

# sonneborn

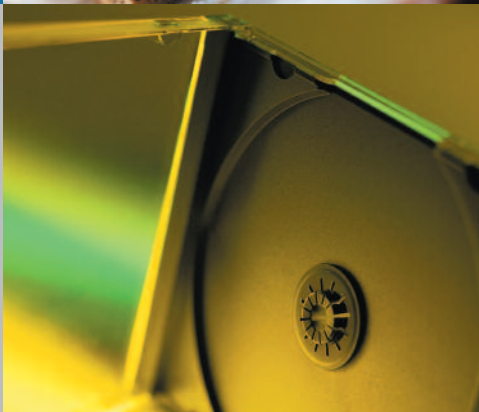
REFINED PRODUCTS

**WHITE OILS**



**PETROLATUMS**

**PETROLEUM DISTILLATES**



**MICROCRYSTALLINE WAXES**

**CHEMISTRY. BY NATURE.™**

The information contained herein is correct to the best of our knowledge. Your attention is directed to the pertinent Material Safety Data Sheets for the products mentioned herein. All sales are subject to Sonneborn's standard terms and conditions of sale, copies of which are available upon request and which are part of Sonneborn's invoices and/or order acknowledgments. Except as expressly provided in Sonneborn's standard terms and conditions of sale, no warranty, express or implied, including warranty of merchantability or fitness for particular purpose, is made with respect to the products described herein. Nothing contained herein shall constitute permission or recommendation to practice any invention covered by a patent without a license from the owner of the patent.

## SONNEBORN, INC.



**SONNEBORN, REBORN.** Since the early 1900s, the Sonneborn name has been synonymous with the highest quality refined hydrocarbons in the world. While through the years our name has changed – most notably as part of Witco – one thing has remained consistent: our goal of providing customers with premium products, superior technical capabilities, and dependable service.

**HISTORY.** Sonneborn's refinery in Petrolia, Pennsylvania traces its heritage back to the mid-1800s and the advent of the oil industry in western Pennsylvania. We pioneered the production of petrolatum for use in medical salves and ointments from the utilization of materials previously considered to be unusable. The next major development came as a result of the first World War when, unable to secure white oil from offshore, our refinery became the first refiner of white oils in the United States.

**GLOBAL LEADERSHIP .** Over a century later, Sonneborn is the global leader in the manufacture and supply of high-purity specialty hydrocarbons. Along the way, we improved on our original developments, utilizing our state-of-the-art, two-stage hydrogenation process to pioneer such innovations as stabilized and low-volatility plastics oils and Super White petrolatums. Our manufacturing sites in Amsterdam, the Netherlands also have a 100-year history of manufacturing and applications expertise. We offer a similar product line in Europe and North America, enabling us to more efficiently serve the needs of our multinational customers. Sonneborn is the world's only producer that offers this global reach and depth of experience.

**PRODUCT CHOICE.** Sonneborn has the broadest product line in the industry. Our combination of standard grades satisfies a broad spectrum of applications, and our custom-formulating ability helps us meet your most exacting specifications. We provide grades that meet the strict standards of USP, NF, BP, DAB, French Codex, EuP, Japanese, and other pharmacopoeias. We also provide products that conform to USDA and FDA classifications.

**CHEMISTRY. BY NATURE™** Just what is natural? At Sonneborn, we believe there is nothing more natural than white mineral oils, petrolatums and microcrystalline waxes. We start with raw materials that naturally occur in the earth, and purify them to their final state. Our products have been soothing people since they were babies. And we continue to build on our innovation, developing new and better products that deliver a natural fit in today's world.



## WHITE OILS

White oils are highly refined mineral oils that consist of saturated aliphatic and alicyclic nonpolar hydrocarbons. They are hydrophobic, colorless, tasteless, odorless, and do not change color over time. Our white oils are chemically and biologically stable, non-comedogenic, and do not support pathogenic bacterial growth. These properties make white oils the standard in many industries.

**APPLICATIONS.** White oils make an ideal blending base for personal care and pharmaceutical products. Their inert nature makes them easy to work with, as they lubricate, smooth, soften, extend, and resist moisture in many formulations. You can find our USP and NF grade white oils in products ranging from baby oils and lotions to sunscreens, tissues, and antibiotics.

The plastics industry uses our Hydrobrite® line of low-volatility white oils in the production of polystyrene, polyolefins, thermoplastic elastomers, and various other polymers to improve and control the melt flow rate of the finished polymer.

Our oils have proven themselves in food applications as wide-ranging as dough divider oils to dust suppression in grain silos. They lubricate food-handling equipment, impregnate wrapping paper to keep foods crisp, control foam in beet sugar and vinegar production, and enhance the leather tanning process. And our low pour-point naphthenic grades improve hot melt adhesives and lubricate air conditioner and refrigerator compressors.

**PRODUCTS.** Sonneborn supplies USP, NF, and technical white oil grades and will custom-blend to meet customer specifications. USP and NF grades meet FDA 21 CFR 172.878 and 21 CFR 178.3620(a) regulations for direct food contact, and USDA H1 food processing lubricant standards. Our USP purity white mineral oils have viscosities that range from 35 cSt to 420 cSt, and pour points that range from -6 °C to less than -21 °C for our naphthenic grades. Our NF light mineral oil grades have lower viscosities, ranging from 7 cSt to 30 cSt, and pour points as low as -24 °C.

**DID YOU KNOW?** Hydrobrite® HV is the highest viscosity USP purity white mineral oil available in the world. The product provides all the benefits of petrolatum but in a liquid form, and is recommended in cosmetic applications where emolliency and skin protection are required. It can also be used as a replacement for more costly high-molecular weight liquids.

## WHITE OILS: TYPICAL PROPERTIES



### TYPICAL PROPERTIES OF STANDARD SONNEBORN® USP AND NF GRADE WHITE OILS

PRODUCT	VISCOSITY		SPECIFIC GRAVITY ASTM D-4052 @ 25°C/25°C <sup>c</sup>	POUR POINT ASTM D-97 °C (°F)	FLASH POINT ASTM D-92 °C (°F)
	ASTM D-445 cSt @ 40°C <sup>a</sup>	ASTM D-2161 SUS @ 100°F <sup>b</sup>			
<b>USP MINERAL OIL</b>					
Hydrobrite® HV	230-290	1400	0.860/0.890	-6 (20)	277 (530)
Hydrobrite® 1000	180-240	1000	0.860/0.885	-6 (20)	274 (525)
Kaydol®	64-70	350	0.869/0.885	-21 (-5)	220 (430)
Gloria®	39-42	210	0.859/0.880	-18 (0)	204 (400)
Protol®	35-37	185	0.859/0.875	-18 (0)	202 (395)
<b>LIGHT MINERAL OIL, NF</b>					
Rudol®	28-30	150	0.852/0.870	-18 (0)	198 (390)
Ervol®	24-26	130	0.849/0.865	-18 (0)	190 (375)
Benol®	18-20	100	0.839/0.865	-21 (-5)	186 (365)
Blandol®	14-17	85	0.839/0.859	-21 (-5)	186 (365)
Carnation®	11-14	70	0.829/0.859	-24 (-10)	186 (365)
Klearol®	7-10	55	0.827/0.846	-24 (-10)	154 (310)
40 Oil	4-5	40	0.810/0.830	+3 (+35)	136 (275)

All above grades are stabilized with Vitamin E, have no odor or taste and are water white (Saybolt color +30), and meet FDA 21 CFR 172.878 and 21 CFR 178.3620(a) requirements. All above grades meet the purity requirements of USP or NF. Hydrobrite HV, Hydrobrite 1000 and 40 Oil may have viscosities or gravities outside the monograph limits for USP or NF. We can supply products meeting the current requirements of BP, DAB, French Codex, EuP, Japanese, and other pharmacopoeias. Special viscosity and pour point oils are available on request.

### TYPICAL PROPERTIES OF STANDARD SONNEBORN® TECHNICAL GRADE WHITE OILS

PRODUCT	VISCOSITY		SPECIFIC GRAVITY ASTM D-4052 @ 25°C/25°C <sup>c</sup>	POUR POINT ASTM D-97 °C (°F)	FLASH POINT ASTM D-92 °C (°F)
	ASTM D-445 cSt @ 40°C <sup>a</sup>	ASTM D-2161 SUS @ 100°F <sup>b</sup>			
<b>TECHNICAL GRADE</b>					
Semtol® 500	90-125	580	0.860/0.880	-12 (10)	270 (520)
Semtol 400	70-90	380	0.860/0.876	-12 (10)	250 (480)
Semtol 350	65-70	350	0.869/0.885	-21 (-5)	220 (430)
Semtol 100	18-20	100	0.839/0.865	-21 (-5)	186 (365)
Semtol 85	14-17	85	0.839/0.862	-21 (-5)	186 (365)
Semtol 70	11-14	70	0.834/0.859	-24 (-10)	186 (365)
Semtol 40	4-6	40	0.804/0.827	+3 (+35)	136 (275)
Freezene® 200	36-40	200	0.870/0.886	-42 (-44)	190 (375)

All above grades are +25 Saybolt color and pass FDA 21 CFR 178.3620(b) for UV absorbance. Intermediate viscosity oils are available on request.

<sup>a</sup> 104°F

<sup>b</sup> 37.8°C

<sup>c</sup> 77°F



## WHITE OILS: APPLICATIONS

### SONNEBORN® WHITE OIL APPLICATIONS

	HYDROBRITE® 1000	KAYDOL®	GLORIA®	PROTOL®	RUDOL®	ERVOL®	BENOL®	BLANDOL®	CARNATION®	KLEAROL®
<b>PERSONAL CARE/PHARMACEUTICAL</b>										
Baby Oil								■	■	
Sun Tan Lotion								■	■	
Sun Tan Oil		■						■	■	
Cold Cream		■	■	■	■	■	■	■	■	
Moisturizing Cream	■	■	■	■	■	■	■	■	■	
Waterless Hand Cream		■	■					■	■	■
Ethnic Hair Care Products	■	■				■	■	■	■	■
Eye Make-Up								■	■	■
Lipsticks/Lip Balms	■							■	■	■
Make-Up Removers								■	■	■
Laxatives/Internal Lubricant		■								
Ointments/Creams	■	■	■					■	■	
<b>BAKING</b>										
Pan Oil	■							■	■	
Divider Oil			■					■	■	
<b>FOOD</b>										
Protective Coating		■						■	■	■
Machinery Lubricant/Cleaner		■							■	■
<b>AGRICULTURE</b>										
Tobacco Processing								■	■	■
Animal Feed									■	■
Grain Elevator Dust Control									■	■
<b>ADHESIVES</b>										
Hot Melt		■								
Pressure Sensitive		■								
<b>GENERAL INDUSTRIAL</b>										
Furniture Polish									■	■
Stainless Steel Cleaner									■	■
Household Insecticides										■
Textile Manufacturing									■	■



# HYDROBRITE® PLASTICS OILS



**PRODUCT DESCRIPTION.** Hydrobrite plastics oils are a family of highly refined, low-volatility mineral oils that consist of saturated aliphatic and alicyclic nonpolar hydrocarbons. They are hydrophobic, colorless, tasteless, odorless, chemically inert, and have excellent UV stability.

**APPLICATIONS.** Hydrobrite plastics oils are added to crystalline polystyrene (PS), high impact polystyrene (HIPS), polyolefins, thermoplastic elastomers, and various other polymers to improve and control the melt flow rate of the finished polymer. Hydrobrite plastics oils are also employed as internal lubricants and/or external lubricants in PS, PVC, PP, PE, TPE, and numerous polymer formulations.

Other applications include: plasticizing agent, catalyst carrier, extender oil, mold release agent, and pigment dispersing agent.

## TYPICAL PROPERTIES OF HYDROBRITE® PLASTICS OILS

PROPERTIES GUARANTEED	TEST METHOD	HYDROBRITE® 550	HYDROBRITE® 380	HYDROBRITE® 200
		LIMITS		
Specific Gravity @ 25 °C/25 °C	ASTM D-4052	0.860/0.880	0.860/0.873	0.845/0.885
Kinematic Viscosity @ 40 °C, cSt	ASTM D-445	100/125	70/90	39.5/46.0
Neutrality	USP	PASS	PASS	PASS
Readily Carbonizable Substances	USP	PASS	PASS	PASS
Solid Paraffin	USP	PASS	PASS	PASS
Limit of Polynuclear Compounds	USP	PASS	PASS	PASS
Sulfur Compounds	USP XVII	PASS	PASS	PASS
Odor	LATM 092	NONE	NONE	NONE
Color, Saybolt	ASTM D-156	30 Min.	30 Min.	30 Min.
GC Distillation, 5%, °C	ASTM D-2887	430 Min.	415 Min.	380 Min.
Pour Point, °C	ASTM D-97	-9 Max.	-9 Max.	-9 Max.
Refractive Index @ 25 °C	ASTM D-1218	1.470/1.478	1.472/1.478	1.4685/1.4735
Paraffinic Carbon, %	ASTM D-3238	67.5/72.0	—	—
Naphthenic Carbon, %	ASTM D-3238	28.0/32.5	—	—
Flash Point, COC, °C	ASTM D-92	254 Min.	240 Min.	—

Hydrobrite® 200, Hydrobrite® 380 and Hydrobrite® 550 are Mineral Oils meeting requirements for USP (current revision) and FDA requirements as per 21 CFR 178.878 and CFR 178.3620(a).



## HYDROBRITE® PVC OIL

**PRODUCT DESCRIPTION.** Hydrobrite PVC Oil is a highly refined liquid paraffin that consists of saturated aliphatic and alicyclic nonpolar hydrocarbons. This lubricant is hydrophobic, colorless, tasteless, odorless, chemically inert, and has excellent UV and color stability. A patent on Hydrobrite PVC Oil technology was recently issued by the U.S. Patent Office.

**APPLICATIONS.** Hydrobrite PVC Oil has been approved as a functional equivalent to paraffin wax in the PPI range formulations for high pressure PVC water pipe at concentrations of 1 to 2 phr. Hydrobrite PVC Oil has been added to TR-2 (PPI PVC Range Composition Listing of Qualified Alternative Ingredients). This product also has NSF International approval and has been listed under NSF version 12, issue January 15, 1999. Hydrobrite PVC Oil serves as an excellent external lubricant for rigid PVC applications including pipe, siding, window profiles, fences, and doors. As an external lubricant, the oil helps reduce friction between the polymer and metal surfaces.

### KEY FEATURES AND BENEFITS:

- Enhanced PVC compatibility: Potential reduction in “plate out” and improved surface characteristics.
- Liquid form: More accurate metering/ease of handling. Will not agglomerate or “bridge” as wax tends to do.
- Liquid form: More uniform coating of PVC particles and improved productivity in high-intensity mixers.
- Narrow molecular weight distribution: More consistent than wax in PVC processing.
- Liquid paraffin: Hydrobrite PVC Oil will provide equivalent IZOD impact results, heat deflection temperature and weathering versus paraffin wax.
- Proven performance: Four years of successful commercial use in large and small diameter PVC pipe.
- Food grade: Safe for use in potable water pipe.

PROPERTIES GUARANTEED	TEST METHOD	LIMITS
Specific Gravity @ 25 °C/25 °C	ASTM D-4052	0.860/0.880
Kinematic Viscosity @ 100 °C, cSt	ASTM D-445	10.0/14.0
Neutrality	USP	PASS
Readily Carbonized Substances	USP	PASS
Solid Paraffin	USP	PASS
Limit of Polynuclear Compounds	USP	PASS
Sulfur Compounds	USP XVII	PASS
Odor	LATM 092	NONE
Color, Saybolt	ASTM D-156	30 Min.
Refractive Index @ 25 °C	ASTM D-1218	1.470/1.478
Flash Point, COC, °C	ASTM D-92	254 Min.

Hydrobrite PVC Oil is a Mineral Oil meeting requirements for USP (current revision) and FDA requirements as per 21 CFR 172.878 and 21 CFR 178.3620(a).



## PETROLATUMS



Petrolatums are homogeneous mixtures of oily and waxy long-chain, nonpolar hydrocarbons. Their hydrating properties set a standard against which other moisturizers are compared. Odorless and tasteless, they range in color from white to yellow, and differ from one another in consistency and shear strength.

**APPLICATIONS.** Personal care and pharmaceutical formulators often choose Sonneborn petrolatums as a formulation base. Petrolatums add lubricity and moisture resistance to lotions, creams, ointments, and hand cleaners.

Sonneborn petrolatums meet FDA requirements. Food processors rely on them for uses that range from baking and candy-making to packaging.

In jar candles, the addition of petrolatum affects the crystallinity of the waxes to give a smoother, more pleasing appearance. In metal polishes and buffing compounds, petrolatums protect against moisture and corrosion.

**PRODUCTS.** Sonneborn carries the world's broadest line of standard and custom-compounded petrolatums and related products.

Sonneborn's lines of USP petrolatums meet FDA 21 CFR 172.880. Our medium-consistency Protopet® grades are used in many fine cosmetics and ointments. Softer Fonoline® grades are used in petroleum jellies and high-solids ointments.

**DID YOU KNOW?** If you are looking for the lightest color petrolatums, Sonneborn sets the standard. Our unique manufacturing process allows us to offer the whitest petrolatums available today, including Super White Protopet®, Super White Fonoline® and Perfecta® grades.



## PETROLATUMS: TYPICAL PROPERTIES

### TYPICAL PROPERTIES OF STANDARD SONNEBORN® PETROLATUMS

USP GRADES	MELTING POINT USP ASTM D-127		CONSISTENCY ASTM D-937 USP	VISCOSITY @ 210 °F ASTM D-445 SUS (cSt)	COLOR LOVIBOND
	°C	°F			
<b>PROTOPET®</b>					
Alba®	54/60	130/140	180/210	67 (12)	1.1 Y <sup>b</sup>
Super White	54/60	130/140	180/210	67 (12)	0.6 Y <sup>b</sup>
White 1S	54/60	130/140	180/210	67 (12)	1.5 Y <sup>a</sup>
White 2L	54/60	130/140	180/210	67 (12)	8Y 0.6R <sup>a</sup>
White 3C	54/60	130/140	180/210	67 (12)	12Y 1.2R <sup>a</sup>
Yellow 2A	54/60	130/140	180/210	67 (12)	30Y 2.5R <sup>a</sup>
<b>PERFECTA®</b>					
Perfecta	57/60	135/140	180/210	60 (10)	0.3 Y <sup>b</sup>
<b>FONOLINE®</b>					
Super White	50/56	122/133	195/230	60 (10)	0.5 Y <sup>b</sup>
White	53/58	127/137	210/245	65 (11)	1.7 Y <sup>a</sup>
Yellow	53/58	127/137	210/245	65 (11)	30Y 2.5R <sup>a</sup>
<sup>a</sup> 2" cell <sup>b</sup> 3" cell					

The above grades have no odor, and meet the requirements for USP (current revision) and FDA 21 CFR 172.880. Products are available conforming to the requirements of BP, DAB, French Codex, EuP, Japanese and other pharmacopoeias. Special grades can be formulated to meet particular customer specifications.

### TYPICAL PROPERTIES OF SONNEBORN® SONOJELLS AND MINERAL JELLIES

USP GRADES	MELTING POINT		CONSISTENCY ASTM D-937 USP	VISCOSITY @ 210 °F ASTM D-445 SUS (cSt)	COLOR LOVIBOND
	°C	°F			
<b>SONOJELL®</b>					
Sonojell #4	42/44	107/112 <sup>d</sup>	90/125	38 (3.8)	0.5 Y <sup>b</sup>
Sonojell #9	42/49	107/120 <sup>c</sup>	150/170	39 (4.1)	0.5 Y <sup>b</sup>
<b>MINERAL JELLIES</b>					
Mineral Jelly #10	40/46	105/115	290/350	40 (4.4)	1.0 Y <sup>a</sup>
Mineral Jelly #14	38/43	100/110 <sup>d</sup>	200/225	40 (4.4)	1.0 Y <sup>a</sup>
Mineral Jelly #17	32/38	90/100 <sup>e</sup>	340/400	40 (4.4)	1.0 Y <sup>a</sup>
<sup>a</sup> 2" cell <sup>b</sup> 3" cell <sup>c</sup> ASTM D-127, Drop M.P. <sup>d</sup> ASTM D-938, Cong. Pt. <sup>e</sup> ASTM D-97, Pour Pt.					

The above grades have no odor and meet FDA 21 CFR 172.880 for UV absorbance. They also meet USP purity requirements. However, they do not qualify as USP, because they do not meet some of the USP physical requirements; i.e., specific gravity, consistency and/or melting point.

# PETROLATUMS: APPLICATIONS



## PETROLATUM APPLICATIONS

	PERFECTA®	ALBA®	SUPER WHITE PROTOPET®	SUPER WHITE FONOLINE®	WHITE PROTOPET® IS®	WHITE FONOLINE®	YELLOW PROTOPET® 2A®	YELLOW FONOLINE®	MINERAL JELLIES	SONO-JELLS®	TECHNICAL PETRO-LATUMS	TROUGH GREASE
<b>COSMETICS/PHARMACEUTICAL</b>												
Skin Creams and Lotions	■	■	■	■	■	■	■	■	■	■		
Dental Adhesive Formulations	■		■	■								
Hair Dressing Creams	■	■	■	■	■	■	■	■	■	■		
Lip Balm			■	■	■	■						
Medicated Ointments	■	■	■	■					■	■		
Moisturizing Lotions	■	■	■	■	■	■	■	■	■	■		
Permanent Waves	■	■	■	■	■	■	■	■	■	■		
Petroleum Jelly				■		■						
Sun Care Products	■	■	■	■	■	■	■	■	■	■		
Suppositories					■	■	■	■	■	■		
Hand Cleaners	■	■	■	■	■	■	■	■	■	■		
<b>FOOD</b>												
Confectionery Lubricants					■	■	■	■				
Meat Packing			■	■	■	■	■	■				
Mold Release Lubricants					■	■	■	■				
Release Agents			■	■	■	■	■	■				
Bakery Lubricants												■
Food Handling Machinery Lubricants							■	■				
<b>INDUSTRIAL</b>												
Metal Polishes, Buffing Compounds							■	■				■
Modeling Clay					■	■	■	■				■
Printing Ink							■	■				■
Toilet Bowl Rings												■
Wire Rope Lubricant							■	■				■
Soldering Pastes							■	■				■
Crayons					■		■					
Candles			■		■		■					
Rust Preventatives							■	■				■
<b>POLYMERS</b>												
Catalyst Carrier					■	■	■	■				■
Extrusion Aid					■	■	■	■				■
Plasticizer					■	■	■	■				■
Transfer Molding					■	■	■	■				■



## MICROCRYSTALLINE WAXES

Microcrystalline waxes consist of odorless, tasteless, nonpolar hydrocarbons with relatively high melting points. Sonneborn Multiwax® grades vary in color from white to yellow, and in such physical properties as hardness and melting point.

**APPLICATIONS.** Sonneborn has a broad product line of microcrystalline waxes.

Our waxes act as bases for chewing gum, and as cold-flexible coatings for cheese wheels. They are natural bases in lipstick, cold creams, and ointments, where they harden, lubricate, carry pigments and medication, and protect against moisture.

FDA-approved Multiwax plays an important role in food packaging. Wax-impregnated paper, film, foil, and corrugated board protect foods from moisture. Multiwax helps hot melt adhesives flow readily and form flexible bonds.

Many of the wax products we use daily, from crayons, candles, and caulk to sealants and fine wood polishes, start with Sonneborn Multiwax.

Our microcrystalline waxes act as carriers for compounds that prevent rust in a wide range of industries.

**PRODUCTS.** Sonneborn is one of the world's largest producers of microcrystalline waxes. Because we make all of our wax as a primary product, not a by-product, we rank among the most dependable suppliers. We ship waxes as bulk liquids, or in cartons or pallets.

Sonneborn's standard Multiwax grades all meet FDA CFR 172.886 and 178.3710 requirements for food-grade petroleum waxes. We also provide a variety of technical grades. Our product line offers you the world's widest choice of white microcrystalline waxes.

The hardness of our standard waxes ranges from 15 to 80 on the ASTM D-1321 needle penetration test.

Sonneborn customizes physical properties to meet customer specifications.

**DID YOU KNOW?** Sonneborn's Multiwax product line is recognized worldwide as the quality standard for the whitest, most consistent grades of microcrystalline wax available.

## MICROCRYSTALLINE WAXES: TYPICAL PROPERTIES & APPLICATIONS



### TYPICAL PROPERTIES OF MULTIWAX® MICROCRYSTALLINE WAXES

PRODUCT	MELTING POINT ASTM D-127		NEEDLE PENETRATION @ 77°F (25°C) ASTM D-1321	VISCOSITY @ 210°F		COLOR		FLASH POINT COC ASTM D-92 °F (°C)
	°F	°C		SUS <sup>a</sup>	cSt <sup>b</sup>	VISUAL	ASTM D-1500	
180-W	175/188	79/87	15/22	75 Min.	14.3 Min.	White	+16 Min. <sup>c</sup>	530 (277) Min.
180-M	175/188	79/87	15/22	75 Min.	14.3 Min.	Light Yellow	2.0 Max.	530 (277) Min.
ML-445	170/180	77/82	25/35	75/90	14.3/18.0	Light Yellow	2.0 Max.	530 (277) Min.
W-445	170/180	77/82	25/35	75/90	14.3/18.0	White	+16 Min. <sup>c</sup>	530 (277) Min.
MW 7545	170/185	77/85	35/70	75/100	14.3/20.4	White	+16 Min. <sup>c</sup>	530 (277) Min.
W-835	165/175	74/79	60/80	75/90	14.3/18.0	White	+16 Min. <sup>c</sup>	475 (246) Min.

<sup>a</sup> ASTM D-2161  
<sup>b</sup> ASTM D-445  
<sup>c</sup> ASTM D-156 (Saybolt color)

The above waxes meet the requirements for Microcrystalline Wax NF as per the National Formulary (current revision), and comply with the requirements of 21 CFR 172.886 and FDA 21 CFR 172.3710 for food grade petroleum waxes. Color: Many of the above grades are available on special order in colors other than those listed above.

### MULTIWAX® MICROCRYSTALLINE APPLICATIONS

	180-W	180-M	ML-445	W-445	W-835
Candles	■	■	■	■	
Chewing Gum	■	■	■	■	■
Cosmetics	■		■	■	■
Crayons			■	■	■
Dental Products			■	■	■
Electrical Grades	■	■	■	■	■
Hot Melt Adhesives	■	■	■	■	■
Laminating Grades			■	■	■
Lubricating Grades			■	■	■
Modifying Grades	■	■	■	■	■
Paste-Up Grades			■	■	■
Pharmaceutical Grades	■	■	■	■	■
Rustproofing Grades	■	■	■	■	■
Sculpture Grades			■	■	■
Sealant Grades			■	■	■



## PETROLEUM DISTILLATES

Petroleum distillates are highly refined solvents with high flash points. We make petroleum distillates by fractionating each grade to a narrow boiling range, then catalytically hydrotreating to remove all aromatic and other unsaturated hydrocarbons. The resulting distillate resembles a very light white oil.

Like white oils, petroleum distillates are hydrophobic, colorless, tasteless, virtually odorless, and color fast. Chemically and biologically stable, they are non-comedogenic and do not support pathogenic bacterial growth.

**APPLICATIONS.** Petroleum distillates are direct substitutes for high-VOC solvents in consumer and institutional products. They lower the VOCs in such aerosol systems as air fresheners, furniture polishes, and insecticides. Non-aerosol uses include waterless hand soaps, floor polishes, nail polish removers, charcoal lighter fluids, and liquid candles.

Petroleum distillates also have many industrial uses. Applications include defoaming agents, metal foil, sheet rolling and quench oils, vegetable froth flotation, dust control agents, and the manufacture of paper and board.

**PRODUCTS.** Sonneborn sells two petroleum distillate grades. PD-23 is our lightest product. It has excellent solvency and a flash point of 230°F (ASTM D-92). The flash point of PD-28 is still higher at 270°F.

The two grades are not classified as combustible under DOT regulations. Neither the International Agency Research on Cancer (IARC), the National Toxicology Program (NTP), nor OSHA list them as carcinogenic. PD-23 complies with FDA 21 CFR 172.884 and 21 CFR 178.3650 food regulations. PD-28 complies with FDA 21 CFR 172.878, and 21 CFR 178.3620(a) regulations for direct food contact.

**DID YOU KNOW?** Sonneborn petroleum distillates meet the Low Vapor Pressure – Volatile Organic Compounds (LVP-VOC) exemption criteria under the California Air Resource Board (CARB) Method 310. As such, Sonneborn petroleum distillates may be considered non-reportable VOCs in calculations of the VOC contents of regulated consumer product categories in the California Consumer Product Regulations.



# PETROLEUM DISTILLATES: TYPICAL PROPERTIES & APPLICATIONS

## TYPICAL PROPERTIES OF PD-23 AND PD-28

PROPERTY	PD-23	PD-28	TEST METHOD
Specific Gravity 60/60	0.800	0.823	ASTM D-287
Flash Point COC, °F	230	270	ASTM D-92
Viscosity SUS @ 100°F	34	39	ASTM D-2161
Viscosity cSt @ 40°C	2.6	4.2	ASTM D-445
Color, Saybolt	+30	+30	ASTM D-156
KB Value	25	22	ASTM D-1123
Refractive Index @ 77°F	1.442	1.453	ASTM D-1218
Pour Point, °F	0	+35	ASTM D-97
Distillation Range, °F			ASTM D-86
lbp	452	526	
5%	465	540	
50	486	568	
95	514	614	
E.P.	533	625	

## PETROLEUM DISTILLATE APPLICATIONS

	PD-23	PD-28
<b>COSMETICS/PHARMACEUTICAL</b>		
Lotions		■
Creams		■
<b>HOUSEHOLD PRODUCTS</b>		
Adhesives		■
Automobile Wax/Polish Formulations	■	■
Furniture Polishes	■	■
Household Cleaners	■	■
Insecticide Carriers	■	■
Liquid Candles	■	■
Metal Cleaners/Polishes	■	■
Waterless Hand Cleaners	■	■
<b>INDUSTRIAL</b>		
Dust Control	■	■
Fertilizers	■	■
Powders	■	■
Aluminum Foil Rolling Oil		■
Carbonless Copy Paper	■	
Froth Flotation of Vegetables	■	■
Defoamers	■	■
Fiber Lubricants		■
Processing of Paper and Board	■	■
Water Treatment	■	■
Cleaning Solvents	■	■



## OTHER SPECIALTY PRODUCTS

In addition to Sonneborn's broad line of products used widely by the personal care, polymer manufacturing, and food processing industries, we also manufacture these product lines for use in a variety of specialty applications.

**REFRIGERATION OILS.** Suniso® refrigeration oils are specifically designed to lubricate refrigeration and air conditioning compressors. They are carefully refined from petroleum lubricating oil stocks. Suniso® oils have the following characteristics which assure maximum trouble-free service life: excellent chemical and thermal stability, low-wax content, low-pour point, high dielectric strength, proper viscosity, and absence of contamination.

**CABLE-FILLING COMPOUNDS.** We manufacture a complete line of filling and flooding compounds for the copper core and fiber optic cable industry. As one of the world's largest producers of cable compounds for the telecommunications industry, we manufacture gel-based (ETPR) filling compounds, petrolatum-based (PE/PJ) filling compounds, and both natural and polymer-based flooding (FC) compounds. The Witcogel® line has the highest quality cable compounds in the telecommunications industry, through compliance with standards set by numerous telephone companies, regulatory agencies, and engineering groups throughout the world.

**INK OILS.** Witsol® ink solvents are a line of hydrocarbon solvents used primarily in the ink industry. The product line consists of both straight run distillates and severely hydrotreated distillates. The severe hydrotreating process removes virtually all aromatic and olefinic hydrocarbons, and produces highly refined aliphatic petroleum solvents. These ink solvents are clear, colorless, odorless, and very chemically stable. They are used primarily where stringent emission regulations, misting on the press, and objectionable smoke and odors need to be reduced substantially or eliminated completely.

**COMPRESSOR LUBRICANTS.** Sonolube® lubricants are designed for high-pressure polyethylene reciprocating compressors in LDPE production. They are formulated based on high quality white mineral oils. Sonolubes bring new and improved solutions to the problems of extending equipment life and energy efficiency. Life of critical compressor components, e.g., piston rings and packings, is extended with corresponding reduction in maintenance costs and increased productivity. Reduction in energy losses due to friction results in improved energy efficiency.

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REFINED PRODUCTS

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