

KNOW YOUR CHEMICAL:

COME CRYSTAL CLEAN
WITH OXALIC ACID

by Denise Parkinson



"The formula of oxalic acid is (C₂H₂O₄); its usual form is that of the crystalline hydrate, (COOH)₂H₂O. Known as a constituent of wood sorrel as early as the 17th century, oxalic acid was first prepared synthetically in 1776. It is manufactured by heating sodium formate in the presence of an alkali catalyst, by oxidizing carbohydrates with nitric acid, by heating sawdust with caustic alkalies, or by fermentation of sugar solutions in the presence of certain molds."

—Online Britannica

"The wood sorrel, Oxalis Acetosella, is also called shamrock. Oxalic acid: a poisonous crystalline dibasic acid, used in pharmacy, the arts, and as a chemical reagent."

—Webster's New Twentieth Century Dictionary, unabridged, copyright 1951 by The World Publishing Company.

Chemicals that assist in cleaning are vital to the pressure washing industry. One of the more effective bleaching agents is oxalic acid. The versatile compound has a diversity of uses and occurs naturally in foods such as spinach and rhubarb—but its synthesized form is poisonous, so don't sprinkle it on salad.

From strengthening dyes as a "mordant," to its use as a reducing agent in photography and purifying agent in the pharmaceutical industry, to removing rust from automobiles and antiques, oxalic acid is as effective as it is multifaceted. Although pressure washing contractors know it as a stain-remover for wood and other surfaces, they may be surprised to learn that beekeepers can use a solution of oxalic acid combined with sugar syrup as an insecticide against the tiny yet destructive varroa mite that has decimated beehives all over the world.

This venerable chemical's ability to produce a crystal-clean result is most visibly demonstrated on quartz. Quartz crystals, prized for use in industry as well as for aesthetics, come out of the ground a muddy, rust-colored mess, only to emerge from an oxalic acid bath a collector's treasure.

"We use a three to one mixture with water—one pound of oxalic acid to three gallons of water—in our operation," says Shane Manley of Ron Coleman Crystal Mines, located in Hot Springs National Park, AR. The cleaning process involves huge metal tanks that are heated for 24 hours "almost to boiling" with the raw crystals lowered into the vats on metal pallets. "We clean about 2,000 pounds [of quartz crystals] in each tank," he adds.

From crystals to concrete, the power of oxalic acid makes it a popular choice for the pressure washing contractor.

Jim Eme, proprietor of The Clean Machine in Vista, CA, likes the results he gets with his sure-flow spray outfit.

"I basically do a lot of flatwork—on cement, patios, pools, flagstone—I find it works pretty good at getting rust stains out," he says. Southern California's calamitous wildfires produce wind-blown ash and soot that tend to wreak havoc on roofs and buildings. Eme uses a reclamation pump, spot treats, and goes after the dirt buildup.

"People are forced to deal with it," Eme says. "When the Santa Ana winds come along, it blows through the hills and that soot travels. Even a week after cleaning, it comes back. Thirty miles from a fire, patios will be covered in soot."

Oxalic acid will also remove tannin or leaf stains and iron or rust stains from metal furniture. On decks, especially redwood, it is effective as a neutralizer before sealing, after the deck has been thoroughly cleaned of mold and mildew.

"I use it instead of any of the bleach stuff that's out there," says John Pabis, owner of B & B Pressure Washing of Redding, CA. "It does the job better for cheaper." Pabis brushes it into the deck ("redwood mainly") and recommends wearing rubber or latex gloves and boots. It's also important to gauge the wind and protect from fumes.

The website, www.peerlesspowerwashing.com, prefaces oxalic acid's uses with the following caution: "Plant and vegetation protection is important, particularly when using bleach or oxalic acid. Oxalic acid's main industrial use is to etch metal. It has a strong odor and can cause repetitive coughing to those close to the applied material. USE A RESPIRATOR. Packaged properly with special surfactants and detergents, oxalic acid based products can be much safer and easier to use than bleach."

A visit to Bob Vila's website yields a lively discussion board on the merits of oxalic acid, along with warnings as to its (potentially fatal) potency. As with any poisonous substance, care must be taken not to inhale or swallow oxalic acid, either when mixing it according to instructions, or applying it to surfaces in well-ventilated areas. If ingestion does occur, milk or water and a prompt call to the Poison Control Center is in order.

If, however, your experience with oxalic acid is a naturally-occurring one, either Grandma's rhubarb pie or the family gourmand's spinach quiche will provide an equally delicious encounter.

Oxalic acid's properties, from the domestic (sterilizing home-brewing equipment) to the municipal (removing calcium impurities during waste-water treatment) guarantee its place on the home front as well as the workaday world, making it a reliable addition to any pressure washing contractor's well-stocked arsenal. *or*