

## **TECHNICAL DATA SHEET**

## XIAMETER™ PMX-200 Silicone Fluid, 50-1,000 cSt

INCI Name: Dimethicone

Colorless, clear polydimethylsiloxane fluid

# Features & Benefits

- Ease of application and rubout
- Ease of buffing
- Enhances color
- High water repellency
- High compressibility
- High shearability without breakdown
- High spreadability and compatibility
- Low environmental hazard
- Low fire hazard
- · Low reactivity and vapor pressure
- Low surface energy
- Good heat stability
- Essentially odorless, tasteless and nontoxic
- Soluble in a wide range of solvents

#### For personal care applications

- Imparts soft, velvety skin feel
- Spreads easily on both skin and hair
- De-soaping (prevents foaming during rubout)

#### For industrial applications

- High dielectric strength
- High damping action
- Oxidation-, chemical- and weather-resistant

#### Composition

- Polydimethylsiloxane polymers
- Chemical composition (CH<sub>3</sub>)<sub>3</sub>SiO[SiO(CH<sub>3</sub>)<sub>2</sub>]nSi(CH<sub>3</sub>)<sub>3</sub>

#### **Applications**

- Active ingredient in a variety of automotive, furniture, metal and specialty polishes in paste, emulsion and solvent-based polishes and aerosols
- Various applications including cosmetic ingredient, elastomer and plastics lubricant, electrical insulating fluid, foam preventive or breaker, mechanical fluid, mold release agent, surface active agent, and solvent-based finishing and fat liquoring of leather











# **Typical Properties**

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

Specific Gravity at 25°C (77°F)   0.960   0.964   0.967     Refractive Index at 28°C (77°F)   1.4022   1.4030   1.4032     Color, APHA   5   5   5     Flash Point, Open Cup   °C (°F)   318 (605)   > 326 (> 620)   > 326 (> 620)     Acid Number, BCP   Trace   Trace   Trace     Melt Point   °C (°F)   -70 (-94)   -65 (-85)     Four Point   °C (°F)   -70 (-94)   -65 (-85)     Suface Tension at 25°C (77°F)   dynes/cm   2.08   20.9   21.0     Volatile Content, at 150°C (302°F)   percent   0.3   0.02   0.07     Viscosity Temperature Coefficient   0.59   0.60   0.60     Coefficient of Expansion   Co/cot**   0.00104   0.00096   0.00096     Thermal Conductivity at 50°C (122°F)   g cal/cm-sec*C   0.00104   0.00096   0.00096     Thermal Conductivity at 50°C (122°F)   g cal/cm-sec*C   0.00104   0.00096   0.00096     Thermal Conductivity at 50°C (122°F)   g cal/cm-sec*C   0.00037     Solubility in Trypical Solvents   High   High   High   High     Aromatic Solvents   High   High   High   High   High     Aliphabic Solvents   High   High   High   High     Dry Alcohols   Poor   Poor   Poor     Poor   Poor   Poor   Poor     Fluorinated Propellants   High   High   High   High     Dry Alcohols   Poor   Poor   Poor     Poor   Poor   Poor   Poor     Fluorinated Propellants   High   High   High   High     Aliphabic Solvents   High   High   High   High     Aliphabic Solvents   High   High   High   High     Dry Alcohols   Poor   Poor   Poor     Poor   Poor   Poor   Poor     Poor   Poor   Poor   Poor     Poor   Poor   Poor   Poor     Poor	Property	Unit	Result		
Specific Gravity at 25°C (77°F)   0.960   0.964   0.967			50 cSt	100 cSt	200 cSt
Refractive Index at 25°C (77°F)         1.4022         1.4030         1.4032           Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         318 (605)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace         Trace         Trace           Melt Point         °C (°F)¹²         -41 (-42)         -28 (-18)         -27 (-17)           Pour Point         °C (°F)         -70 (-94)         -65 (-85)         -65 (-85)           Surface Tension at 25°C (77°F)         dynes/cm         20.8         20.9         21.0           Volatile Content, at 150°C (302°F)         percent         0.3         0.02         0.07           Viscosity Temperature Coefficient         0.59         0.60         0.60         0.60           Coefficient of Expansion         cc/cc/°C         0.00104         0.00096         0.00096           Thermal Conductivity at 50°C (122°F)         g cal/cm-sec °C         0.00104         0.00097         0.00037           Solubility Parameter³         7.3         7.4         7.4         7.4         7.4           Solubility in Typical Solvents         High         High         High         High         High	Appearance		Crystal clear	Crystal clear	Crystal clear
Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         318 (605)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 327 (         (-17)         Percent	Specific Gravity at 25°C (77°F)		0.960	0.964	0.967
Flash Point, Open Cup "C (°F) 318 (605) > 326 (> 620) > 326 (> 620) Acid Number, BCP Trace Trace Trace Trace Trace Melt Point "C (°F)¹²² 4.1 (-42) -28 (-18) -27 (-17) (	Refractive Index at 25°C (77°F)		1.4022	1.4030	1.4032
Acid Number, BCP Trace Trace Trace  Melt Point   C (°F)12	Color, APHA	No.	5	5	5
Melt Point         °C (°F)¹²         -41 (-42)         -28 (-18)         -27 (-17)           Pour Point         °C (°F)         -70 (-94)         -66 (-85)         -65 (-85)           Surface Tension at 25°C (77°F)         dynes/cm         20.8         20.9         21.0           Volatile Content, at 150°C (302°F)         percent         0.3         0.02         0.07           Viscosity Temperature Coefficient         0.59         0.60         0.60           Coefficient of Expansion         cc/cc/°C         0.00104         0.00096         0.00096           Thermal Conductivity at 50°C (122°F)         g cal/cm-sec °C         0.00037	Flash Point, Open Cup	°C (°F)	318 (605)	> 326 (> 620)	> 326 (> 620)
Pour Point         °C (°F)         -70 (-94)         -65 (-85)         -65 (-85)           Surface Tension at 25°C (77°F)         dynes/cm         20.8         20.9         21.0           Volatile Content, at 150°C (302°F)         percent         0.3         0.02         0.07           Viscosity Temperature Coefficient         0.59         0.60         0.60           Coefficient of Expansion         cc/cc/°C         0.00104         0.00096         0.00096           Thermal Conductivity at 50°C (122°F)         g cal/cm-sec °C         0.00037         0.00037         0.00037           Solubility Parameter³         7.3         7.4         7.4           Solubility in Typical Solvents         High	Acid Number, BCP	1	Trace	Trace	Trace
Surface Tension at 25°C (77°F)         dynes/cm         20.8         20.9         21.0           Volatile Content, at 150°C (302°F)         percent         0.3         0.02         0.07           Viscosity Temperature Coefficient         0.59         0.60         0.60           Coefficient of Expansion         cc/cc/°C         0.00104         0.00096         0.00096           Thermal Conductivity at 50°C (122°F)         g cal/cm-sec °C         0.00037         0.00037           Solubility Parameter³         7.3         7.4         7.4           Solubility in Typical Solvents         High         Hi	Melt Point	°C (°F) <sup>1,2</sup>	-41 (-42)	-28 (-18)	-27 (-17)
Volatile Content, at 150°C (302°F)         percent         0.3         0.02         0.07           Viscosity Temperature Coefficient         0.59         0.60         0.60           Coefficient of Expansion         cc/cc/°C         0.00104         0.00096         0.00096           Thermal Conductivity at 50°C (122°F)         g cal/cm-sec °C         0.00037         0.00037           Solubility Parameter³         7.3         7.4         7.4           Solubility in Typical Solvents         High         High         High           Chlorinated Solvents         High         High         High           Aliphatic Solvents         High         High         High           Aliphatic Solvents         Poor         Poor         Poor           Water         Poor         Poor         Poor           Poor         Poor         Poor         Poor           Fluorinated Propellants         High         High         High           Dielectric Strength at 25°C (77°F)         volts/mil         400         400         400           Volume Resistivity at 25°C (77°F)         ohm-cm         1.0x10¹5         1.0x10¹5         1.0x10¹5         1.0x10¹5           Appearance         Grystal clear         Crystal clear <td< td=""><td>Pour Point</td><td>°C (°F)</td><td>-70 (-94)</td><td>-65 (-85)</td><td>-65 (-85)</td></td<>	Pour Point	°C (°F)	-70 (-94)	-65 (-85)	-65 (-85)
Viscosity Temperature Coefficient         0.59         0.60         0.60           Coefficient of Expansion         cc/cc/°C         0.00104         0.00096         0.00096           Thermal Conductivity at 50°C (122°F)         g cal/cm-sec.°C         0.00037             Solubility Parameter³         7.3         7.4         7.4           Solubility in Typical Solvents         High         No         20         Poor	Surface Tension at 25°C (77°F)	dynes/cm	20.8	20.9	21.0
Coefficient of Expansion         cc/cc/°C         0.00104         0.00096         0.00096           Thermal Conductivity at 50°C (122°F)         g cal/cm-sec.°C         0.00037           Solubility Parameter³         7.3         7.4         7.4           Solubility in Typical Solvents         High         High         High           Chlorinated Solvents         High         High         High           Aromatic Solvents         High         High         High           Aliphatic Solvents         Poor         Poor         Poor           Vater         Poor         Poor         Poor           Fluorinated Propellants         High         High         High           Dielectric Strength at 25°C (77°F)         volts/mil         400         400         400           Volume Resistivity at 25°C (77°F)         ohm-cm         1.0x10¹5         1.0x10¹5         1.0x10¹5           Appearance         Crystal clear	Volatile Content, at 150°C (302°F)	percent	0.3	0.02	0.07
Thermal Conductivity at 50°C (122°F)         g cal/cm-sec °C         0.00037           Solubility Parameter³         7.3         7.4         7.4           Solubility in Typical Solvents         Chlorinated Solvents           Chlorinated Solvents         High High High High High High High High	Viscosity Temperature Coefficient		0.59	0.60	0.60
Solubility Parameter3   7.3   7.4   7.4	Coefficient of Expansion	cc/cc/°C	0.00104	0.00096	0.00096
Solubility in Typical Solvents         High	Thermal Conductivity at 50°C (122°F)	g cal/cm⋅sec⋅°C	- 4	0.00037	- 6
Chlorinated Solvents         High Aromatic Solvents         High High High High High High High High	Solubility Parameter <sup>3</sup>		7.3	7.4	7.4
Aromatic Solvents         High         Poor         Poor <td>Solubility in Typical Solvents</td> <td></td> <td>. (1)</td> <td></td> <td></td>	Solubility in Typical Solvents		. (1)		
Aliphatic Solvents         High Dry Alcohols         High Poor Poor Poor Poor Poor Poor Poor Poo	Chlorinated Solvents		High	High	High
Dry Alcohols         Poor         Poor         Poor           Water         Poor         Poor         Poor           Fluorinated Propellants         High         High         High           Dielectric Strength at 25°C (77°F)         volts/mil         400         400         400           Volume Resistivity at 25°C (77°F)         ohm-cm         1.0x10¹⁵         1.0x10¹⁵         1.0x10¹⁵           Appearance         Crystal clear         Crystal clear         Crystal clear         Crystal clear           Specific Gravity at 25°C (77°F)         0.969         0.970         0.970           Refractive Index at 25°C (77°F)         1.4034         1.4035         1.4035           Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Aromatic Solvents		High	High	High
Water Fluorinated Propellants         Poor High         Poor Hour High         Poor Active         Poor Active         400			High	High	High
Fluorinated Propellants         High         High         High           Dielectric Strength at 25°C (77°F)         volts/mil         400         400         400           Volume Resistivity at 25°C (77°F)         ohm-cm         1.0x10¹⁵         1.0x10¹⁵         1.0x10¹⁵           Appearance         350 cSt         500 cSt         1,000 cSt           Appearance         Crystal clear         Crystal clear         Crystal clear           Specific Gravity at 25°C (77°F)         0.969         0.970         0.970           Refractive Index at 25°C (77°F)         1.4034         1.4035         1.4035           Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Dry Alcohols		Poor	Poor	Poor
Dielectric Strength at 25°C (77°F)         volts/mil         400         400         400           Volume Resistivity at 25°C (77°F)         ohm-cm         1.0x10¹⁵         1.0x10¹⁵         1.0x10¹⁵           Appearance         350 cSt         500 cSt         1,000 cSt           Appearance         Crystal clear         Crystal clear         Crystal clear           Specific Gravity at 25°C (77°F)         0.969         0.970         0.970           Refractive Index at 25°C (77°F)         1.4034         1.4035         1.4035           Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Water		Poor	Poor	Poor
Volume Resistivity at 25°C (77°F)         ohm-cm         1.0x10¹⁵         1.0x10¹⁵         1.0x10¹⁵           Appearance         Crystal clear         Crystal clear         Crystal clear         Crystal clear         Crystal clear           Specific Gravity at 25°C (77°F)         0.969         0.970         0.970           Refractive Index at 25°C (77°F)         1.4034         1.4035         1.4035           Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Fluorinated Propellants		High	High	High
Appearance         Crystal clear         Crystal clear         Crystal clear         Crystal clear         Crystal clear           Specific Gravity at 25°C (77°F)         0.969         0.970         0.970           Refractive Index at 25°C (77°F)         1.4034         1.4035         1.4035           Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Dielectric Strength at 25°C (77°F)	volts/mil	400	400	400
Appearance         Crystal clear         Crystal clear         Crystal clear           Specific Gravity at 25°C (77°F)         0.969         0.970         0.970           Refractive Index at 25°C (77°F)         1.4034         1.4035         1.4035           Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Volume Resistivity at 25°C (77°F)	ohm-cm	1.0x10 <sup>15</sup>	1.0x10 <sup>15</sup>	1.0x10 <sup>15</sup>
Specific Gravity at 25°C (77°F)         0.969         0.970         0.970           Refractive Index at 25°C (77°F)         1.4034         1.4035         1.4035           Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)			350 cSt	500 cSt	1,000 cSt
Refractive Index at 25°C (77°F)         1.4034         1.4035         1.4035           Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Appearance		Crystal clear	Crystal clear	Crystal clear
Color, APHA         5         5         5           Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Specific Gravity at 25°C (77°F)	and a grant of	0.969	0.970	0.970
Flash Point, Open Cup         °C (°F)         > 326 (> 620)         > 326 (> 620)         > 326 (> 620)           Acid Number, BCP         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Refractive Index at 25°C (77°F)		1.4034	1.4035	1.4035
Acid Number, BCP         Trace         Trace         Trace           Melt Point         °C (°F)         -26 (-15)         -25 (-13)         -25 (-13)	Color, APHA		5	5	5
Melt Point °C (°F) -26 (-15) -25 (-13) -25 (-13)	Flash Point, Open Cup	°C (°F)	> 326 (> 620)	> 326 (> 620)	> 326 (> 620)
	Acid Number, BCP		Trace	Trace	Trace
Pour Point °C (°F) -50 (-58) -50 (-58) -50 (-58)	Melt Point	°C (°F)	-26 (-15)	-25 (-13)	-25 (-13)
	Pour Point	°C (°F)	-50 (-58)	-50 (-58)	-50 (-58)

The melt point temperature is a typical value and may vary somewhat due to molecular distribution (especially 50 cSt).
 If the melting point is critical to your application, then several lots should be thoroughly evaluated.







Due to different rates of cooling, this test method may yield pour points lower than the temperature at which these fluids would melt.

<sup>3.</sup> Fedors Method: R.F. Fedors, Polymer Engineering and Science, Feb. 1974.



## **Typical Properties (Cont.)**

Property	Unit		Result	
		350 cSt	500 cSt	1,000 cSt
Surface Tension at 25°C (77°F)	dynes/cm	21.1	21.2	21.2
Volatile Content, at 150°C (302°F)	percent	0.15	0.11	0.11
Viscosity Temperature Coefficient		0.60	0.61	0.61
Coefficient of Expansion	cc/cc/°C	0.00096	0.00096	0.00096
Thermal Conductivity at 50°C (122°F)	g cal/cm⋅sec⋅°C	9	0.00038	0.00038
Solubility Parameter	70	7.4	7.4	7.4
Solubility in Typical Solvents	70		6	(/)
Chlorinated Solvents		High	High	High
Aromatic Solvents		High	High	High
Aliphatic Solvents		High	High	High
Dry Alcohols		Poor	Poor	Poor
Water		Poor	Poor	Poor
Fluorinated Propellants		High	High	High
Dielectric Strength at 25°C (77°F)	volts/mil	400	400	400
Volume Resistivity at 25°C (77°F)	ohm-cm	1.0x10 <sup>15</sup>	1.0x10 <sup>15</sup>	1.0x10 <sup>15</sup>

## **Description**

XIAMETER™ PMX-200 Silicone Fluid, 50-1,000 cSt is a polydimethylsiloxane polymer manufactured to yield essentially linear polymers in a wide range of average kinematic viscosities.

The viscosities generally used in formulating polishes are between 100 and 30,000 cSt. To obtain optimum results, in terms of ease of application and depth of gloss, it is preferable to use a blend of a low-viscosity fluid and a high-viscosity fluid (e.g. 3 parts XIAMETER™ PMX-200 Silicone Fluid 100 cSt and 1 part XIAMETER™ PMX-200 Silicone Fluid 12,500 cSt). The low-viscosity silicone fluid acts as a lubricant to make polish application and rubout easier, whereas the high-viscosity silicone fluid produces a greater depth of gloss. Since these polymers are inherently water-repellent, they will cause water to bead up on a treated surface rather than penetrate the polish film.

#### How to Use

XIAMETER™ PMX-200 Silicone Fluid, 50–1,000 cSt is highly soluble in organic solvents such as aliphatic and aromatic hydrocarbons, and the halocarbon propellants used in aerosols. The fluid is easily emulsified in water with standard emulsifiers and normal emulsification techniques. XIAMETER™ PMX-200 Silicone Fluid, 50-1,000 cSt is insoluble in water and many organic products. Additive quantities as small as 0.1% may suffice where XIAMETER™ PMX-200 Silicone Fluid, 50-1,000 cSt is to be used as a surface agent or for de-soaping creams and lotions. However, 1-10% is needed for applications such as hand creams and lotions to form a more uniform film and effective barriers.











