



SILICONE SEALANTS

CALUMET SOLVENTS & WHITE OILS

Sealants are chemical products designed to create mechanical seals. Silicone sealants have unique chemical makeup compared to organic polymer-based sealants and keep their elasticity and stability in both high and low temperatures. Silicone sealants are also resistant to other chemicals, moisture, and weather.

Silicone sealants are commonly used to bond plastic, metal, glass, and ceramics and as caulks for sealing cracks. An important requirement for sealants is high flexibility to tolerate movement between different materials.

APPLICATIONS

- Aerospace
- Automotive
- Construction
- Electronics
- Medical

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CALUMET SOLVENTS & WHITE OILS

Low viscosity oils (high boiling point solvents/fluids) are commonly used as plasticizers and extenders at a typical concentration of 20-30% in silicone sealant formulations. Plasticizers impart softness and flexibility to a compound to achieve the desired material hardness and strength. Extenders reduce viscosity of a compound and provide solvency to polymers, so additives can be blended.

▲ BENEFITS

- Reduce formulation cost
- Reduce discoloration issues (inherent to traditional organic plasticizers)
- Improve transparency of the sealant
- Facilitate extrusion and application performance
- Minimize recurring shrinkage

▲ MAIN REQUIREMENTS

- Low volatile organic compound (VOC) content
- Low aromatics (odor) for indoor use
- Low polycyclic aromatic hydrocarbons (PAH content)
- High solvency (low aniline point)
- Colorless for undyed silicone sealant formulations
- Excellent UV stability
- Resistance in staining of yellow alloys (copper) and aluminum

SOLVENTS

Aliphatic Fluids - Act as organic plasticizer and are compatible with silicone sealant formulations. Calumet LVP products are considered CARB compliant Low Vapor Pressure-Volatile Organic Compounds (LVP-VOC).

Isoparaffinic Fluids - Act as organic plasticizers or extenders with excellent compatibility and solvency properties with silicone polymer systems.

PROPERTIES	METHOD	LOW VAPOR PRESSURE SOLVENTS			ISOPARAFFINIC SOLVENTS	
		LVP 100	LVP 200	LVP 300	CONOSOL® 260	CONOSOL® 340
API Gravity @ 60 °F	ASTM D4052	45.9	42.9	41.5	39.9	34.6
Density @ 60 °F (Pounds Per Gallon)	ASTM D1250	6.649	6.766	6.792	6.873	7.092
Flash Point, COC (C), PMCC (P) (°F)	ASTM D92 ASTM D93	201 (P)	242 (P)	256 (C)	285 (P)	341 (C)
Color, Saybolt	ASTM D156	30	30	30	30	30
Refractive Index @ 25 °C	ASTM D1218	1.4380	1.4460	1.4495	1.4536	1.4658
Aromatics (Vol. %)	ASTM D1319	<1.0	<1.0	<1.0	0.3	0.3
Distillation, IBP (°F)	ASTM D86	431	485	512	519	599
Distillation, 50% (°F)	ASTM D86	444	502	542	550	611
Distillation, Dry Point (°F)	ASTM D86	474	538	590	596	642
Specific Gravity @ 60/60 °F	ASTM D1250	0.7975	0.8115	0.8183	0.8237	0.8518
Aniline Point (°F)	ASTM D611	172.8	179.5	191.5	191.0	189.8
Kauri-Butanol Value	ASTM D1133	26.7	25.0	23.1	23.8	21.7
Pour Point (°F)	ASTM D97	-27	-9	-1	-30	-30
Viscosity @ 40 °C (cSt)	ASTM D445	1.91	2.80	3.67	3.74	7.86
Meets CARB Requirements	Method 310	Yes	Yes	Yes	Yes	Yes
Vapor Pressure @ 20 °C (mm Hg)	ASTM D2879	0.11	0.03	0.02	0.01	<0.01
Non-Hazardous		√	√	√	√	√

DRAKESOL™ FDA Compliant Solvents

These solvents can act as organic plasticizers or extenders, while meeting various FDA credentials for incidental or direct food contact.

PROPERTIES	METHOD	205	220	260	305
API Gravity @ 60 °F	D4052	45.4	42.7	41.8	33.1
Specific Gravity, 60/60 °F	D4052	0.7999	0.8126	0.8164	0.8596
Flash Point, PMCC (°F)	D93	202	240	263	333
Color, Saybolt	D156	30	30	30	30
Kauri-Butanol Value	D1133	26.7	25.0	23.2	22.7
Refractive Index @ 20 °C	D1218	1.4416	1.446	1.4488	1.4684
Distillation Range (°F)	D86				
IBP		432	485	511	604
50%		443	502	541	622
EP		474	538	594	654
FDA 21 CFR 172.884	FDA	PASS	PASS	PASS	N/A
FDA 21 CFR 178.3650	FDA	PASS	PASS	PASS	N/A
FDA 21 CFR 573.740	FDA	PASS	PASS	PASS	N/A
FDA 21 CFR 573.680	FDA	PASS	PASS	PASS	PASS
FDA 21 CFR 178.3620 (b)	FDA	PASS	PASS	PASS	PASS

WHITE OILS

Calumet white oils can be used as a viscosity modifier reducing costs by replacing the silicon fluids in the formulation. PENETECK®, DRAKEOL® 5, and DRAKEOL® 10B (Naphthenic) have low viscosity, good compatibility, color stability, and excellent low temperature performance, commonly required for sealants.

The high solvency of our DRAKEOL 10B, naphthenic oil, enables the formulator to optimize the plasticiser concentration. Additionally, the DRAKEOL product line meets purity specifications of the USP/NF and FDA standards which go into a variety of high regulated industries like food, pharma and personal care applications.

PROPERTIES	METHOD	DRAKEOL 5 MIN OIL USP	DRAKEOL 10B	PENETECK
API Gravity @ 60 °F	D4052	35.7	29.1	38.8
Specific Gravity @ 25/25 °C	D4052	0.8180/0.8610	0.8670/0.8840	0.8210/0.8370
Color, Saybolt	D156	30	30	30
Viscosity @ 40 °C (cSt)	D7042	7.0/9.6	17.7/20.2	3.9/5.3
Viscosity @ 100 °F (SUS)	D2161	50.2/60.0	95/105	39.5/44.0
Flash Point, COC (°F)	D92	337	333	305
Odor	USP/NF	PASS	PASS	PASS
Pour Point (°F)	D97	10	-23	-27
Acidity	USP	PASS	PASS	PASS
Infrared Absorption	USP	PASS	PASS	PASS
Limit of PAH	USP	PASS	PASS	PASS
Readily Carbonizable Substances	USP	PASS	PASS	PASS
Soild Paraffins	USP	PASS	PASS	PASS
FDA 21 CFR 172.878	FDA	PASS	PASS	PASS

All DRAKEOL products and PENETECK meet the following FDA regulations: 21 C.F.R. § 172.878 regarding direct food additives, 21 C.F.R. § 178.3620 (a) regarding indirect food additives, and H1 food processing lubricant standards.

TECHNICAL ASSISTANCE

For product or technical questions, contact your Sales Representative or Calumet Product Support at (800) 437-3188 or email technical@calumet.com.

To the best of our knowledge, the information contained herein is accurate, but is given without warranty or guarantee. We assume no liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of the suitability of any information or material for the use contemplated, the name of use and whether there is any infringement of patents is the sole responsibility of the user.

Calumet's sampling and testing procedures in effect at the time of production will be used for certification testing. Results may be based on tank certification, manufacturing data, periodic testing and/or most recent product restock. Typical values only represent the values one would expect if the property were tested in our laboratories with our test methods on the specified date. Some product properties are not frequently measured, and accordingly typical values are not based on a statistically relevant number of tests.

The information in this document relates only to the named product. The user is solely responsible for all determination regarding any use and any process.



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