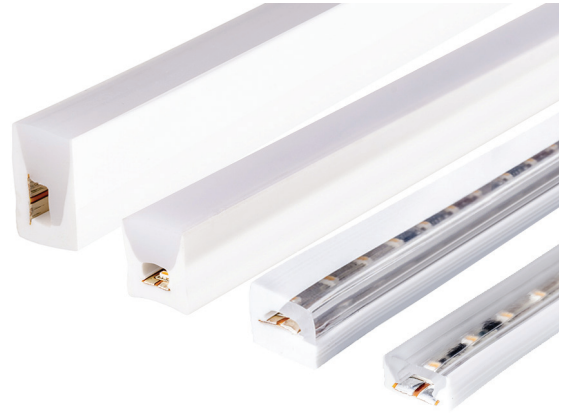


liniLED® LED strip chemical resistance

The chemical resistance of our PVC-P extruded liniLED® Top and Side emitting LED strips versus various types of liquids and gasses, is specified in this material sheet. The chemical resistance depends on the nature of the interacting substances, their composition, the temperature and the duration of exposure.

Upon contact of liquids and gasses with the PVC-P material different processes can occur, such as absorption of the liquid, extraction of soluble plasticizers and chemical reactions, which can potentially cause changes in the properties of products made of PVC-P.



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The behavior of the products in relation to the different materials is divided into the following groups:

A	Resistant: the material is usually classified as suitable.
B	Semi resistant: the suitability with the material in question need to be checked, further tests must be carried out.
C	Not resistant: the material is generally rated as unsuitable.
-	Information of the chemical resistance is not available.

The composition (mass fraction in %) of the chemicals is designated as:

VL	Aqueous solution, mass fraction $7 \leq 10\%$.
GL	Saturated aqueous solution at 20 ° C.
TR	Chemical is technically pure.

1. Chemicals

Chemical substance	Ratio	20° C	40° C
1-butanol	TR	C	C
1,4-butanediol	GL	A	B
1,4-dioxane	TR	C	C
2-chloro-1-bromoethane	TR	C	C
2-ethylhexanol-1	TR	C	C
3-chloro-1-bromopropane	TR	C	C
4-chlorobenzaldehyde	TR	C	C
4-chlorobenzaldehyde-2-sulfonic acid	TR	A	-
Acetaldehyde	10%	B	C
Acetaldehyde	40%	-	C
Acetaldehyde	TR	C	C
Acetaldehyde / acetic acid	90 / 10%	C	C
Acetic acid	10%	A	A
Acetic anhydride	10%	C	C
Acetoacetic	TR	C	C
Acetone	TR	C	C
Acetone	1%	C	C
Acetophenone	TR	C	C
Acetylacetone	TR	C	C
Acetylene	TR	B	-
Acrylic ester	TR	C	C
Adipic acid	GL	A	B
Allyl alcohol	96%	C	C
Allyl chloride	TR	C	C
Alumina	GL	A	-
Aluminum acetate	GL	A	A
Aluminum chloride	10%	A	A
Aluminum chloride	GL	A	-
Aluminum fluoride	GL	A	-
Aluminum hydroxide	GL	A	-
Aluminum nitrate	GL	A	-
Aluminum sulphate	10%	A	A
Ammonia water	10%	A	B
Ammonia water	32%	B	C
Ammonium	GL	A	-
Ammonium bromide	GL	A	-
Ammonium carbamate	GL	A	A
Ammonium carbonate	GL	A	A
Ammonium chloride	GL	A	A
Ammonium citrate	GL	A	-
Ammonium nitrate	GL	A	-
Ammonium oxalate	GL	A	-

Chemical substance	Ratio	20° C	40° C
Ammonium sulfate	10%	A	A
Ammonium sulfate	GL	A	-
Ammonium sulfide	GL	A	-
Amyl	TR	C	C
Amyl alcohol	TR	C	C
Amyl chloride	TR	C	C
Amyllaurate	TR	C	C
Aniline hydrochloride	GL	A	B
Aniline	GL	C	C
Anisole	TR	C	C
Barium chloride	GL	A	A
Barium nitrate	GL	A	A
Barium hydroxide	GL	A	A
Benzalchloride	TR	C	C
Benzaldehyde	GL	C	C
Benzene	TR	C	C
Benzenesulfonic	10%	A	B
Benzenesulfonic	40%	A	C
Benzoic	GL	A	-
Benzoic acid	GL	A	A
Benzotrichloride	TR	C	C
Benzotrifluoride	TR	C	C
Benzoyl chloride	TR	C	C
Benzyl	TR	C	C
Benzylethylanilin	TR	C	C
Bichromic-sulphuric acid	TR	C	C
Borax	GL	A	-
Boric acid	GL	A	A
Bromine vapor	insubstantial	C	C
Bromobenzene	TR	C	C
Bromoform	TR	C	C
Butyl	TR	C	C
Butyl butyrate	TR	C	C
Butyl phthalate	TR	C	C
Butyl stearate	TR	A	A
Butyric	GL	C	C
Calcium bicarbonate	GL	A	-
Calcium carbonate	GL	A	-
Calcium chloride	GL	A	A
Calcium nitrate	GL	A	A
Calcium sulfate	GL	A	-
Carbon dioxide	100%	A	A
Carbon disulphide	TR	C	C
Carbon tetrachloride	TR	C	C

Chemical substance	Ratio	20° C	40° C
Caustic soda	10%	A	A
Caustic soda	25%	D	C
Caustic soda	50%	C	C
Chloralkylether	TR	C	C
Chloranil	TR	C	C
Chlorocresol	0,5%	C	C
Chlorkresole	TR	C	C
Chloroacetaldehyde	TR	C	C
Chloroacetone	TR	C	C
Chlorobenzene	TR	C	C
Chloroform	TR	C	C
Chloroformate	TR	C	C
Chloronaphthalenes	TR	C	C
Chlorosulfonic	TR	B	C
Chlorotoluenes	TR	C	C
Chloroxylenes	TR	C	C
Chlortoluidine	TR	C	C
Chlorxylenole	TR	C	C
Chrome alums	GL	A	A
Chromic acid	10%	A	-
Chromyl	TR	C	C
Cinnamaldehyde	TR	C	C
Citric acid	10%	A	B
Cresol	VL	C	C
Crotonaldehyde	TR	C	C
Cumene	TR	C	C
Cupric sulfate	GL	A	-
Cuprous chloride	GL	A	A
Cyanoacetate	TR	C	C
Cyclohexane	TR	C	C
Cyclohexanol	TR	C	C
Cyclohexanone	TR	C	C
Cyclohexylamine	TR	C	C
Dibutylmethyldithioglycolat	TR	C	C
Dibutylthioglycolat	TR	C	C
Diethylaniline	TR	C	C
Dimethylamine	TR	C	C
Dimethylaniline	TR	C	C
Dimethylformamide	TR	C	C
Diphenyl	TR	C	C
Diphenylamine	TR	C	C
Diphenyloxide	TR	C	C
Ethanolamine	TR	C	C
Ethyl	TR	C	C

Chemical substance	Ratio	20° C	40° C
Ethyl acetate	TR	C	C
Ethyl alcohol	10%	A	B
Ethyl alcohol	96%	C	-
Ethyl bromide	TR	C	C
Ethyl ether	TR	C	C
Ethyl formate	TR	C	C
Ethylbenzene	TR	C	C
Ethylene bromide	TR	C	C
Ethylene chloride	TR	C	C
Ethylene oxide (Liquid)	100%	C	C
Ethylenechlorohydrin	TR	C	C
Ethylglycol	TR	C	C
Ferricyanide	GL	A	A
Ferrocyanide	GL	A	A
Fluosilicic acid	30%	A	A
Formaldehyde	30%	B	-
Formaldehyde	40%	B	-
Formamide	VL	C	C
Formic acid	10%	A	A
Formic acid	TR	C	-
Furfural	TR	C	C
Gasoline	TR	C	C
Gasoline / benzene mixture	80 / 20%	C	C
Glucose	GL	A	-
Glycerin	TR	A	A
Glycol	10%	A	B
Glycol	TR	B	B
Hexachloroethane in alcohol	VL	C	C
Hexamethylenetetramine	GL	A	B
Hydrobromic	10%	A	A
Hydrobromic	63%	A	-
Hydrochloric acid	37%	A	A
Hydrofluoric acid	7%	A	-
Hydrogen	100%	A	-
Hydrogen chloride	GL	B	B
Hydrogen peroxide	20%	A	-
Hydrogen sulfide	100%	B	-
Hydroxylamine	10%	A	A
Iron-II-chloride	GL	A	A
iso-butyl phosphate	TR	C	C
Lactic acid	10%	A	A
Lactic acid	50%	A	B
Lactic acid	90%	B	C
Lead acetate	10%	A	A

Chemical substance	Ratio	20° C	40° C
Magnesium carbonate	GL	A	-
Magnesium chloride	GL	A	A
Magnesium hydrogensulfite	GL	A	-
Magnesium sulfate	GL	A	A
Maleic	10%	A	B
Maleic	35%	A	B
Mercury	TR	A	A
Methanol	TR	C	C
Methyl chloride (gas)	TR	C	C
Methylamine	32%	C	C
Methylene chloride	TR	C	C
Monobromonaphthalene	TR	C	C
n-butyl chloride	TR	C	C
n-butyl ether	TR	C	C
Nickel II chloride	GL	A	-
Nickel II sulfate	GL	A	A
Nitric acid	10%	A	B
Nitric acid	65%	C	C
Nitrobenzene	TR	C	C
Nitroglycerin	GL	C	C
o-chlorobenzoyl	TR	C	C
Oleic acid	TR	B	C
Oxalic	GL	A	A
Oxygen	TR	A	A
Ozone	100%	B	-
p-cymene	TR	C	C
p-tert-amylphenol	TR	C	C
p-tert-butylphenol	TR	B	C
Perchlorethylene	TR	C	C
Petroleum	TR	C	C
Phenol	5%	C	C
Phenylhydrazinchlorhydrat	GL	B	-
Phenylhydrazine	TR	C	C
Phosgene	100%	C	C
Phosphoric	85%	A	A
Phosphorus chlorides	TR	C	C
Phosphorus pentoxide	TR	A	-
Potassium	TR	C	C
Potassium bromide	GL	A	A
Potassium chloride	GL	A	A
Potassium persulfate	GL	A	-
Potassium alloys	TR	C	C
Potassium aluminum sulfate	GL	A	A
Potassium borate	10%	A	A

Chemical substance	Ratio	20° C	40° C
Potassium bromate	GL	A	-
Potassium carbonate	GL	A	A
Potassium chlorate	GL	A	A
Potassium dichromate	GL	A	A
Potassium fluoride	GL	A	-
Potassium hydrogen	GL	A	-
Potassium hydroxide	10%	A	-
Potassium nitrate	GL	A	A
Potassium perchlorate	GL	A	-
Potassium permanganate	18%	-	B
Potassium sulphate	GL	A	-
Quinoline	TR	C	C
Silicon chloroform	TR	C	C
Silver nitrate	10%	A	-
Sodium bisulfite	10%	A	A
Sodium chlorate	GL	A	A
Sodium chloride	GL	A	A
Sodium hypochlorite (12.5% active chlorine)	12,5%	B	-
Sodium sulfide	10%	A	A
Sodium sulfide	GL	B	B
Stannous chloride	GL	A	A
Succinic acid	TR	A	-
Sulfur chlorides	TR	C	C
Sulfur dioxide	100%	-	B
Sulfuric acid	60%	A	A
Sulfuric acid	96%	C	C
Tartaric acid	GL	A	B
Tetrahydrofuran	TR	C	C
Tetrapropylenebenzene	TR	C	C
Thionyl chloride	TR	C	C
Toluene	TR	C	C
Trichloroethylene	TR	C	C
Triethanolamine	TR	C	C
Trimethylolpropane	10%	A	B
Urea	VL	A	A
Vinyl acetate	TR	C	C
Vinyl chloride	100%	C	C
Xylene	TR	C	C
Zinc chloride	GL	A	A
Zinc sulfate	GL	A	A

2. Food, (alcoholic) drinks and other consumer goods

Chemical substance	20° C	40° C
Alcoholic drinks	A	-
Antifreeze for motor vehicle	A	B
Battery acid	A	B
Beef tallow	B	-
Bone oil	B	C
Chlorinated lime slurry	C	-
Citronella	C	C
Detergent (occasionally)	A	A
Developers (photo)	A	A
Dextrin	A	A
Diesel fuel	C	C
Dishwashing liquid	A	-
Edible oils	B	C
Fat emulsions	B	-
Fibers (photo)	A	A
Fruit juices	A	C
Fruit Tree carbolineum	C	C
furniture polish	C	C
Gasoline fuels	C	C
Gelatin	A	A
Hair Shampoo	A	-
Heating oil	C	C
Humic acids	A	-
Hypochlorite	B	-
Ink	A	A
Kamferöl	C	C
Lanolin	B	C
Lard	B	C
Lemon juice	A	-
Linseed	B	C
Mastics	B	C
Mayonnaise	B	-
Milk	A	A
Mineral oils (aromatics)	A	C
Mineral water	A	-
Molasses	A	A
Motor oils for automotive	B	C
Nail polish	C	C
Nail polish remover	C	C
Palm oil	B	C
Peanut oil and peanut butter	B	B
Perfume	C	C

Chemical substance	20° C	40° C
Petroleum	C	C
Pine needle oil	C	C
Pine oil	C	C
Salt water	A	A
Seawater (saltwater)	A	B
Shoe polish	B	C
Soap solution (aqueous)	A	B
Sodas	A	-
Softener	C	C
Starch solution	A	-
Sugar solution	A	-
Sugar syrup	A	-
Tar	B	C
Toothpaste	A	-
Transformer oil	B	-
Urine	A	A
Varnishes	A	-
Vaseline	B	C
Vinegar	B	B
Vinegar	B	C
Wine vinegar	B	B
Wines	A	-
Wood tar	C	C