

# Hydrated silica

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 [en.wikipedia.org/wiki/Hydrated\\_silica](https://en.wikipedia.org/wiki/Hydrated_silica)

**Hydrated silica** is a form of [silicon dioxide](#), which has a variable amount of water in the formula. It is also known as [silicic acid](#), a term usually used for its form dissolved in water. It is found in nature, as [opal](#) (which has been mined as a gemstone for centuries), and in the cell walls of [diatoms](#). It is also manufactured for use in [toothpaste](#). Once dehydrated the gel is used as a [desiccant](#) known as [silica gel](#). It is also used in various paints and varnishes and in the production of [beer](#).

## Nature

In its pure form, as manufactured for toothpaste, it is an odourless, tasteless, white, gelatinous substance, which is chemically inert.

## Chemical formula

Chemical Formula:  $\text{SiO}_2 \cdot n\text{H}_2\text{O}$

$\text{SiO}_2 = 1, \text{H}_2\text{O} = 1: \text{H}_2\text{SiO}_3$

$\text{SiO}_2 = 1, \text{H}_2\text{O} = 2: \text{H}_4\text{SiO}_4$  [also known as  $\text{Si}(\text{OH})_4$ ]

$\text{SiO}_2 = 2, \text{H}_2\text{O} = 1: \text{H}_2\text{Si}_2\text{O}_5$

$\text{SiO}_2 = 2, \text{H}_2\text{O} = 3: \text{H}_6\text{Si}_2\text{O}_7$

$\text{SiO}_2 = 3, \text{H}_2\text{O} = 2: \text{H}_4\text{Si}_3\text{O}_8$

$\text{SiO}_2 = 3, \text{H}_2\text{O} = 4: \text{H}_8\text{Si}_3\text{O}_{10}$

$\text{SiO}_2 = 4, \text{H}_2\text{O} = 1: \text{H}_2\text{Si}_4\text{O}_9$

## Use in toothpaste

## Flame retardant

It also has synergetic effects when compounded with traditional flame retardants such as magnesium hydroxide and aluminium hydroxide.

## Safety

Hydrated silica is listed by the US [Food and Drug Administration](#) as "Generally Recognized as Safe".

## References