



SONNEBORN

COMPRESSOR LUBRICANTS

Pure reliability
for your LDPE &
EVA production

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AN HF SINCLAIR BRAND



In LDPE* and EVA* production, even the smallest inconsistency can have major consequences. Compressor lubricants are not a commodity – they are a critical component in protecting your assets, maintaining uptime and safeguarding production.

Sonneborn (an HF Sinclair brand) offers a wide range of high-performance, food grade compressor lubricants that operators of high-pressure, reciprocating ethylene compressors (hyper compressors) can rely on. Our fluids are engineered to deliver consistent, proven performance as demonstrated by decades of real-world use and field experience. Sonneborn supplies and supports a dominant share of the global market demand by manufacturing tailor-made lubrication solutions for hyper compressors with production sites in both North America and Europe.

Beyond its broad product portfolio, Sonneborn works as a trusted partner — anticipating challenges, supporting critical decisions and ensuring dependable global supply.

This combination of proven performance, technical leadership and supply reliability enables you to focus on what matters most: efficiency, protecting equipment, maximizing uptime and running your plant with confidence.

Sonneborn compressor lubricants are widely used in ethylene hyper compressors around the globe, offering:

- **Lubricity** – reducing friction and wear on plungers and packing rings, maintaining a strong lubricating film.
- **Inertness** – chemically stable and not interfering with polymerization.
- **Consistency** – narrow specifications and robust quality controls assuring strong batch-to-batch consistency.
- **Compressor life and efficiency** – extending the lifespan of critical compressor components and delivering improved energy efficiency.
- **Food safety and regulatory compliance** – meeting the stringent requirements of U.S. FDA 21 CFR 178.3570 for lubricants with incidental food contact, and based on ultra-pure white oils compliant with the Commission Regulation (EU) No. 10/2011 for food-contact plastics.

Trusted by major global hyper compressor OEMs:

Sonneborn has the largest number of tested and approved white oil-based compressor lubricants on the Burckhardt Compression AG List of Pumpability Tested Cylinder Lubricants.

*LDPE - Low-Density Polyethylene
EVA - Ethylene Vinyl Acetate

CL AND SONOLUBE™

Compressor Lubricants

High-performance compressor lubricants designed for high-pressure, reciprocating ethylene compressors

HYDROBRITE™

White Oils

High-purity white oils used as heat transfer and flushing fluids for cooling and cleaning compressor cylinders

With over 120 years of experience in specialty products manufacturing and more than 50 years of ethylene compressor lubricant innovation, Sonneborn (an HF Sinclair brand) has been at the cutting edge of development and supply of high-purity, food-grade ethylene hyper compressor lubricants. Sonneborn supplies a broad range of PAG-free, white oil-based compressor lubricants, and has the capability to customize products to meet specific customer requirements such as reducing or eliminating thickeners like PIB* and antioxidants like BHT*.

Operating two manufacturing facilities in the United States and the Netherlands, Sonneborn is one of the largest global manufacturers of many other high-quality specialty products, including white oils, petrolatums, waxes, sodium sulfonates and other conventional and naturally derived products.

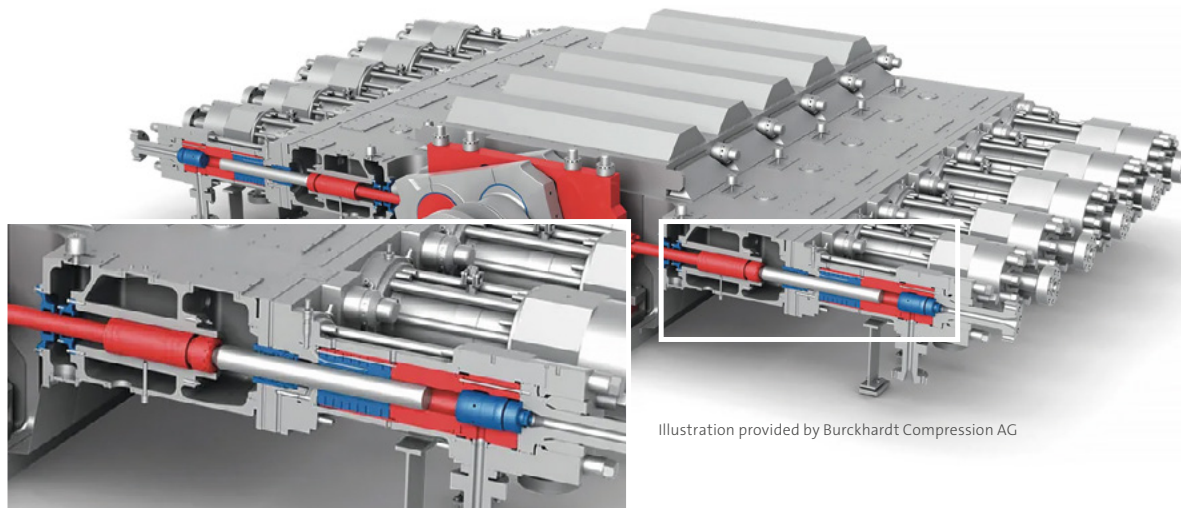


Illustration provided by Burckhardt Compression AG

Our compressor lubricants protect the plunger and packing rings here while our white oils are used to cool down, flush and clean the cylinders.

*PIB - Polyisobutylene
BHT - Butylated hydroxytoluene

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SONNEBORN COMPRESSOR LUBRICANTS

A family of solutions – tailor-made to your application needs

Ethylene compressors operate under extreme pressures (up to 50,000 psi / 3500 bar), where lubricant purity, consistency and performance directly impact equipment operation, uptime and life. Sonneborn (an HF Sinclair brand) develops compressor lubricants specifically for these challenges.

Sonneborn supplies four generations of compressor lubricants, each further improving lubricity, friction reduction and pressure-viscosity performance under extreme operating conditions. Committed to meeting increasingly demanding market requirements, Sonneborn is in the process of developing the next generation of technology for its Gen-V products.

Beyond performance and consistency, the extremely high purity of Sonneborn formulations ensures full compliance with food safety and regulatory requirements, and makes them well-suited for applications where compressor lubricants may be present in the final LDPE- and EVA-based products with food-contact end uses.

Key benefits:

- High-purity, food-grade formulations
- Dependable product quality and batch-to-batch consistency
- Proven, continuous performance in demanding operating conditions
- Validated proof of concept with leading global hyper compressor OEMs for decades

FOUR GENERATIONS OF SONNEBORN COMPRESSOR LUBRICANTS

Gen-I	Gen-II	Gen-III	Gen-IV
Consists of compounded white oils and viscosity boosters providing hydrodynamic lubrication.	Incorporation of antioxidants and lubricity additives to provide boundary lubrication with decades of success.	Formulated with enhanced additive package, providing smart condition responsive lubrication with 100% improvement in coefficient of friction versus Gen-II.	Provides smart condition responsive lubrication with “on demand” release of reserve boundary lubrication, and improved pressure viscosity performance.
Example products: CL 600 PL CL 1200 PH	Example products: CL 1000 PHLA 3.0 (1% BHT) CL-1200-PH-LA300	Example products: SONOLUBE™ 168 SONOLUBE™ 170 EU-V SONOLUBE™ M-600	Example products: SONOLUBE™ HP 235 EU SONOLUBE™ HP 235 EU-V



GLOBAL REACH. SECURE SUPPLY.

The broad portfolio of Sonneborn (an HF Sinclair brand) ethylene compressor lubricants is available globally from both North American and European facilities, while maintaining the highest standards of batch-to-batch consistency, quality and performance. Below are just a few examples of what we offer. Contact our Technical Services team to find the perfect fit for your specific needs.

CL 1200 PH

Our Gen-I CL 1200 PH provides hydrodynamic lubrication with no antioxidant or boundary lubrication additives. For applications involving highly sensitive catalysts.

Property	Test Method	Specification
Kinematic Viscosity @ 40°C, cSt	ASTM D7279	220 – 240
Kinematic Viscosity @ 100°C, cSt	ASTM D7279	21.5 – 24.5
Density @ 20°C, kg/m ³	ASTM D4052	860 – 880
Acid/Neutralization No., mg KOH/g	ASTM D664	0.0 – 0.1
Flash Point, COC, °C (°F)	ASTM D92	210 (410) Min.
Pour Point, °C (°F)	ASTM D97	-9 (16) Max.
Saybolt Color, AU	ASTM D156	24 Min.
Odor	Olfactory	Slight Odor

This product meets requirement of U.S. FDA per 21 CFR 178.3570. The white oil used in this product complies with the Commission Regulation (EU) No. 10/2011, Annex I, Table 1, FCM 95.

CL-1200 -PH-LA300

Our Gen-II CL-1200-PH-LA300 has been used successfully for decades with potent boundary lubrication, viscosity boost and antioxidant protection.

Property	Test Method	Specification
Kinematic Viscosity @ 40°C, cSt	ASTM D7279	220 – 240
Kinematic Viscosity @ 100°C, cSt	ASTM D7279	21.0 – 24.0
Density @ 20°C, kg/m ³	ASTM D4052	860 – 880
Acid/Neutralization No., mg KOH/g	ASTM D664	5.5 – 7.0
Flash Point, COC, °C (°F)	ASTM D92	220 (428) Min.
Pour Point, °C (°F)	ASTM D97	-9 (16) Max.
Saybolt Color, AU	ASTM D156	24 Min.
Odor	Olfactory	Slight Odor

This product is in accordance with U.S. FDA 21 CFR 178.3570, except for an antioxidant which is listed in U.S. FDA 21 CFR 178.2010. The white oil used in this product complies with the Commission Regulation (EU) No. 10/2011, Annex I, Table 1, FCM 95.

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THE SONOLUBE™ RANGE

Purpose-engineered and field-proven;
over 25 years of successful service

SONOLUBE™ 168

Our Gen-III SONOLUBE™ 168 has demonstrated a 300% increase in stand-life compared to Gen-II lubricant technology. LDPE and EVA production plants benefit from extended run lengths, reduced intervention frequency and improved overall compressor availability without compromising process stability.

Property	Test Method	Specification
Specific Gravity @ 25°C	ASTM D4052	0.8550 – 0.8840
Specific Gravity @ 15.56°C	ASTM D4052	0.8593 – 0.8883
Kinematic Viscosity @ 40°C, cSt	ASTM D445	108 – 126
Acid/Neutralization No., mg KOH/g	ASTM D974	1.65 – 2.35
Flash Point, COC, °C (°F)	ASTM D92	218 (424) Min.
Pour Point, °C (°F)	ASTM D97	-9 (16) Max.
Appearance	Visual	Bright & Clear
Color	ASTM D1500	1.0 Max.
Water, ppm	ASTM D6304	75.0 Max.
Odor	Olfactory	Slight Polybutene
Weight per Gallon, lb/gal	ASTM D4052	7.156 – 7.397

This product meets requirement of U.S. FDA per 21 CFR 178.3570. The white oil used in this product complies with the Commission Regulation (EU) No. 10/2011, Annex I, Table 1, FCM 95.

SONOLUBE™ 170 EU-V

Field-proven in high-pressure ethylene compressors operating in the 20,000 – 34,000 psi range, our Gen-III SONOLUBE™ 170 EU-V has replaced Gen-II technology with success, providing outstanding performance and improved reliability in severe service environments.

Property	Test Method	Specification
Specific Gravity @ 25°C	ASTM D4052	0.8600 – 0.8870
Specific Gravity @ 15.56°C	ASTM D4052	0.8643 – 0.8913
Kinematic Viscosity @ 40°C, cSt	ASTM D445	181 – 201
Acid/Neutralization No., mg KOH/g	ASTM D974	1.30 – 2.00
Flash Point, COC, °C (°F)	ASTM D92	218 (424) Min.
Pour Point, °C (°F)	ASTM D97	-9 (16) Max.
Appearance	Visual	Bright & Clear
Color	ASTM D1500	1.0 Max.
Water, ppm	ASTM D6304	50.0 Max.
Odor	Olfactory	Mild Polybutene
Weight per Gallon, lb/gal	ASTM D4052	7.197 – 7.422

This product meets requirement of U.S. FDA per 21 CFR 178.3570. The white oil used in this product complies with the Commission Regulation (EU) No. 10/2011, Annex I, Table 1, FCM 95.



SONOLUBE™ M-600

Proven in continuous-duty commercial ethylene compressors, our Gen-III SONOLUBE™ M-600 delivers stable lubrication performance under demanding operating conditions. Its long-standing field history demonstrates reliable wear protection and dependable operation.

Property	Test Method	Specification
Specific Gravity @ 25°C	ASTM D4052	0.8600 – 0.8830
Specific Gravity @ 15.56°C	ASTM D4052	0.8643 – 0.8873
Kinematic Viscosity @ 40°C, cSt	ASTM D445	94.2 – 124.9
Acid/Neutralization No., mg KOH/g	ASTM D974	1.65 – 2.35
Flash Point, COC, °C (°F)	ASTM D92	218 (424) Min.
Pour Point, °C (°F)	ASTM D97	-6 (21) Max.
Appearance at 41°C	Visual	Bright & Clear
Color	ASTM D1500	1.0 Max.
Water, ppm	ASTM D6304	50.0 Max.
Odor	Olfactory	Mild Petroleum
Weight per Gallon, lb/gal	ASTM D4052	7.197 – 7.389

This product meets requirement of U.S. FDA per 21 CFR 178.3570. The white oil used in this product complies with the Commission Regulation (EU) No. 10/2011, Annex I, Table 1, FCM 95.

SONOLUBE™ HP 235 EU

Our high-performance Gen-IV product, SONOLUBE™ HP 235 EU, provides smart on-demand lubrication, offering longer up-time, lower maintenance costs and increased reliability.

Property	Test Method	Specification
Kinematic Viscosity @ 40°C, cSt	ASTM D7279	200 – 220
Density @ 20°C, kg/m³	ASTM D4052	870 – 890
Acid/Neutralization No., mg KOH/g	ASTM D664	0.0 – 0.5
Viscosity Index	ASTM D2270	100 Min.
Flash Point, COC, °C (°F)	ASTM D92	200 (392) Min.
Saybolt Color, AU	ASTM D156	15 Min.
Odor	Olfactory	Slight Odor

This product meets requirement of U.S. FDA per 21 CFR 178.3570. The white oil used in this product complies with the Commission Regulation (EU) No. 10/2011, Annex I, Table 1, FCM 95.

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HYDROBRITE™ WHITE OILS

Sonneborn (an HF Sinclair brand) HYDROBRITE™ white oils are ultra-pure, colorless, odorless, tasteless white oils produced using advanced refining technologies. They have exceptionally high saturates levels and very low aromatic and sulfur content. As a result, they offer outstanding chemical stability and inertness.

HYDROBRITE™ white oils are used as heat transfer oils to cool down the cylinders of ethylene hyper compressors. They can also be safely used as flushing oils to flush and clean the system to remove degraded polymers, residual lubricants, potential contaminants, sludge and varnish residues.

Their purity and inertness are essential in LDPE and EVA production. Below are just a few examples. Explore our Specialty White Oils brochure to find additional HYDROBRITE™ products and to learn more about the full range of our broad white oil portfolio.

Product	Kinematic Viscosity cSt @ 40°C ASTM D445	Specific Gravity @ 25°C ASTM D4052
HYDROBRITE™ 380 PO	70 – 90	0.860 – 0.873
HYDROBRITE™ 550 PO	100 – 125	0.860 – 0.880

Product	Kinematic Viscosity cSt @ 40°C ASTM D7279	Density kg/m³ @ 20°C ASTM D4052
HYDROBRITE™ 380 PO EX BV	70 – 90	850 – 880
HYDROBRITE™ 550 EU	90 – 125	860 – 880
PAROL™	63 – 70	850 – 880

*HYDROBRITE™ 380 PO and HYDROBRITE™ 550 PO meet the requirements of the United States Pharmacopoeia (USP) and U.S. FDA 21 CFR 172.878 and 21 CFR 178.3620(a).

*HYDROBRITE™ 380 PO EX BV and HYDROBRITE™ 550 EU meet the requirements of the United States Pharmacopoeia (USP) and U.S. FDA 21 CFR 178.3620(a), as well as the purity requirements of European Pharmacopoeia (Ph. Eur.) and U.S. FDA 21 CFR 172.878. They are also listed in the Commission Regulation (EU) No. 10/2011 as an approved additive or polymer production aid.

*PAROL™ meets the requirements of European Pharmacopoeia (Ph. Eur.), the United States Pharmacopoeia (USP), and U.S. FDA 21 CFR 178.3620(a), as well as the purity requirements of U.S. FDA 21 CFR 172.878. It is also listed in the Commission Regulation (EU) No. 10/2011 as an approved additive or polymer production aid.

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CRANKCASE LUBRICANTS

Our portfolio extends beyond compressor lubricants

Did you know that through Petro-Canada™ Lubricants, also an HF Sinclair brand, we offer lubricants for compressor crankcase components including crankshaft, bearings, gears, and crosshead pins and bushings?

Together, Sonneborn and Petro-Canada Lubricants (HF Sinclair brands) provide a consolidated, full-range lubrication offering for your ethylene compressors, backed by trusted quality and proven performance from one integrated network.

Petro-Canada Lubricants NG Compoil™ AW 150 and 220 are specially designed for use in the crankcase of reciprocating compressors, and have a long history of successful service in the hydrocarbon gas compression industry.

Petro-Canada Lubricants TURBOFLO™ R&O 150 and 220 are high-quality, rust- and oxidation-inhibited lubricants designed for circulating systems of a wide range of industrial machinery.

NG Compoil™ AW and **TURBOFLO™ R&O** are long-lasting products that provide enhanced component protection, extended equipment life, and operation reliability, by delivering:

- Hydrodynamic lubrication and wear protection
- Robust rust and corrosion protection
- Excellent oxidation and thermal stability
- Effective water separation and foaming resistance

NG Compoil AW 150 and Turboflo R&O 150 are approved and listed by Burckhardt Compression AG on their list of Lubricating Oils ISO VG 150 Categories C/CL (according to DIN 51517 Part 1 C and Part 2 CL) as suitable mineral oils for crankgear lubrication.

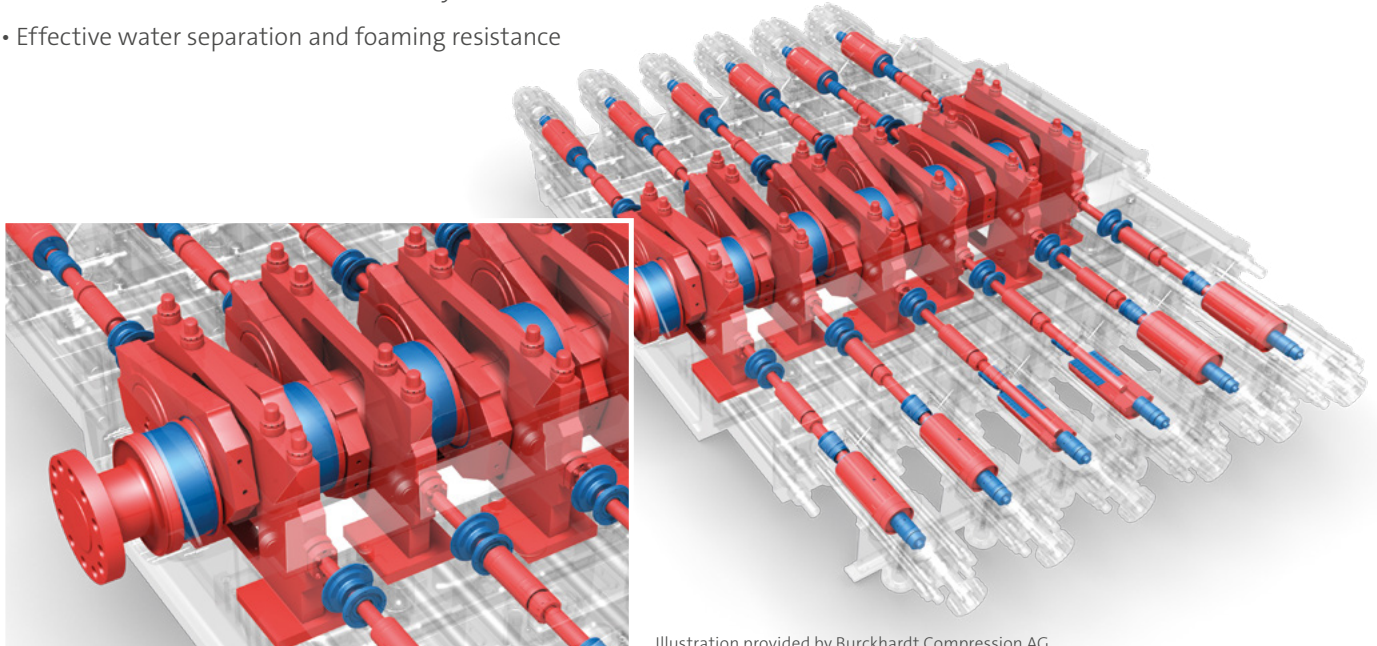


Illustration provided by Burckhardt Compression AG

Our crankcase lubricants protect the crankshaft, bearings and gears here.

Typical Properties of Petro-Canada Lubricants NG Compoil™ AW

Property	Test Method	NG Compoil AW 150	NG Compoil AW 220
Density @ 15° C, kg/L	ASTM D4052	0.8786	0.8879
Pour Point, °C (°F)	ASTM D5950	-33 (-27)	-30 (-22)
Flash Point, COC, °C (°F)	ASTM D92	277 (531)	291 (556)
Kinematic Viscosity cSt @ 40°C cSt @100°C	ASTM D445	140.5 14.41	218.0 19.15
Viscosity Index	ASTM D2270	101	99
Demulsibility @ 82°C, min	ASTM D1401	10	15
Foam Sequence I, ml/ml Sequence II, ml/ml Sequence III, ml/ml	ASTM D892	10/0 20/0 10/0	0/0 20/0 0/0
Copper corrosion, 3 h @ 100°C	ASTM D130	1b	
Rust Procedure A, 24 h Procedure B, 24 h	ASTM D665	Pass Pass	Pass Pass
Acid Number, mg KOH/g	ASTM D664	0.15	0.14
RPVOT Oxidation Time, min	ASTM D2272	1883	1012
Fourball Wear Scar Diameter, mm	ASTM D4172	0.44	0.43

*The values quoted above are typical of normal production. They do not constitute a specification.

Typical Properties of Petro-Canada Lubricants TURBOFLO™ R&O

Property	Test Method	TURBOFLO™ R&O 150	TURBOFLO™ R&O 220
Density @ 15° C, kg/L	ASTM D4052	0.8732	0.8784
Pour Point, °C (°F)	ASTM D5950	-30 (-22)	-21 (-6)
Flash Point, COC, °C (°F)	ASTM D92	269 (516)	275 (527)
Kinematic Viscosity cSt @ 40°C cSt @100°C	ASTM D445	137.1 14.19	205.5 18.32
Viscosity Index	ASTM D2270	101	98
Demulsibility @ 82°C, min	ASTM D1401	10	15
Foam Sequence I, ml/ml Sequence II, ml/ml Sequence III, ml/ml	ASTM D892	10/0 0/0 0/0	0/0 0/0 0/0
Copper corrosion, 3 h @ 100°C	ASTM D130	1a	1a
Rust Procedure A, 24 h Procedure B, 24 h	ASTM D665	Pass Pass	Pass Pass
Acid Number, mg KOH/g	ASTM D664	0.18	0.17
RPVOT Oxidation Time, min	ASTM D2272	510	498
Fourball Wear Scar Diameter, mm	ASTM D4172	0.86	0.83

*The values quoted above are typical of normal production. They do not constitute a specification.

How can we help?

Sonneborn (an HF Sinclair brand) produces high-quality, specialty products for hundreds of customers and develops thousands of solutions worldwide — from personal care and pharmaceuticals to food and industrial applications.

Sonneborn compressor lubricants represent our commitment to offer high-performance, food-grade ethylene compressor lubricants that the LDPE and EVA production industry can trust and rely on.

Everything we make and every action we take is based on the knowledge that nothing is more valuable to our customers than absolute confidence in our products, our experts and our services.



Get in touch

For technical support or to learn more about Sonneborn compressor lubricants, visit and contact:



**SONNEBORN
WEBSITE**



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