

CimeXa Insecticide Dust™ and Silica Gel: What is Silica Gel? Are All Silicas the Same?

CimeXa Insecticide Dust is comprised of 92.1% amorphous silica gel, and the chemical formula for silica is SiO₂ – a.k.a. silicon dioxide. Silicon dioxide and numerous silicate minerals are ubiquitous in nature. Silicon dioxide is the most prevalent mineral component of common sand, in the form of ground quartz. Sand, however, won't kill bugs!

Silica gel is made by a controlled mixture of sodium silicate (a substance made from quartz) and acid which produced a gel substance (hence the term *silica gel*). The gel is then purified in a washing process, dried and milled.

Silica gel has been known since the 1600s and has a very large number of uses. It is FDA GRAS (Generally Recognized As Safe) listed and may be used as a food additive. It is used widely as a desiccant (e.g. silica packets found in products and a component of cat litter), a preservation agent, a catalyst, a purifying agent, and many other industrial and consumer product uses.

While crystalline silica dust, and certain natural forms of silica such diatomaceous earth which can have crystalline components can cause silicosis if breathed chronically, synthetic amorphous (amorphous means non-crystalline) silica gel, as used in Cimexa, does not have crystalline structure and does not cause silicosis. Note that amorphous silica gel does normally have desiccating (drying) properties, so inhalation of dust during application can be irritating and should be avoided (a particulate dust mask is recommended for application). Chronic contact with skin, and eye contact, can also cause irritation due to the drying effect.

There are many different forms and grades of silica gel that are produced to have very specific properties for different applications. For example, the silica beads typically used in desiccant packs found in products would not be particularly useful for insecticide uses. The amorphous silica gel used in CimeXa is engineered to have very specific properties for making a good insecticide. CimeXa has very strong absorption properties for absorbing water and oil, but not ambient humidity, so it attacks the waxy cuticle of insects and then dries them out. And compared to diatomaceous earth which cuts insects, and therefore has repellency which is a negative feature for certain insecticide applications, CimeXa is a pure desiccant. CimeXa does not cut and does not have direct repellency effects which would keep insects from contacting it sufficiently to be killed.

Additional information on amorphous silica gel may be found in the US EPA Re-registration Eligibility Decision (RED) Facts Sheet for Silica (Silicon Dioxide and Silica Gel):

<https://archive.epa.gov/pesticides/reregistration/web/pdf/4081fact.pdf>