b>~</b>	<b>V</b>	<b>/</b>	<b>V</b>	<b>~</b>	<b>✓</b>	<b>/</b>	>		×	<b>~</b>	<b>~</b>	<b>/</b>	>
Dichloromethane	×	×	×	<b>✓</b>	<b>~</b>	0			X	<b>✓</b>	<b>✓</b>		<b>✓</b>	×
Diethyl ether		<b>/</b>	×	<b>/</b>	<b>V</b>	<b>V</b>	<b>/</b>		X	1	<b>~</b>	<b>~</b>	<b>V</b>	<b>/</b>
Dimethyl sulfoxide (DMSO)	×		×	0	1	×	×	×	X	<b>V</b>	<b>V</b>		0	
Dimethyl formamide (DMF)	×	<b>V</b>	×	<b>V</b>	×	0	×	×	X	<b>V</b>	<b>V</b>		X	
Ethanol	<b></b>	<b></b>	<b>V</b>	<b></b>	<b>V</b>	<b>~</b>	<b></b>	1	1	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	×
Ethyl acetate			×	<b>V</b>	1	<b>V</b>	<b>V</b>	<b>/</b>	X	<b>V</b>	<b>~</b>	×	X	×
Ethylene diamine				<b>V</b>	0	0	•	,	×	<u> </u>	· /		<b>V</b>	
Ethylene glycol			<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>/</b>	<b>V</b>	<b>V</b>	·	<b>V</b>	<b>V</b>	· /	<b>V</b>
Formaldehyde (40%)	<b>V</b>		•	<b>V</b>	<u> </u>	<u> </u>	<u> </u>	*	· /	<b>V</b>	· /	· /	· /	X
Formic acid (10%)	<b>V</b>			<b>V</b>	<b>V</b>	<b>V</b>	<u> </u>	X	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	0
Formic acid (30%)	•			<b>V</b>	×	0	•	X	X	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	X
Gasoline	0	<b>V</b>	X	<b>V</b>	<b>✓</b>	<b>V</b>	<b>/</b>	0	X	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>✓</b>
	•		_ ^	<b>V</b>	<b>V</b>	<b>V</b>	\ \ \ \ \ \	•	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>
Glycerol	<b>~</b>			<b>V</b>	<b>✓</b>	<b>V</b>	\ \ \ \		1	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	1
Hexanes	<b>V</b>							~	•	<b>V</b>				•
Hydrobromic acid (10%)		X		<b>✓</b>	<b>/</b>	<b>✓</b>	<b>V</b>	X			<b>V</b>		<b>/</b>	
Hydrobromic acid (47%)		X		0	<b>V</b>	0	X	X		<b>V</b>	<b>V</b>		<b>V</b>	
Hydrochloric acid (10%)		X	<b>V</b>	<b>V</b>	<b>V</b>	<b>✓</b>	<b>V</b>	X	1	1	0	<b>✓</b>	<b>V</b>	1
Hydrochloric acid (37%)	<b>V</b>	X	0	<b>V</b>	1	0	0	X	X	<b>V</b>	0	0	<b>V</b>	X
Hydrofluoric acid (5%)		X	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>		X	<b>V</b>	<b>V</b>	X		<b>V</b>	X
Hydrofluoric acid (50%)	<b>V</b>	X	0	1	<b>✓</b>	X		X	X	<b>✓</b>	<b>V</b>		<b>✓</b>	X
Hydrogen peroxide (30%)	0	X	<b>/</b>	<b>/</b>	<b>✓</b>	<b>~</b>	<b>/</b>	<b>/</b>	0	<b>✓</b>	0	<b>~</b>	<b>/</b>	<b>~</b>
Isopropyl alcohol (IPA)	0	<b>✓</b>	0	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>V</b>	1	<b>✓</b>	<b>✓</b>	1		<b>✓</b>	X
Methanol	×	<b>~</b>		<b>/</b>	<b>✓</b>	<b>✓</b>	<b>/</b>		0	<b>~</b>	<b>~</b>	<b>~</b>	<b>✓</b>	×
Methyl ethyl ketone (MEK)	X	<b>✓</b>	×	<b>V</b>	0	<b>✓</b>	0	X	×	<b>✓</b>	<b>✓</b>	<b>✓</b>	X	1
Nitric acid (10%)	×	×	<b>~</b>	<b>✓</b>	<b>~</b>	<b>✓</b>	<b></b>	×	<b>✓</b>	<b>~</b>	<b>~</b>	<b>~</b>	<b>✓</b>	1
Nitric acid (20%)	×	×	0	<b>✓</b>	<b>~</b>	<b>✓</b>	0	×	<b>✓</b>	<b>V</b>	<b>✓</b>	<b>~</b>	<b>✓</b>	×
Nitric acid (67%)	<b>~</b>	×	×	<b>/</b>	<b>V</b>	×	×	×	X	<b>V</b>	<b>V</b>	×	<b>/</b>	×
Phosphoric acid (10%)	<b>V</b>	×	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	×	<b>V</b>	<b>V</b>	0		<b>V</b>	<b>V</b>
Phosphoric acid (85%)	<b>V</b>	×	0	<b>V</b>	1	×	×	×	X	<b>V</b>	<b>V</b>		0	×
Potassium hydroxide (10%)	<b>V</b>	<b>V</b>	0	<b>V</b>	<b>✓</b>	<b>V</b>	<b>V</b>	1	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>
Potassium hydroxide (30%)	<b></b>	<b>V</b>	X	<b></b>	<b>V</b>	<b>~</b>	0	X	<b></b>	<b>V</b>	<b>V</b>	<b>V</b>	0	1
Sulfuric acid (10%)	×	×	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	X	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	1
Sulfuric acid (30%)	X	X	X	1	1	0	X	X	<b>V</b>	<u> </u>	· /	<b>V</b>	<b>V</b>	X
Sulfuric acid (>80%)		X	X	X	X	X	X	X	X	<b>V</b>	<b>V</b>	X	<b>V</b>	X
Sodium acetate (40%)	<b>V</b>			\ \ \		<b>✓</b>			<b>✓</b>	<b>V</b>	X		<b>V</b>	<b>∼</b>
Sodium chloride (sat.) (32%)	<b>V</b>	<b>✓</b>	<b>V</b>	<b>V</b>	<b>/</b>	<b>✓</b>	<b>/</b>	<b>/</b>	<b>✓</b>	<b>✓</b>	<b>✓</b>	<b>~</b>	<b>V</b>	<b>✓</b>
	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	\ \ \ \		<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>~</b>
Sodium bicarbonate (sat.)	<b>∨</b>	✓	<b>V</b>	<b>V</b>	<b>∨</b>	<b>V</b>	\ \ \ \		<b>✓</b>	<b>V</b>	\ \ \ \	<b>V</b>	<b>V</b>	<b>V</b>
Sodium hydroxide (10%)		1	0				0							1
Sodium hydroxide (30%)	<b>/</b>	<b>/</b>		<b>/</b>	<b>/</b>	<b>V</b>		,	<b>/</b>	<b>/</b>	<b>/</b>	<b>V</b>	0	
Sodium hypochlorite (bleach)		<b>V</b>	<b>V</b>	<b>✓</b>	<b>✓</b>	<b>V</b>		<b>✓</b>	<b>V</b>	<b>V</b>	<b>V</b>	<b>✓</b>	<b>/</b>	X
Styrene (monomer)	X	<b>V</b>	X			<b>V</b>			X	<b>V</b>	<b>V</b>		<b>✓</b>	
Tetrahydrofuran (THF)	X	<b>V</b>	X	<b>V</b>	1	0	<b>V</b>		X	<b>V</b>	<b>V</b>		0	0
Toluene	<b>V</b>	<b>✓</b>	X	<b>/</b>	<b>✓</b>	<b>✓</b>	0	0	×	<b>✓</b>	<b>V</b>	<b>✓</b>	<b>✓</b>	0
Triethanolamine		<b>✓</b>	0	<b>V</b>		0			×	X	<b>V</b>	<b>✓</b>	0	
Vinyl chloride (monomer)					0	<b>✓</b>							<b>✓</b>	
Xylene	×	<b>V</b>	X	<b>V</b>	1	<b>V</b>			X	<b>V</b>	<b>V</b>		<b>V</b>	×

Solvent resistance was tested by submerging the specimen for 30 days in solvent at R.T.; ranking definition:
A: weight change < 1%, tensile strength retained > 95% to standard; B: weight change between 1~10%, tensile strength retained > 75%; C: weight change > 10%, tensile strength retained < 75%; D: dissolved and softened within 120 hours.

\*PEN and PVDF is tested using 3D-printed ASTM D638 specimen by FLXR Team.
For latest rev: www.flxr.engineering