Product Safety Assessment

DOWCLENE™ Cleaning Fluids


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Names
- DOWCLENE™ products
- DOWCLENE 3670 cleaning fluid
- DOWCLENE 3660 cleaning fluid
- DOWCLENE 3670 cold cleaner AllI
- DOWCLENE PX-16S cleaning fluid
- DOWCLENE PX-36 cleaning fluid
- DOWCLENE PX-43S cleaning fluid

Product Overview
- DOWCLENE™ cleaning fluids are specialty formulations based on modified alcohols. These products are colorless liquids with a mild odor. They dry (or evaporate) residue-free. DOWCLENE fluids are marketed by SAFECHEM, a subsidiary of The Dow Chemical Company. These cleaners are often used with the SAFE-TAINER™ system; a closed-loop, self-contained solvent delivery system. For further details, see Product Description.
- DOWCLENE fluids are used for high-precision industrial metal cleaning and degreasing. Their applications range from cleaning ball bearings, machine housings, and parts to engine blocks, ballpoint pen tips, and jewelry. DOWCLENE fluids are also used in the electronics and optics industries. For further details, see Product Uses.
- DOWCLENE cleaning fluids are for industrial use only. Worker exposure is possible at DOWCLENE manufacturing facilities or at facilities using these cleaners. Exposure is minimized through engineering controls and the use of personal protective equipment. For further details, see Exposure Potential.
- Users of these materials must be familiar with the product Safety Data Sheet and adequately trained prior to handling. Eye contact with DOWCLENE fluids may cause slight to severe irritation, depending on the formulation. Prolonged or repeated skin contact may irritate the skin. Excessive inhalation of these products may adversely affect the upper respiratory tract and lungs. For further details, see Health Information.

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Most DOWCLENE™ products, based on modified alcohols, are readily biodegradable, unlikely to accumulate in the food chain, and are practically non-toxic to aquatic organisms. Some hydrocarbon-based DOWCLENE products are inherently biodegradable, and can pose long-term effects to the environment. If released to the environment, these hydrocarbon-based products will evaporate and partition into the air where they expected to degrade rapidly. For further details, see Environmental Information.

Most DOWCLENE™ cleaning fluids and their vapors would be considered combustible. They are thermally stable at typical storage and use temperatures, but can decompose (oxidize) at elevated temperatures. Avoid contact with strong acids, strong bases, strong oxidizers, and direct sunlight. For further details, see Physical Hazard Information.

Manufacture of Product

- **Capacity** – DOWCLENE™ cleaning fluids are manufactured by SAFECHEM, a subsidiary of The Dow Chemical Company.
- **Process** – DOWCLENE products are proprietary formulations based on alkoxypropanol, which are manufactured to meet the stringent cleaning requirements specified by customers.

Product Description

DOWCLENE™ cleaning fluids are specialty formulations based on modified alcohols. These products are clear-colored liquids with a mild odor. They are surfactant-free and therefore dry (evaporate) completely clean and residue-free. DOWCLENE cleaning fluids are noncorrosive and chemically and thermally stable. This family of cleaning products consists of the DOWCLENE 16 Series, DOWCLENE 36 Series, and the DOWCLENE™ PX Series. These products are effective alternatives to conventional chlorinated hydrocarbons, hydrocarbons, and water-based cleaning systems.

Product Uses

DOWCLENE™ cleaning fluids are used for the following applications:

- **DOWCLENE 16 Series** – Immersion and vapor cleaning in modern closed-loop vacuum systems.
- **DOWCLENE 1601 cleaning fluid** – Removal of grease and oil, emulsion residues, polishing and lapping pastes, and fingerprints. Also used on small parts, sintered metals, ballpoint pen tips, lapped parts, aluminum cases, heat exchangers, optical lenses, and jewelry.
- **DOWCLENE 1611 cleaning fluid** – Removal of water-based cooling lubricants, protective coatings, polishing pastes, and glues. The product is well-suited for medium industrial parts cleaning, such as lapped and sintered metal parts and metal fines and cuttings.

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• **DOWCLENE™ 1621 cleaning fluid** – This hydrocarbon containing formulation is well-suited for applications where large amounts of oil-based contamination – such as grease, fat, and oil – are removed and where low water solubility and corrosion protection is necessary. It also is used in combination with water-based cleaners, allowing removal of both polar and nonpolar contamination in a single cleaning cycle in closed cleaning equipment.

• **DOWCLENE 36 Series** – Developed as cold-cleaner formulations for dip, brush, and wipe cleaning of hard surfaces.

• **DOWCLENE 3650 cleaning fluid** – Water-based wipe cleaner formulation used for residue-free cleaning and degreasing of surfaces by wiping with a towel prior to welding, painting, or application of adhesive; cleaning of large surfaces, such as machine housings, glass, mirrors, engine blocks, etc.

• **DOWCLENE 3660/3670 cleaning fluid** – Cleaning and degreasing by dip and/or brush application also used for general cleaning during maintenance and repairs. These products are hydrocarbon-based.

• **DOWCLENE PX Series** – Specialty cleaning for the optics and electronics industries.

• **DOWCLENE PX-16S cleaning fluid** – Closed-system cleaning (cleaning under vacuum); removal of resin-containing flux residuals from soldered electronic components.

• **DOWCLENE PX-33/PX-36 cleaning fluid** – Cleaning screens, templates, misprints, circuit boards, and frames; removing printing inks/pastes, soldering pastes, thick film pastes, and surface-mount technology (SMT) adhesives.

• **DOWCLENE PX-43S cleaning fluid** – Vacuum cleaning of screens, templates, frames, soldering frames, circuit boards, surface-mount device (SMD) hybrids, misprints, optical glass; removing flux residues, soldering pastes, SMT adhesives, thick-film pastes, printing inks and pastes, and fillers.

### Exposure Potential

DOWCLENE™ cleaning fluids are used in the production of industrial and consumer products. Based on the uses for these products, the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in a DOWCLENE manufacturing facility or in the various industrial or manufacturing facilities that use these products. These cleaners are produced, distributed, and stored in closed systems. Those working with DOWCLENE products in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit unnecessary exposure. See Health Information.

- **Consumer exposure to products containing DOWCLENE cleaning fluids** – DOWCLENE fluids are industrial cleaners for commercial use. They are not available to the general public. See Health Information.

- **Environmental releases** – DOWCLENE cleaning fluids are generally used in enclosed systems, so releases to the environment are expected to be minimal. The modified alcohol-based DOWCLENE fluids may be released to air by slowly evaporating from cleaners or other products containing them. However, because they are completely soluble, once introduced to water, the compounds will tend to remain dissolved in water. If released to the environment, DOWCLENE products containing hydrocarbons will evaporate and partition into the air. In the event of a spill, the focus is on containing the spill to prevent contamination of soil and surface or ground water. Absorb small spills with sand or vermiculite. Collect in suitable and properly labeled containers. Most DOWCLENE fluids do not pose a risk to aquatic organisms; however, those that contain a hydrocarbon component may pose long-

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term adverse risk to aquatic organisms if released to the aquatic environment. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, ventilate and dike the area to contain the spill. DOWCLENE™ products are vapor explosion hazards. Keep spilled material out of sewers. Evacuate personnel upwind. Eliminate all sources of ignition immediately. Ground and bond all handling equipment. Pump with explosion-proof equipment. Respiratory protection and other personal protective equipment should be worn when there is a potential to exceed the exposure limit. Collect in suitable and properly labeled containers. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Keep people away. Isolate the area and deny unnecessary entry. Use a water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam to fight the fire. ATC-type alcohol-resistant foams are preferred. Do not use a direct water stream; it may spread the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

**Health Information**

Health information for DOWCLENE™ cleaning fluids is summarized on the relevant Safety Data Sheets. It is important to note that health risks associated with individual products may vary based on their formulation or intended use. The Safety Data Sheet is the preferred source for specific health information. These materials may also contain minor components or additives that have additional health risks. An overview of health information for DOWCLENE cleaning fluids appears below.

**Eye contact** – Eye contact with these products may cause slight to severe irritation with corneal injury, depending on formulation. Vapor may cause eye irritation experienced as mild discomfort and redness.

**Skin contact** – Prolonged or repeated skin contact may cause local redness and irritation. Drying and flaking may occur. A chemical burn is possible from repeated skin contact. Symptoms may include pain, severe local redness, swelling, and tissue damage. Prolonged skin contact is unlikely to result in absorption of harmful amounts.

**Inhalation** – Prolonged, excessive inhalation of these products may irritate the upper respiratory tract (nose and throat) and lungs. Symptoms of excessive exposure may be anesthetic or narcotic effects and dizziness or drowsiness. Excessive exposure may increase sensitivity to epinephrine and increase irregular heartbeats.

**Ingestion** – These cleaners have low toxicity if swallowed. Swallowing small amounts incidental to normal handling is not likely to cause injury; however, swallowing larger amounts may cause injury. Aspiration into the lungs may occur during ingestion or vomiting resulting in rapid absorption and injury to other body systems. Chemical pneumonia may occur.

**Repeated exposure** – In animal testing, effects have been observed in the liver, kidneys, and adrenal glands following repeated overexposure to these products.

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For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Environmental Information\textsuperscript{1,2}

DOWCLENE™ cleaning fluids are generally used in enclosed systems, so releases to the environment are expected to be minimal. The main components in DOWCLENE products range from moderately to highly volatile, and may evaporate from products containing them. However, most DOWCLENE fluids are highly soluble in water, and therefore once introduced, will have a tendency to remain in water. They have minimal tendency to bind to soil or sediment.

Modified alcohol-based DOWCLENE products are unlikely to persist in the environment. The components are readily biodegradable according to Organisation for Economic Co-operation and Development (OECD) guidelines, which suggest the chemicals will be removed from water and soil environments, including biological wastewater treatment plants.

Some DOWCLENE products contain hydrocarbon components, which have a low density and are not soluble in water, therefore they would tend to float on the water surface. Because these fluids evaporate easily, hydrocarbon based fluids released into the environment would tend to partition into the air where they are expected to degrade rapidly. These materials are inherently biodegradable and would also be removed from water and soil environments, including wastewater treatment systems.

Most DOWCLENE cleaning fluids have a low bioconcentration potential (tendency to build up in the food chain) and are practically non-toxic to fish and other aquatic organisms. However, some of the DOWCLENE fluids contain a hydrocarbon component that may increase the bioconcentration potential. Because of their high toxicity, hydrocarbon based DOWCLENE fluids may pose long-term adverse risk to aquatic organisms.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Physical Hazard Information\textsuperscript{1,2,5}

Most DOWCLENE™ cleaning fluids and their vapors are combustible. These products are thermally stable under recommended storage and use conditions, but exposure to elevated temperatures can cause these products to decompose.

Avoid contact with strong acids, strong bases, strong oxidizers, and halogenated organic compounds. Avoid direct sunlight.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of DOWCLENE™ cleaning fluids. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet, Technical Data Sheet, or Contact Us.
Additional Information

- Safety Data Sheet – Request from the Dow Customer Information Group: (www.dow.com/assistance/dowcig.htm)
- Contact Us (http://www.dow.com/en-us/contact-us/)


References

1. DOWCLENE™ 1611 Cleaning Fluid Material Safety Data Sheet, The Dow Chemical Company.
3. DOWCLENE 1621 Cleaning Fluid Material Safety Data Sheet, The Dow Chemical Company.
5. DOWCLENE PX-16S Cleaning Fluid Material Safety Data Sheet, The Dow Chemical Company.
11. SAFECHEM Market Information.
12. DOWCLENE 3670 Cold Cleaner AIII Material Safety Data Sheet, The Dow Chemical Company.

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Product Safety Assessment: DOWCLENE™ Cleaning Fluids

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