



## Technical Data Sheet

### **DOWSIL™ 510 Fluid** **DOWSIL™ 550 Fluid** **DOWSIL™ 710 Fluid**

Phenylmethyl polysiloxane

#### **Features & Benefits**

- Heat resistance
- High flash points
- Low volatility
- Radiation resistance

#### **Composition**

- Silicone fluid

#### **Applications**

- Hydraulic arrestors (snubbers)
- Hydraulically actuated valves and instruments used in nuclear plants
- Other applications where radiation exposure exists

#### **Typical Properties**

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

Property	Unit	DOWSIL™ 510 Fluid	DOWSIL™ 550 Fluid	DOWSIL™ 710 Fluid
Viscosity at 25°C (77°F)	cs	50, 100, 500, 30,000	125	500
Viscosity/Temperature Coefficient		0.655	0.76	0.79
Specific Gravity at 25°C (77°F)		0.985, 0.992, 0.997, 0.990	1.07	1.11
Color, APHA		20, 20, 20, 50	40	40
Flash Point, °C (°F), Minimum		274 (525)	308 (586)	302 (575)
Fire Point, Estimated	°C (°F)	> 343 (> 650)	> 343 (> 650)	> 343 (> 650)
Autoignition Temperature, Estimated	°C (°F)	482 (900)	482 (900)	487 (910)
Pour Point, Estimated	°C (°F)	-57 (-70)	-50 (-58)	-22 (-8)
Specific Heat at 100°C (212°F)		0.405	0.396	0.391

The melt point temperature is a typical value and may vary somewhat due to molecular distribution (especially 50 cs or less). If melting point is critical to your application, then several lots should be thoroughly evaluated. Due to different rates of cooling, this method may yield pour points lower than the temperature at which these fluids would melt.

## Typical Properties (Cont.)

Property	Unit	DOWSIL™ 510 Fluid	DOWSIL™ 550 Fluid	DOWSIL™ 710 Fluid
Thermal Conductivity at 50°C (122°F)	g-Cal/cm <sup>2</sup> -sec-°C	0.00036	0.00035	0.00035
Volatile Content, % by weight after 4 hr at 250°C (482°F)		2.5	2.1	3.0
Radiation Resistance	rads	1.7 x 10 <sup>8</sup>	Similar	Similar

### Description

DOWSIL™ 510 Fluid, DOWSIL™ 550 Fluid and DOWSIL™ 710 Fluid have radiation resistance of approximately 1.7 x 10<sup>8</sup> rads.

DOWSIL™ 510 Fluid is available in a viscosity range of 50 to 30,000 cs, DOWSIL™ 550 Fluid has a viscosity of 125 cs and DOWSIL™ 710 Fluid has a viscosity of 500 cs. DOWSIL™ 550 Fluid and DOWSIL™ 710 Fluid can be blended to provide any viscosity between 125 and 500 cs.

Other characteristics include:

- Thermal stability – DOWSIL™ 510 Fluid, DOWSIL™ 550 Fluid and DOWSIL™ 710 Fluid demonstrate exceptional high-temperature stability during continuous use at 232°C (450°F); these materials are also suitable for low-temperature applications requiring pour points as low as -57°C (-70°F)
- A phenyl group on the polymer chain
- Chemical inertness – Silicone fluids, including DOWSIL™ 510 Fluid, DOWSIL™ 550 Fluid and DOWSIL™ 710 Fluid are inherently inert, resulting in no corrosion of metals or adverse effect on the seals commonly used in the construction of snubbers, valves and instruments
- Ability to swell silicone rubber
- Low flammability – DOWSIL™ 510 Fluid, DOWSIL™ 550 Fluid and DOWSIL™ 710 Fluid exhibit a flash point in excess of 274°C (525°F), a fire point of 343°C (650°F) minimum and an autoignition temperature in excess of 482°C (900°F)
- Compressibility – The relatively high compressibility of these fluids makes them ideal for use in shock absorbing and motion dampening applications (see Table I)
- Heat transfer – Because of their excellent oxidation and temperature resistance, these fluids can be used to transfer heat; heat conductivity is relatively constant over a wide temperature range
- Compatibility – DOWSIL™ 510 Fluid is incompatible with both DOWSIL™ 550 Fluid and DOWSIL™ 710 Fluid; however, DOWSIL™ 550 Fluid and DOWSIL™ 710 Fluid are compatible and miscible with each other – compatibility with other silicone fluids should be determined before use

**Table I:** Compressibility of DOWSIL™ 510 Fluid, DOWSIL™ 550 Fluid and DOWSIL™ 710 Fluid

Fluid	Pressure, psi	Compression, %	Bulk Modulus
DOWSIL™ 510 Fluid, 100 cs	5,000	2.80	179,000
	20,000	7.95	253,000
DOWSIL™ 550 Fluid	1,000	0.50	200,000
	5,000	2.30	217,000
	10,000	3.95	253,000
	20,000	6.50	308,000
DOWSIL™ 710 Fluid	5,000	1.70	294,000
	10,000	3.15	317,000
	20,000	5.50	364,000

**Shipping Limitations** None.

**Handling Precautions** 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 in their original, unopened containers at 25°C (77°F), DOWSIL™ 510 Fluid and DOWSIL™ 550 Fluid have no known limits to useful life. When stored in its original, container at or below 32°C (90°F), unopened DOWSIL™ 710 Fluid has no known limit to its useful life. Dow warrants product shelf life up to 60 months from date of manufacture.

**Packaging Information** DOWSIL™ 510 Fluid is available in 8, 40 and 440 lb (3.6, 18.1 and 200 kg) containers. DOWSIL™ 550 Fluid and DOWSIL™ 710 Fluid are available in 9, 45 and 485 lb (4.1, 20.4 and 220 kg) containers. All weights, net.

**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.

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