

Thermo Scientific
Labware Chemical Resistance Table



Effects of Chemicals on Plastics

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Interpretation of Chemical Resistance

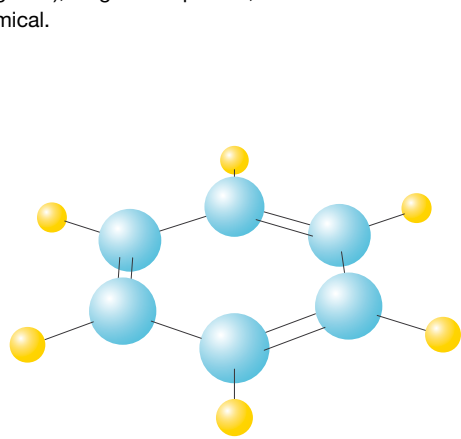
The Chemical Resistance Table that follows is a general guide only. Because so many factors can affect the chemical resistance of a given product, you should test under your own conditions.

Effects of Chemicals on Plastics

Chemicals can affect the strength, flexibility, surface appearance, color, dimensions or weight of plastics. The basic modes of interaction which cause these changes are: (1) chemical attack on the polymer chain, with resultant reduction in physical properties, including oxidation; reaction of functional groups in or on the chain; and depolymerization; (2) physical change, including absorption of solvents, resulting in softening and swelling of the plastic; permeation of solvent through the plastic; dissolution in a solvent; and (3) stress cracking from the interaction of a “stress cracking agent” with internal or external stresses.

Mixing and/or dilution of certain chemicals can be potentially dangerous.

The reactive combination of different chemicals or compounds of two or more classes may cause an undesirable chemical effect or result in an increased temperature, which can affect chemical resistance (as temperature increases, resistance to attack decreases). Other factors affecting chemical resistance include pressure and internal or external stresses (e.g. centrifugation), length of exposure, and concentration of the chemical.



Environmental Stress Cracking

Environmental stress cracking is the failure of a plastic material in the presence of certain types of chemicals.

This failure is not a result of chemical attack. Simultaneous presence of three factors causes stress cracking: tensile stress, a stress cracking agent and the inherent susceptibility of the plastic to stress cracking.

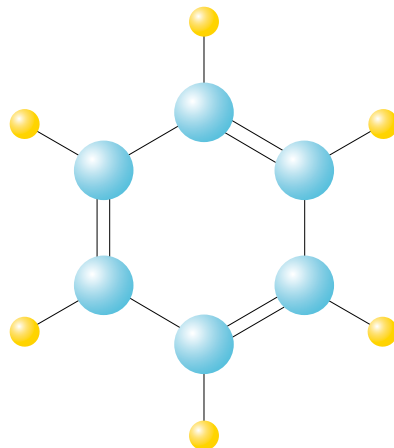
Common stress cracking agents are detergents, surface active chemicals, lubricants, oils, ultra-pure water and plating additives such as brighteners and wetting agents. Relatively small concentrations of stress cracking agent may be sufficient to cause cracking.

Mixing and/or dilution of certain chemicals may result in reactions which produce heat, which can cause product failure.

Pre-test your specific usage and always follow correct lab safety procedures.

Caution: Do not store strong oxidizing agents in plastic labware except that made of Teflon® FEP or PFA. Prolonged exposure can cause the material to become brittle and fail.

While prolonged storage may not be intended at time of filling, a forgotten container will fail in time and result in leakage of contents. Do not place any plastic labware into a flame.

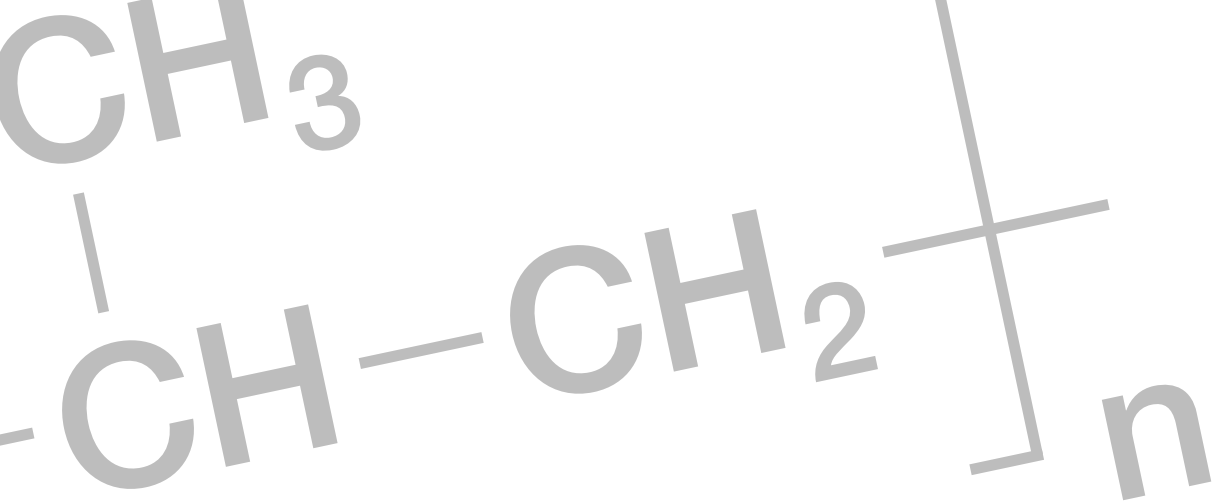


Resin Codes	
ECTFE	Halar® ECTFE (ethylene-chlorotrifluoroethylene copolymer)
ETFE	Tefzel ETFE (ethylene-tetrafluoroethylene)
FEP	Teflon® FEP (fluorinated ethylene propylene)
HDPE	high-density polyethylene
FLPE	fluorinated polyethylene
LDPE	low-density polyethylene
PC	polycarbonate
PEI	polyetherimide
PET	polyethylene terephthalate
PETG	polyethylene terephthalate copolymer
PFA	Teflon® PFA (polyfluoroalkoxy)
PMMA	polymethyl methacrylate (acrylic)
PMP	polymethylpentene
PP	polypropylene
PPCO	polypropylene copolymer
PS	polystyrene
PSF	polysulfone
RESMER	RESMER manufacturing technology
SAN	styrene acrylonitrile
TFE	Teflon® TFE (tetrafluoroethylene)
TMX	Thermanox
PMX	Permanox

PPCO has replaced polyallomer (PA) in all products.



Labware Chemical Resistance Table				Labware Olefin Polymers										Labware Fluoropolymers								Other Labware Polymers										Specialty Materials																			
				LDPE		HDPE		PPP		PPO		PMP		FLPE		FEP		TFE/PTFE		PFA		Halar® ECTFE		Tefzel® ETFE		PETG		PC		PSF		PS		PMMA		SAN		PEI		RES-MER™		PMX		TMX		PET					
Chemical, Concentration	CAS #	EC Number	M.W.	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50	20	50								
Lead Acetate, pure	301-104-2	206-104-4	32.529	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E							
L-Tartaric Acid, pure	809-69-4	201-766-0	15.009	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E						
Magnesium Chloride, pure	7786-30-3	232-094-6	9.521	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E					
MEK, pure	78-93-3	201-159-0	7.211	N	N	F	N	G	F	E	G	F	N	E	G	E	E	E	E	E	E	E	G	F	E	G	G	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N			
Mercuric Chloride, pure	7487-94-7	231-299-8	27.150	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E				
Methoxyethyl Oleate, pure	111-10-4	203-834-5	34.054	E	G	E	E	E	G	E	G	E	G	E	E	E	E	E	E	E	E	E	E	E	E	E	G	-	F	N	F	N	N	N	F	N	-	-	-	-	-	-	E	G	-	-	-	-			
Methyl Acetate, pure	79-20-9	201-185-2	7.408	F	N	F	F	G	F	G	F	G	F	N	E	G	E	E	E	E	E	E	E	G	E	E	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N			
Methyl Alcohol, pure	67-56-1	200-659-6	3.204	E	N	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	N	N	N	G	F	E	G	F	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Methyl Ethyl Ketone, pure	78-93-3	201-159-0	7.211	G	F	F	N	G	F	E	G	F	N	E	G	E	E	E	E	E	E	G	F	E	G	G	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Methyl Isobutyl Ketone, pure	108-10-1	203-550-1	10.016	G	F	F	N	G	F	G	F	F	F	F	F	E	E	E	E	E	E	E	G	E	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Methyl Propyl Ketone, pure	107-87-9	203-528-1	8.613	G	F	N	N	G	F	G	F	F	F	G	F	E	E	E	E	E	E	E	G	E	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Methylene Chloride, pure	75-09-2	200-838-9	8.493	N	N	F	N	F	N	F	N	F	N	G	F	E	E	E	E	E	E	F	N	G	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Methyloxirane, pure	75-56-9	200-879-2	7.412	F	F	G	F	F	N	F	F	F	N	E	G	E	E	E	E	E	E	E	E	E	E	G	F	F	N	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Methyl-t-Butyl Ether, pure	#####	216-653-1	8.815	N	N	F	N	F	N	F	N	F	N	E	G	F	E	E	E	E	E	E	E	E	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N			
MIBK, pure	108-10-1	203-550-1	10.016	G	F	N	N	G	F	G	F	F	F	F	F	E	E	E	E	E	E	E	G	E	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Mineral Spirits, pure	64475-85-0	N/A	N/A	F	N	F	N	F	N	F	N	F	N	E	E	G	F	E	E	E	E	E	E	G	E	G	G	-	F	F	F	F	F	F	N	N	N	G	F	-	-	G	F	E	E	-	-	-	-		
n-Butanol, pure	71-36-3	200-751-6	7.412	E	E	E	E	E	E	E	E	E	E	G	E	E	E	E	E	E	E	E	E	E	E	-	-	E	E	E	E	E	G	N	N	E	N	E	E	E	E	E	E	E	G	E	N	E	N		
n-Butyl Acetate, pure	123-86-4	204-658-1	11.616	G	F	E	G	F	N	G	F	G	F	E	G	E	E	E	E	E	E	E	G	E	G	-	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
n-Butyl Alcohol, pure	71-36-3	200-751-6	7.412	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	-	-	E	E	E	E	E	G	N	N	E	N	E	E	E	E	E	E	E	E	E	E	E	E		
n-Decane, pure	124-18-5	204-686-4	142.28	F	N	F	N	F	N	F	N	F	N	F	G	F	E	E	E	E	E	E	E	E	E	-	-	F	N	G	F	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
n-Heptane, pure	142-82-5	205-563-8	100.20	F	N	G	F	F	N	F	F	F	F	F	G	G	E	E	E	E	E	E	E	E	E	-	-	F	N	G	G	N	N	E	-	E	G	N	G	F	F	F	F	E	-	E	-	-	-		
Nitrobenzene, pure	98-95-3	202-716-0	12.311	N	N	N	N	N	N	N	N	N	F	N	F	F	E	E	E	E	E	E	E	G	E	E	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Nitrohydrochloric Acid, pure	8007-56-5	N/A	N/A	N	N	N	N	N	N	N	N	N	N	N	N	E	E	E	E	E	E	E	G	E	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Nitromethane, pure	75-52-5	200-876-6	6.104	N	N	F	N	N	N	F	N	E	F	G	F	E	E	E	E	E	E	E	F	E	G	N	N	F	N	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
n-Octane, pure	111-65-9	203-892-1	11.423	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	-	-	G	F	G	F	N	N	-	-	N	N	E	-	G	F	E	E	-	-	-	-	-	-		
Oil, Cedarwood, pure	8000-27-9	N/A	N/A	N	N	F	N	N	N	N	N	N	N	E	G	E	E	E	E	E	E	E	G	E	G	-	-	G	F	G	F	N	N	F	N	N	N	E	E	E	E	E	N	N	E	N	E	N	N		
Oil, Cinnamon, pure	8015-91-6	N/A	N/A	N	N	F	N	N	N	G	F	N	E	E	G	E	E	E	E	E	E	E	G	E	G	-	-	G	F	G	F	N	N	F	N	N	N	E	E	E	E	E	E	N	N	E	N	E	N	N	
Oil, Mineral, pure	8012-95-1	232-384-2	N/A	G	N	E	E	G	F	E	G	E	G	E	E	E	E	E	E	E	E	E	E	E	G	N	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
Oil, Orange, pure	8008-57-9	N/A	N/A	G	N	G	F	G	F	G	F	F	F	E	G	E	E	E	E	E	E	E	G	E	E	-	-	F	F	F	F	N	N	F	N	N	N	N	E	E	E	E	E	F	F	E	N	E	N	N	
Oil, Pine, pure	8006-88-0	N/A	N/A	G	N	F	N	E	G	E	G	G	F	E	G	E	E	E	E	E	E	E	G	E	G	-	-	G	F	G	F	N	N	F	N	N	N	E	E	E	E	E	E	G	F	E	N	E	N	N	
Orange Oil, pure	8008-57-9	N/A	N/A	G	N	G	F	G	F	G	F	F	F	E	G	E	E	E	E	E	E	E	G	E	E	-	-	F	F	F	F	N	N	F	N	N	N	E	E	E	E	E	E	F	F	E	N	E	N	N	
Orthoarsenic Acid, pure	7778-39-4	231-901-9	14.194	G	F	E	E	E	E	E	G	E	E	E	E	E	E	E	E	E	E	E	E	E	E	-	-	E	E	E	E	E	E	-	-	-	-	-	-	E	E	E	E	-	-	-	-	-			
Ozone, pure	10028-15-6	233-069-2	4.800	G	N	G	N	F	N	E	G	E	E	G	N	E	E	E	E	E	E	E	E	E	E	-	-	N	N	E	F	F	E	E	G	G	G	G	F	F	E	E	-	-	-	-	-	-	-	-	
p-Chloroacetophenone, pure	99-91-2	202-800-7	15.460	E	E	E	E	G	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	-	-	G	N	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
p-Dichlorobenzene, pure	106-46-7	203-400-5	14.700	F	N	N	N	G	F	G	F	G	F	F	F	E	E	E	E	E	E	E	N	E	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Pentyl acetate, pure	628-63-7	211-047-3	13.018	G	F	E	G	G	F	G	F	G	F	E	E	E	E	E	E	E	E	E	E	E	-	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Perchloric Acid, pure	7601-90-3	231-512-4	10.046	G	N	G	N	G	N	G	N	G	N	G	N	G	F	G	F	G	F	G	F	G	F	-	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Perchloroethylene, pure	127-18-4	204-825-9	16.583	N	N	N	N	N	N	N	N	N	N	F	F	E	E	E	E	E	E	E	E	G	E	E	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Petroleum, pure	64742-82-1	265-185-4	N/A	N	N	G	N	F	N	N	N	G	F	E	F	E	E	E	E	E	E	E	G	E	E	-	-	G	N	E	G	F	N	N	N	N	E	G	E	E	G	F	G	F	E	G	E	G	E	G	
Phenyl Methyl Ketone, pure	98-86-2	202-708-7	12.015	N	N	F	F	G	F	F	N	G	N	G	G	E	E	E	E	E	E	E	E	E	E	-	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Phenylacrolein, pure	104-55-2	203-213-9	13.216	N	N	F	N	N	N	N	N	N	N	N	E	F	E	E	E	E	E	E	E	G	E	G	-	-	G	F	G	F	N	N	N	N	N	N	E	E	E	E	N	N	E	N	E	N	N	N	N
Picric Acid, pure	88-89-1	201-865-9	22.911	N	N	N	N	N	N	N	N	N	E	E	N	N	E	E																																	



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