

Which gloves can be recommended against acids?

An acid is a chemical that donates protons or hydrogen ions and/or accepts electrons.

A simpler explanation is:

Acids form a large class of chemical substances.

Their aqueous solutions have one or more of the following properties:

- They have a sour taste
- They react with and dissolve certain metals and form salts
- Most acids contain hydrogen in their formulation ex: H_2SO_4 –sulphuric acid, HNO_3 –Nitric acid. There are few exceptions that do not have hydrogen AlCl_3 –Lewis acid

Acids can be divided in two groups:

Inorganic acids (mineral acids)

All mineral acids are highly irritant and corrosive to human tissue. This group contains the strongest acids. Ex: Sulphuric acid.

Organic acids

This group contains carboxylic acids, fatty acids All these acids contain a carboxylic group ($-\text{COOH}$). Although they can be quite irritating; these acids are generally less aggressive. EX: Acetic acid and Formic acid.

What is a pH?

When defining acids, the notion of 'pH' is often used. This value indicates the acidity (or alkalinity for bases) of a certain chemical, and is situated between 0 and 14. Acids have pH lower than 7.

The higher the concentration of an acidic solution is, the lower the pH value.

Scientifically speaking, $\text{pH} = -\log([\text{H}^+])$, i.e. the negative logarithm of the hydrogen ions concentration when the product is dissolved in water

Where are acids used?

Acids are used in all kinds of industries and applications; for example as lab reagents, electroplating baths, metallurgy, production of explosives, glass etching (hydrofluoric acid), petroleum refining industry,...

Sulphuric acid is the top commercially produced chemical in the US.

In our daily lives, we use acids a lot as well:

- Soft drinks are diluted acid solutions (Coke has a pH of 2, i.e. it is a strong acid)
- Our stomach contains the strong hydrochloric acid (HCl)
- Citrus fruits contain citric acid
- Wine that tastes sour contains acetic acid
- Vinegar contains acetic acid
- Cleaning products
- Acidic rain (sulphuric acid)

Which gloves can be recommended to protect against acids?

The following table gives a brief overview of common acids and their respective chemical permeation breakthrough times. Of course the concentration of an acid is very important and should always be taken into consideration when choosing an adequate glove.

Check for specific breakthrough times in the Chemical Guardian chart.

There is a specific FAQ to HF (Hydrofluoric acid) describing the hazardous nature and the recommendations. Please refer to the FAQ in case of HF.

Recommendations made in this note are based on extrapolations from laboratory test results and information regarding the composition of chemicals and may not adequately represent specific conditions of end use. Synergistic effects of mixing chemicals have not been accounted for. For these reasons, and because Ansell has no detailed knowledge of or control over the conditions of end use, any recommendation must be advisory only and Ansell fully disclaims any liability including warranties related to any statement contained herein.

Which gloves can be recommended against acids?

Material				Butyl	LLDPE	Neoprene	Neoprene	Nitrile	Nitrile	Nitrile	Nitrile/Neoprene	PVC	Viton Butyl
Thickness (mm)				0.35	0.062	0.13	N.A.	0.12	0.38	N.A.	0.19	N.A.	0.7
Product Name / Style				ChemTek	Barrier	NeoTouch	Scorpio	TouchNTuff	Solvex	AlphaTec	Microflex	Snorkel	ChemTek
Type	CAS	Chemical name	%	38-514	02-100	25-101.201	08-352.354	92-500.600.605 / 93-250.300.700	37-675.676	58-530.535	93-260	04-414	38-628
sgl	110-16-7	Maleic acid, saturated aqueous solution	99	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'
sgl	144-62-7	Oxalic acid, saturated solution	99	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'
sgl	64-18-6	Formic acid	85	>480'	>480'	60-120'	>480'	<10'	30-60'	30-60'	30-60'	120-240'	>480'
sgl	64-19-7	Acetic acid, glacial	100	>480'	158'	17'	>480'	7'	53'	42'	30'	26'	>480'
sgl	7647-01-0	Hydrochloric acid	37	>480'	>480'	101'	>480'	51'	>480'	>480'	>480'	>480'	>480'
sgl	7664-38-2	Phosphoric acid	85	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'
sgl	7664-93-9	Sulphuric acid	50	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'	>480'
sgl	7664-93-9	Sulphuric acid	98	60-120'	>480'	7'	240-480'	<10'	30-60'	60-120'	30-60'	30-60'	>480'
sgl	7697-37-2	Nitric acid	50	>480'	>480'	120-240'	>480'	9'	>480'	>480'	60-120'	>480'	>480'
sgl	7697-37-2	Nitric acid	70	>480'	>480'	29'	>480'	<5'	26'	53'	10-30'	28'	>480'

This chart was generated based on the EN374 standard