Product Information

DOW CORNING®
OS-10, OS-20, OS-30 Fluids
Fluids

Volatile methylsiloxanes

FEATURES

OZONE SAFE

- Do not deplete ozone
- Do not generate smog
- Negligible contribution to global warming
- In USA have been classified as non-voc's

- Clear & colourless
- Odourless
- Compatible with most plastics and surface coatings
- Low toxicity
- Low surface tension
- Evaporate completely at room temperature
- Surfaces cleaned with these fluids can be subsequently painted or coated
- High purity: residual non-volatile content is less than 1ppm
- Non-irritating to skin

APPLICATIONS

The following uses are envisaged:

- For rinsing parts after cleaning with stronger cleaning agents. They dry to leave no residues or spots.
- As precision cleaning agents for aerospace guidance system components.
- Aerosols for the cleaning of industrial optics and spectacle lenses.
- The impregnation of "wipes" for cleaning applications where more aggressive solvents cannot be used.
- Replacement of organic fluids as carriers in some industrial processes.
- As alternatives to hydrocarbon solvents in consumer product formulations.
- As solvents or carriers for silicone oils or greases.
- For cleaning contaminated surfaces prior to painting or bonding.

TYPICAL PROPERTIES

Specification writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales representative prior to writing specifications on this product.

Parameter	Unit	OS-10	OS-20	OS-30
Flash point, closed cup	°C (°F)	-3 (27)	34 (94)	57 (135)
Boiling point at 760mm Hg	°C (°F)	100 (212)	152 (306)	194 (381)
Vapour Pressure at 25°C	mm Hg	42.2	3.9	0.43
Heat of vapourisation at BP	Btu/gal	528	450	398
Drying rate (butyl acetate = 1) (ASTM D-1901)		3.8	0.7	0.15
Viscosity at 25°C (77°F)	cSt	0.65	1	1.5
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		16.6	15.1	13.4

CAUTION

BOTH DOW CORNING OS-10 AND OS-20 FLUIDS ARE CLASSIFIED AS FLAMMABLE LIQUIDS. APPROPRIATE PRECAUTIONS MUST BE TAKEN DURING THE STORAGE AND HANDLING OF THESE PRODUCTS.

HOW TO USE

Cleaning with DOW CORNING® OS Fluids

Cleaning with DOW CORNING 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 CORNING OS Fluids.
DOW CORNING 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 the DOW CORNING OS Fluid with the surfaces to be cleaned.
DOW CORNING OS Fluids are excellent solvents for non-volatile silicone materials. Contaminated surfaces that have been cleaned with a DOW CORNING OS Fluid can be subsequently coated or bonded because the DOW CORNING OS Fluid will completely evaporate - leaving no trace of silicone.

ENVIRONMENTAL STATUS

DOW CORNING OS Fluids are pure methyl polysiloxanes and 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 CORNING OS Fluids are exempt from US Federal VOC regulations and are included on the list of acceptable precision and electronics 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 CORNING 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 CORNING OS Fluids are classified as ignitable waste and must be transported and disposed of in an appropriate manner.

FLAMMABILITY OF DOW CORNING OS FLUIDS

DOW CORNING OS-10, OS-20, OS-30 Fluids exhibit closed cup flash points which place them in the flammable or combustible range of materials. Table 1 summarises the important flammability properties of OS Fluids. Note that the vapour pressure of OS-10 results in an ability to reach the Lower Explosive Limit (LEL) without heating, and that DOW CORNING OS-20 requires only modest heating above ambient temperature to reach its LEL.

DOW CORNING 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 vapour formation to levels well below the LEL of the particular liquid.

Dow Corning recommends that OS Fluids be stored in closed containers, away from heat, sparks, and open flames, and used only in processes which 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 designing such processes.

EXTINGUISHMENT GUIDELINES

Dow Corning 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-fuelled flame is described as a characteristic luminous, yellow-white with tan-grey or white-grey smoke that is somewhat lighter in colour 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 vaporisation at the boiling point are lower for the siloxanes than for organics. Thus, the total energy required to vapourise 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 CO£ and dry chemical extinguishers to be ineffective once the fire has reached certain proportions of size and heat flux. However, CO£ can extinguish a smaller VMS fire if applied properly in the early stages.

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®[1] 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 theorised 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 vapours and oxygen is inhibited, and the fire is extinguished.

Dow Corning 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.

[1] ANSULITE® is a registered trademark of Ansul Inc.

HANDLING PRECAUTIONS

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

DOW CORNING 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 them with water.

Empty containers should be carefully ventilated to prevent build-up of flammable vapours from residual fluid.

DOW CORNING OS Fluids can generate static electricity when they flow in pipework and it is recommended that conductive metal pipework is used. Also, the use of plastic handling components should be minimised. 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. 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 FROM YOUR LOCAL DOW CORNING SALES REPRESENTATIVE.

USABLE LIFE AND STORAGE

When stored at or below 0°C in the original unopened containers these products have a usable life of 40°C months from the date of production.

PACKAGING

These products are supplied in drums (approx. 200 litres) and in 25 litre pails.

SHIPPING LIMITATIONS

DOW CORNING OS-10 and DOW CORNING OS-20 Fluids are classified as "FLAMMABLE LIQUIDS". DOW CORNING OS-30 is classified as "COMBUSTIBLE LIQUID". Detailed information is given in the Product Safety Data Sheets.

LIMITATIONS

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

HEALTH AND ENVIRONMENTAL INFORMATION

DOW CORNING OS Fluids have been studied for their toxicological properties and show a low order of mammalian and environmental toxicity.

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Health, Environment and Regulatory Affairs specialists available in each area.

For further information, please consult your local Dow Corning representative.

WARRANTY INFORMATION - PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that Dow Corning's products are safe, effective, and fully satisfactory for the intended end use. Dow Corning's sole warranty is that the product will meet the Dow Corning sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. Dow Corning specifically disclaims any other express or implied warranty of fitness for a particular purpose or merchantability. Unless Dow Corning provides you with a specific, duly signed endorsement of fitness for use, Dow Corning disclaims liability for any incidental or consequential damages. Suggestions of use shall not be taken as inducements to infringe any patent.

Table 1: Flammability Properties of DOW CORNING OS Fluids

Product	*Vapour Pressure, 25°C (77°F) (Torr)*	*Saturated Vapour Concentration (Vol %)*	*LEL (Vol%)*	*UEL (Vol%)*	*Flash Point °C (°F)*	*DOT Class*	*NFPA Class*	*Autoignition Temperature, °C(°F)*
DOW CORNING OS-10	42.2	5.55	1.25	18.6	-2.8 (27)	Flammable	Class IB	341.1 (646)
DOW CORNING OS-20	3.9	0.5	0.9	13.8	34.4 (94)	Flammable	Class IC	350 (662)
DOW CORNING OS-30	0.43	0.06	0.9	- *	57.2 (135)	Combustible	Class II	350 (662)

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