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Chemical resistance of Tenite™ cellulose acetate propionate

Tenite™ cellulose acetate propionate, a plastic produced from cellulose acetate propionate (CAP), has been tested in contact with a number of materials. The results of those tests are presented here.

Most tests were conducted by placing dry, injection-molded specimens of CAP in contact with the other material for the period of time shown. Unless stated otherwise, tests were conducted at 23°C (73°F). Because results from tests conducted at different temperatures or for different time periods may vary from those shown in this report, users of Tenite must be guided by their own tests made under conditions equivalent to or representative of those to which the plastic will be subjected in actual service.

The test results presented in this report are intended only as a guide to the general chemical resistance of CAP. In actual applications where chemical resistance is a concern, it is necessary to conduct testing with the specific chemical, reagent, and end-use articles involved. No effort is made in this publication to account for specific chemicals or reagents that may no longer be commercially available or may have been modified after test results were obtained.

Certain materials designated in this publication are generally unsatisfactory for use in contact with CAP. There is no implication that other materials are suited for use with Tenite.

The chemical behavior of CAP is very similar to that of Tenite™ cellulose acetate butyrate, which is a plastic made from cellulose acetate butyrate (CAB). Butyrate was developed several years before propionate, and many more tests of the type reported here have been conducted with it and are reported in Eastman publication SP-TRS-10069.

Reagent	Time exposed	Observed condition of plastic
Chemical		
Acetic acid, 5%	1 year	Slightly softened
Acetone*	—	Dissolved
Ammonium hydroxide, 10%	1 year	Slightly swollen
Butyl acetate*	—	Dissolved
Calcium chloride, 2.5%	1 year	Unchanged
Carbon disulfide*	1 year	Softened, swollen
Carbon tetrachloride*	1 year	Softened, swollen
Chloroform*	1 year	Softened, swollen
Citric acid, 10%	1 year	Unchanged
Citric acid (tablets)	1 month, 50°C (122°F)	Unchanged
Ethyl acetate*	—	Dissolved
Ethyl alcohol, 50%*	1 year	Softened, swollen
Ethyl alcohol, 95%*	1 year	Softened, swollen
Ethylene glycol	1 year	Unchanged
Ethylene glycol monoethyl ether*	—	Dissolved
Ethylene glycol monomethyl ether acetate*	—	Dissolved
Formaldehyde, 35%*	1 year	Softened, swollen
Gasoline, regular*	1 year	Dark yellow, slightly warped
Glycerin	1 year	Unchanged
Heptane	1 year	Unchanged
Hydrochloric acid, 10%*	1 year	Disintegrated
Hydrogen peroxide, 3%	1 year	Unchanged
Methanol, 5%	1 year	Unchanged
Methanol, 100%*	—	Dissolved
Methyl ethyl ketone*	—	Dissolved
Methyl isoamyl ketone*	—	Dissolved
Nitric acid*	1 year	Disintegrated
Oleic acid	1 year	Unchanged
Ozone, 5–15 pphm	45 days (outdoors)	Unchanged
Ozone, 70 pphm	45 days, 49°C (12°F)	Unchanged
Phenol, 5%*	1 year	Disintegrated
Propane (gas)	1 year	Unchanged
Propane (liquid)	1 year	Unchanged
Soap solution, USP	1 year	Unchanged
Sodium carbonate, 2.5%	1 year	Unchanged
Sodium chloride, 10%	1 year	Unchanged
Sodium ferrocyanide (dry crystals)	1 week	Unchanged
Sodium hydroxide, 1%	1 year	Unchanged
Sodium hydroxide, 10%*	1 year	Disintegrated
Sulfuric acid, 3%	1 year	Unchanged
Sulfuric acid, 30%*	1 year	Slightly warped
Toluene*	1 year	Softened, swollen
Turpentine	1 year	Unchanged
Water	1 year	Unchanged
Xylene*	1 year	Softened, swollen

**Indicates that material is generally unsatisfactory for use in contact with Tenite CAP under the conditions of this test.*

Reagent	Time exposed	Observed condition of plastic
Miscellaneous material		
Malathion, 50% spray diluted with water to 0.5% malathion*	1 week	Softened, swollen, surface pitted, and cloudy when wet
Crude oil	1 year	Unchanged
Purol HD SAE 10 motor oil	6 months	Unchanged
Sachet powder	1 month, 50°C (122°F)	Unchanged
Vicks Sinex™*	2 days, 50°C (122°F)	Badly stained, softened

**Indicates that material is generally unsatisfactory for use in contact with Tenite CAP under the conditions of this test.*

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The results of **insight**™

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