



Technical Data Sheet

DOWSIL™ OS-10 Fluid **DOWSIL™ OS-20 Fluid** **DOWSIL™ OS-30 Fluid**

Ozone-safe compounds for a variety of applications

Features & Benefits

- Ozone-safe; do not deplete ozone
- Do not generate smog
- Negligible contribution to global warming
- In USA, classified as non-VOCs
- Clear and colorless
- Odorless
- Compatible with most plastics and surface coatings
- Low toxicity
- Low surface tension
- Evaporate completely at room temperature
- Surfaces cleaned with these fluids can subsequently be painted or coated
- High purity: very low residual nonvolatile content
- Non-irritating to skin

Applications

- Rinsing parts after cleaning with stronger cleaning agents; dry to leave no residues or spots
- Aerosols for cleaning industrial optics and spectacle lenses
- Impregnating “wipes” for cleaning applications where more aggressive solvents cannot be used
- Replacing organic fluids as carriers in some industrial processes
- Alternatives to hydrocarbon solvents in consumer product formulations
- Solvents or carriers for silicone oils or greases
- Cleaning contaminated surfaces prior to painting or bonding

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

| Property | Unit | DOWSIL™ OS-10 Fluid | DOWSIL™ OS-20 Fluid | DOWSIL™ OS-30 Fluid |
|----------------------------|---------|---------------------|---------------------|---------------------|
| Flash Point, Closed Cup | °C (°F) | -3 (27) | 34 (94) | 57 (135) |
| Boiling Point at 760 mm Hg | °C (°F) | 100 (212) | 152 (306) | 194 (381) |

Typical Properties (Cont.)

| Property | Unit | DOWSIL™ OS-10 Fluid | DOWSIL™ OS-20 Fluid | DOWSIL™ OS-30 Fluid |
|--|----------------|---------------------|---------------------|---------------------|
| Vapor Pressure at 25°C (77°F) | mm Hg | 42.2 | 3.9 | 0.43 |
| Latent Heat at BP | cal/g (BTU/lb) | 46 (83) | 36 (66) | 31 (56) |
| Latent Heat at 25°C (77°F) | cal/g (BTU/lb) | 54 (97) | 47 (85) | 42 (76) |
| Drying Rate ¹ (Butyl Acetate = 1) | | 3.8 | 0.7 | 0.14 |
| Viscosity at 25°C (77°F) | cP | 0.5 | 0.8 | 1.3 |
| Specific Gravity at 25°C (77°F) | | 0.76 | 0.82 | 0.85 |
| Surface Tension at 25°C (77°F) | dynes/cm | 15.2 | 16.5 | 17.3 |
| Freezing Point | °C (°F) | -68 (-90) | -82 (-115) | -68 (-90) |
| Kauri-butanol Value | | 17 | 15 | 13 |

1. ASTM D-1901; ASTM: American Society for Testing and Materials.

Caution

Both DOWSIL™ OS-10 Fluid and DOWSIL™ OS-20 Fluid are classified as flammable liquids. Appropriate precautions must be taken during the storage and handling of these products.

How to Use

Cleaning

Cleaning with Dow OS fluids is a simple process. Parts may be immersed in the cleaning fluid with vigorous action or the fluid can be applied by spray. Soils are lifted from the surfaces by the action of the fluid. Lightly contaminated components can be cleaned by wiping them with tissues impregnated with Dow OS fluids. Dow OS fluids are compatible with a wide range of materials and will not harm most substrates, including most plastics and delicate coatings. Their mild cleaning action also makes them suitable for cleaning multi-material components and devices. However, it is advisable to check the compatibility of Dow OS fluid with the surfaces to be cleaned. Dow OS fluids are excellent solvents for nonvolatile silicone materials. Contaminated surfaces that have been cleaned with Dow OS fluid can subsequently be coated or bonded because the Dow OS fluid will completely evaporate leaving no trace of silicone.

Environmental Status

Dow OS fluids are pure methyl polysiloxanes, are low in toxicity and do not contribute to ozone depletion. Their lifetime in the atmosphere is between 10 and 30 days. The ultimate oxidative degradation products are carbon dioxide, silicic acid and water. As a result, they will not form smog or create ozone at lower altitudes and any contribution to global warming will be insignificant due to the short atmospheric half-life. Dow OS fluids are exempt from US Federal VOC regulations and are included on the list of acceptable precision and PCB systems cleaning substances in the US "Significant New Alternatives Policy" also known as SNAP.

Recycling

The ability to recycle solvents is important from an environmental and economic standpoint. Because Dow OS fluids are single component materials, they can be purified by distillation. They can also be recovered by filtration, gravity separation or desiccant water removal, thus extending the life of the fluid. Heavily contaminated Dow OS fluids are classified as ignitable waste and must be transported and disposed of in an appropriate manner.

Flammability

DOWSIL™ OS-10 Fluid, DOWSIL™ OS-20 Fluid and DOWSIL™ OS-30 Fluid exhibit closed cup flash points, which places them in the flammable or combustible range of materials. The table summarizes the important flammability properties of these materials. Note that the vapor pressure of DOWSIL™ OS-10 Fluid results in an ability to reach the Lower Explosive Limit (LEL) without heating, and that DOWSIL™ OS-20 Fluid requires only modest heating above ambient temperature to reach its LEL. Dow OS fluids should be handled and stored in accordance with all applicable fire safety laws and regulations. As with any flammable or combustible liquid, fire safety can be addressed through the elimination of ignition sources, displacement of oxygen, or suppression of flammable vapor formation to levels well below the LEL of the particular liquid.

Dow recommends that OS fluids be stored in closed containers, away from heat, sparks, and open flames, and used only in processes that have been engineered to be operated within well-defined parameters of fire prevention. Documents published by the National Fire Protection Association (NFPA) are a good resource and guide for design such processes.

Flammability Properties of DOWSIL™ OS Fluids

| Product | Vapor Pressure, 25°C (77°F) (Torr) | Standard Vapor Concentration, Vol % | LEL, Vol % | UEL, Vol % °C (°F) | Flash Point | DOT Class | NFPA Class °C (°F) | Autoignition Temperature |
|---------------------|------------------------------------|-------------------------------------|------------|--------------------|-------------|-------------|--------------------|--------------------------|
| DOWSIL™ OS-10 Fluid | 42.2 | 5.55 | 1.25 | 18.6 | -3 (27) | Flammable | Class IB | 341 (646) |
| DOWSIL™ OS-20 Fluid | 3.9 | 0.5 | 0.9 | 13.8 | 34 (93) | Flammable | Class IC | 350 (662) |
| DOWSIL™ OS-30 Fluid | 0.43 | 0.06 | 0.9 | ¹ | 57 (135) | Combustible | Class II | 350 (662) |

1. Could not be measured due to apparatus temperature constraints. Estimated to be in the 10–15% range.

Extinguishment Guidelines

Dow scientists and engineers have studied, and continue to study, the dynamics of volatile methyl siloxane (VMS) fires, including those involving OS fluids. These studies have shown the products of complete combustion to be carbon dioxide, water and amorphous silica. The VMS-fueled flame is described as characteristically luminous and yellow-white with tan grey or white-grey smoke, somewhat lighter in color than that resulting from hydrocarbon fires.

VMS fluids tend to burn more rapidly than hydrocarbons of comparable volatility. This has been attributed to two possible factors. First, heat capacities and heats of vaporization at the boiling point are lower for siloxanes than for organics. Thus, the total energy required to vaporize these materials is lower. Secondly, energy feedback from the flame to the fuel is enhanced by the influence of silica on the emission characteristics of the flame.

The rapid and accelerating nature of a VMS fire results in a greater degree of difficulty of extinguishment as the heat flux increases. Tests on large pools of VMS liquid have shown CO₂ and dry chemical extinguishers to be ineffective once a fire has reached certain proportions of size and heat flux. However, CO₂ can extinguish a smaller VMS fire if applied properly in the early stages.

Extinguishment Guidelines (Cont.)

Foam has been found to be the most effective fire extinguishing agent for VMS fires. Specifically, AFFF (> 30:1) alcohol resistant, medium expansion foam, such as Ansulite 3x3 foam, has been shown to work well. Consult your plant safety group or local fire fighting unit for application recommendations.

A fine water spray can also be an effective method of extinguishment. It is theorized that the water serves to significantly cool the fire, allowing the combustion product silica to return to the surface of the liquid. When a sufficient layer of silica has formed, contact between fuel vapors and oxygen is inhibited, and the fire is extinguished.

Dow is committed to further studies of VMS fire properties, as well as the identification of all effective extinguishing agents, and will communicate its findings to its customers as they become available.

Handling Precautions

Recommended occupational limits for vapors of these products are given in the Safety Data Sheet.

Dow OS fluids can be used in cleaning equipment provided it is designed to safely handle flammable or combustible liquids. Contact the equipment manufacturer for specific recommendations.

Direct contact with eyes may cause temporary discomfort, which can be relieved by flushing with water.

Empty containers should be carefully ventilated to prevent buildup of flammable vapors from residual fluid.

Dow OS fluids can generate static electricity when they flow in pipework and it is recommended that conductive metal pipework be used. Also, the use of plastic handling components should be minimized. Precautions must be taken to ensure that static charge does not build up to a level where it may become a shock hazard or cause a discharge capable of ignition.

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life and Storage

When stored at or below 54°C in the original, unopened containers, DOWSIL™ OS-20 Fluid and DOWSIL™ OS-30 Fluid have a shelf life of four years from the date of manufacture. When stored at or below 43°C in the original, unopened containers, DOWSIL™ OS-10 Fluid has shelf life of five years from the date of manufacture.

Packaging Information

Dow OS fluids are supplied in drums (approx.) 200 L (52 gal) and in 25 L (6.5 gal) pails.

**Shipping
Limitations**

DOWSIL™ OS-10 Fluid and DOWSIL™ OS-20 Fluid are classified as “Flammable Liquids.” DOWSIL™ OS-30 Fluid is classified as a “Combustible Liquid.” Detailed information is given in the Safety Data Sheets.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

**Health and
Environmental
Information**

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, dow.com or consult your local Dow representative.

**Disposal
Considerations**

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

**Product
Stewardship**

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

dow.com

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