DIN-Abbreviation and Temperature Resistance of Plastics

DIN – Abbreviation Standards 7723 / 7728	Chemical Designation	°C Temperature Range From	To	Tolerated temperature
ABS	Acrylonitrile butadiene styrene	- 40	+ 85	100 °C
ECTFE	Ethylene-chloritrifluoroethylene	- 76	+150	170 °C
ETFE	Ethylene-tetrafluoroethylene	-100	+150	180 °C
FEP	Tetrafluoroethylene-perfluoropropylene	-200	+205	
HDPE	High-density polyethylene	- 50	+ 80	120 °C
LDPE	Low-density polyethylene	- 50	+ 75	90 °C
MF	Melamine		+ 80	120 °C
PA	Polyamide	- 30	+ 80	140 °C
PC	Polycarbonate	-100	+135	140 °C
PET	Polyethylene terephthalate	-40	+60	75 °C
PFA	Perfluoroalkoxy	-200	+260	
PMP (TPX®)	Polymethylpentene	0	+120	180 °C
PMMA	Polymethylmethacrylate	- 40	+ 85	90 °C
POM	Polyoxymethylene	- 40	+ 90	110 °C
PP	Polypropylene	- 10	+110	140 °C
PS	Polystyrene	- 10	+ 70	80 °C
PTFE	Polytetrafluoroethylene	-200	+260	
PVC	Polyvinylchloride	- 20	+ 80	
SAN	Styrene-acrylonitrile	- 20	+ 85	95 °C
SI	Silicone rubber	- 50	+180	250 °C

Limit temperatures tolerated for short time only.

Sterilizing Plastic Laboratory Ware

Plastic	Autoclavable at 121 °C	Gas Sterilizable (Ehtylene Oxide)	Dry Sterilizable at 160 °C	Chemically Sterilizable (in Formalin)	Sterilizable by ionizing radiation
ABS	no	yes	no	yes	yes
ETFE/ECTFE	yes	yes	yes	yes	no
HDPE	no	yes	no	yes	yes
LDPE	no	yes	no	yes	yes
PC	yes (20 min.)	yes	no	yes	yes
PET	no	yes	no	yes	yes
PFA/FEP	yes	yes	yes	yes	no
PMP (TPX®)	yes	yes	no	yes	no
PP	yes	yes	no	yes	no
PS	no	yes	no	yes	yes
PTFE	yes	yes	yes	yes	no
PVC	no	yes	no	yes	no
SI	yes	yes	yes	yes	no

Before sterilizing any item, verify that no contamination or residues are present, remove any stoppers, fittings, or caps, their presence could destroy plastics during sterilization or autoclaving.

Chemical Resistance of Plastic Groups

	ABS	LDPE	HDPE	PP	PET	PMP	PTFE/FEP/PFA	ECTFE/ETFE	PC	PA
Acids, diluted, weak	+	+	+	+	+	+	+	+	+	~
Acids, conc., strong	~	+	+	+	+	+	+	+	–	–
Alcohols, aliphatic	–	+	+	+	~	+	+	+	+	–
Aldehydes	–	+	+	+	~	+	+	+	~	~
Alkalis	~	+	+	+	~	+	+	+	–	~
Esters	–	+	+	+	–	+	+	+	–	+
Hydrocarbons, aliphatic	–	~	+	+	~	~	+	+	~	+
Hydrocarbons, aromatic	–	~	+	~	–	~	+	+	–	+
Hydrocarbons, halogenated	–	–	~	~	–	–	+	+	–	+
Ketones	–	+	+	+	–	~	+	+	–	+
Oxidants (oxidizing acids), strong	–	~	~	~	–	~	+	~	–	–

+ Completely resistant. At the given temperature and concentration it is resistant for many months against the compound.
The plastic remains unaltered without significant weight variations.
Resiste completamente. Alla temperatura e concentrazione indicate resiste molti mesi alla sostanza con cui viene a contatto.
Il materiale rimane inalterato senza significative variazioni di peso.
Excellente résistance. Aux températures et concentrations données il résiste plusieurs mois aux composés.
Le materiel reste inalteré. Il n'y a pas de variations significatives du poids.

~ Resistant with some reservations. At the given temperature and concentration it is resistant against the compound for a short time.
It may swell up slightly with variation of weight of ≥ 3%.
Resiste mediamente. Alla temperatura e concentrazione indicate resiste minor tempo alla sostanza con cui viene a contatto,
può rigonfiarsi leggermente con variazioni di peso ≥ 3%.
Bonne résistance avec quelques réserves cependant. Aux températures et concentrations données il résiste moins longtemps
et peut se gonfler légèrment avec variation du poids ≥ 3%.

– Not resistant. At the given temperature and concentration the compound is corroded, swells up or cracks more or less visibly in a short time.
Non resiste. Alle condizioni di temperatura e di concentrazione indicate viene corroso, si rigonfia o si screpola, più o meno visibilmente in breve tempo.
Mauvaise résistance. Aux températures et concentrations données le composé est corrodé, gonfle ou se craquelle plus ou moins visiblement dans peu de temps.

Chemical Resistance Chart

	C/MF	ABS	ETFE ECTFE	PA	PC	HDPE LDPE	PMMA	POM	PP	PS	FEP/PFA PTFE	PVC	SAN	PMP (TPX®)	PET
Temperature °C		20	50	20	20	50	50	50	50	50	50	20	50	50	20
Acetaldehyde		−	+	~	~	~	−		~	−	+	−	−		−
Acetone	+	−	+	+	−	+		~	~	−	+	−	−	~	−
Acetophenone	+	−	+						~	−	+		−		−
Allylalcohol		−	+	~	+	~			+	~	+		−		+
Aluminium chloride	+	+	~	+	+	~	+		+	+	+		+	+	~
Ammonia 25%		+	+	−	−	+	~	+	+	~	+		~	+	~
Ammonia		+	+			+			+		+				~
Ammonium chloride aqueous sol.		+	+		+	+	+		+	+	+		+	+	~
Amyl acetate (Pentyl acetate)		−	+	~		+			+	−	+		−		+
Amyl alcohol (Pentanol)	+	+	+	+		+			+	~	+	+	~	+	+
Aniline		−	+	~		~	−		~	−	+	−	−	+	+
Aqua regia	−	−	+	−		~			~	~	+	~		~	−
Arsenic acid		+	+		+	~			+	+	+				+
Benzaldehyde		+	+	~		~	~		~	−	+		−	+	−
Benzene	+	−	+	~	−	−	−	~	−	−	+	−	−		−
Boric acid 10%		+	+	+		+			+	~	+		+	+	+
Butyl acetate		−	+	+		~	−	~	~	−	+		−	~	+
Calcium chloride		+	+	+		+	+	+	+	+	+		+	+	+
Calcium Hypochloride		+		+	+	+	~		+	~	+		+	+	~
Carbon tetrachloride	+	−	+	+	−	~	−	~	~	−	+	−	−	~	+
Chlorine		+	+			−			−	−	+	−	−	−	−
Chlorobenzene		−	+	+	−	~				−	+		−		+
Chloroform	+	−	+	~	−	−	−		−	−	+		−	~	−
Chloruretted (chlorine-) water		+	+	−		~	+		~	~	+	~	~	~	−
Chromatosulphuric acid conc.			+			−			−	~	+	~	~	−	−
Chromic acid 20%		+	+		+	−			~	~	+	+	~		~
Cupric sulfate		+	+	+	+	+	+		+	+	+		+		+
Decahydronaphthalene		−	+	+	+	−	~		−	−	+		−	~	~
Dibutyl phthalate	~	−	+	+		~	~	+	~	−	+		−	~	+
Diethyl ether		−	+			~	−		~	−	+		−	~	~
1.4-Dioxane		−	+	+	−	+			+		+			+	+
Ethyl acetate	+	−	~	+	~	~	−		~	−	+	−	−	~	−
Ethyl alcohol 96%	+	~	+	+	+	+	~		+	+	+	+	~	+	+
Ethylene chloride		−	+	+	−	~	−		~	−	+		−	~	−
Ethylene glycol	+	+	+	+		+	+		+	+	+	+	+	+	+
Fluorinated hydrocarbons		−	+			−			~	−	+		~		~
Fluorine		−	~	+		−			−		+				−
Formaldehyde		+	+	+	+	+	+	+	+	~	+	+	~	+	+
Formic acid 85%	+	+	+	−	−	+	−	−	~	~	+	+	~	~	~
Gasoline	+	−	+	+	+	~		+	~	−	+	−	−	~	~
Glacial acetic acid	~	−	+	−	−	+		~	~	~	+	+	~	~	+
Glycerin	+	+	+	+	+	+	+	+	+	+	+		+	+	+
Hexane		−	+	+		~	+	+	~	~	+		+	~	+
Hydrobromic acid 69%		+	+	~		~			~	−	+				~
Hydrochloric acid		+	+	−	+	+	+	−	+	~	+		~	+	~
Hydrofluoric acid 35%	−	+	+	−	−	+	~		+	~	+		~	+	+
Hydrogen peroxide 30%	~	+	+	~	+	+	~	~	+		+	+			+
Iodine tincture		+	+	−	+	~	−		~	~	+		~	+	~
Lead acetate		+	+		+				−						~
Lead acetate aqueous solution		~	+	~	+				−	+	+		+		~
Magnesium chloride		~	+	+	+		+		+	+	+		+		+
Mercurous+ mercuric chlorid		+	+		+	+	+		+	~	+		+	+	~
Mercury		+	+	+	+	+	+		+	+	+	+	+	+	~
Methyl alcohol (methanol)		−	+	+	−	+	−		+	~	+		~	+	+
Methylene chloride		−	+	~	−	−				−	+		−		−
Nitric acid 50%	~	−	+	−	−	~	~	−	~	~	+	+	~	+	~
Oxalic acid, 10%		+	+	~	+	+	+		+	+	+	+	+	+	~
Ozone < 0.5 ppm		−													+
Perchloroethylene		−	+	−	+	~	+		~	~	+		+	~	−
Phenol 100%		−	+	−	−	+	−	−	+	~	+	~	−	+	−
Phosphoric acid	−	+	+	−	+	~	−	~	~	~	+	+	~	~	~
Phosphorus trichloride		−			−	+									
Potassium chloride		+	+		+						+				+
Potassium hydroxide	~	+	+	+		+	+		+	~	+	+	~	+	−
Potassium permanganate		~	+	−	+	+	+	+	+	~	+		~	+	~
Pyridine		−	+	+	−	~	−		~	−	+		−	~	
Silver nitrate		+	+		+	+	+		+	~	−		~		~
Sodium carbonate		+	+	+		+	+	+	+	~	+	+	~	+	+
Sodium dichromate		+	+	+	+	+	+	~	+	+	+	+		+	−
Sodium hydroxide	~	~		+	−	+	~		+	~	+	+	~	+	−
Sulfuric acid 95%		−	+	−	−	~	−	−	~	~	+		−	+	−
Tetrahydrofuran	+	−	+	+	−	~			~	−	+		−	−	+
Toluene		−	+	+	−	~	−	+	~	−	+	~		~	~
Trichloroethylene	+	−	+	~	+	−	−	~	~	−	+	−	−	~	−
Trisodium phosphate		~	+	+		+			+		+				~
Urea	+	+	+	+		+			+	~	+		+	+	+
Xylene		−	+		−	−	−	+	~	~	+	−	−	~	~
Zinc chloride 10%		+	+	~	+	+	+		+	~	+		+	+	+
Zinc sulfate 10%		+	+		+	+			+	+	+		+		~