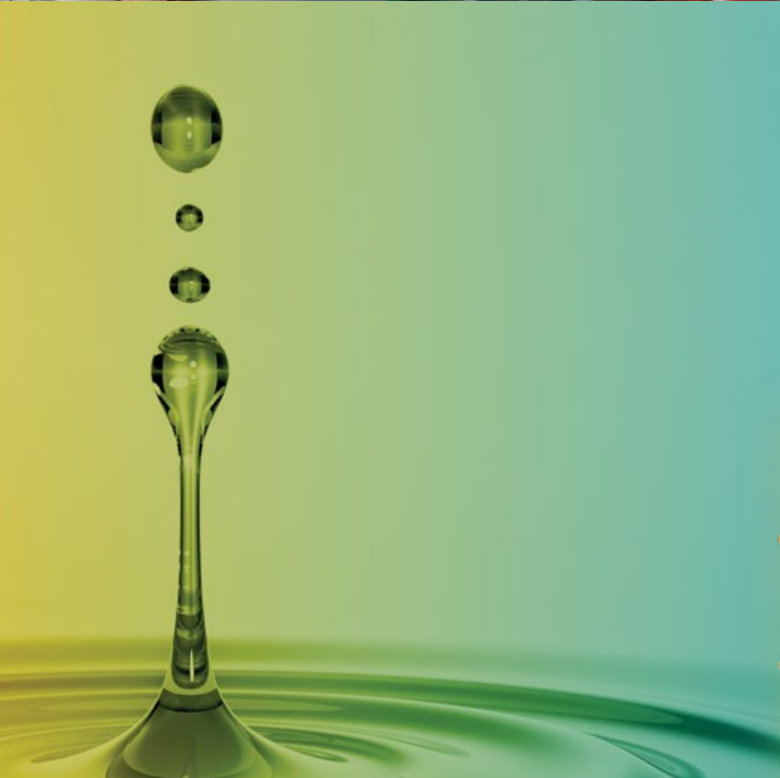


FOOD GRADE AND ENVIRONMENTAL PRODUCTS GUIDE



 clarion.
LUBRICANTS





2025 Edition

This Clarion Lubricants product guide is your directory to Clarion fluids, greases and their applications.

Products are not available at all source points. Please check product availability and container sizes for your normal source point(s).

Technical information and assistance:

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lubeshelp@citgo.com

Pre-shipment inquiries:

Order Management

800-331-4068, option 1

ordermanagement@citgo.com

Pricing, availability, post-shipment inquiries:

Customer Service

800-331-4068, option 2

lubescs@citgo.com

Properties shown are based on typical values for the product only and do not constitute a specification. The information contained herein is subject to change without notice.

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Clarion® lubricants are prohibited from being repackaged. The reprinting of Clarion® labels and other material is also prohibited.

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Please visit www.clarionlubricants.com for the most up-to-date information on products or for Safety Data Sheets.

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CLARION® Food Grade White Mineral Oils



OVERVIEW



- High-purity oils refined by ultra-high pressure hydrotreatment and stabilized with vitamin E oxidation inhibitor.
- Available in five viscosity grades.
- Do not contain any natural products derived from animals, nuts, or genetically modified organisms (GMOs).
- Suitable for use where vegetarian and nut-free food is prepared.

FEATURES & BENEFITS



- Meet the requirements of U.S. FDA regulations 21 CFR 172.878 for contact with food for human consumption, and 21 CFR 178.3620 (a) for use as a component of nonfood articles intended for use in contact with food for human consumption.
- NSF 3H and H1 registered for use in food plants under the jurisdiction of the USDA.
- Meet the current standards of the National Formulary (NF) or US Pharmacopeia (USP).
- Certified under NSF/ANSI/CAN Standard 61: Drinking Water System Components - Health Effects (Grades 200 and 350 only).
- Certified as Kosher with the Union of Orthodox Jewish Congregations of America (U).
- Certified as Halal with the Islamic Food and Nutrition Council of America (M).



Certified to NSF/ANSI/CAN Standard 61

Clarion Food Grade White Mineral Oils 200 and 350 (ONLY)

APPLICATIONS



- Coatings for fruits and vegetables, defoamers, shell egg spray, bakery pans and dough dividers, cutters, knives, meat packers' benches, boards, trays, and hooks.
- Rust preventative and lubricant for food processing machinery.
- For use in cosmetics, suntan lotions, baby oils, bath oils, as a base for ointments, as a pelletizing aid, and as a drug processing agent.

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CL10107

APPLICATIONS



- For use in the food processing area as a release agent on grills, pans, and other food processing equipment.
- As a drip oil for water well line shaft bearings where an H1 food grade lubricant is required or desired. Clarion Food Grade White Mineral Oils 200 and 350 are certified under NSF/ANSI/CAN Standard 61 for use in potable water systems. Always consult State and local regulatory agency requirements for water system lubricant requirements.
- For use as a dust control agent for wheat, corn, soybean, barley, rice, rye, oats, and sorghum. Applied amount should not exceed limit specified in FDA 21 CFR 178.878

PROPERTIES



Typical Properties for CLARION Food Grade White Mineral Oils:

| | 70 | 90 | 200 | 350 | 500 |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|
| Material Code | 633507009 | 633509009 | 633512009 | 633514009 | 633516009 |
| ISO Grade | 10 | 15 | 32 | 68 | 100 |
| Gravity, °API ASTM D4052 | 34.4 | 32.2 | 32.3 | 31.6 | 31.1 |
| Density, lb/gallon | 7.10 | 7.2 | 7.23 | 7.23 | 7.25 |
| Flash Point, °C (°F) ASTM D92 | 188 (370) | 190 (374) | 218 (424) | 246 (475) | 246 (475) |
| Pour Point, °C (°F) ASTM D97 | -33 (-27) | -27 (-17) | -12 (+10) | -12 (+10) | -9 (+16) |
| Viscosity ASTM D445 | | | | | |
| cSt at 40°C | 12.6 | 16.0 | 37.5 | 65.04 | 107.8 |
| cSt at 100°C | 3.0 | 3.47 | 6.03 | 8.58 | 12.00 |
| SUS at 100°F | 72 | 87 | 193 | 337 | 562 |
| Color, Saybolt, ASTM D156 | +30 | +30 | +30 | +30 | +30 |
| NF/USP | NF | NF | USP | USP | USP |
| USDA Shell Egg Oil | ✓ | ✓ | — | — | — |
| Kosher | Ⓢ | Ⓢ | Ⓢ | Ⓢ | Ⓢ |
| Halal | Ⓜ | Ⓜ | Ⓜ | Ⓜ | Ⓜ |
| NSF Registered (Registration Number) | 3H/H1 (124614) | 3H/H1 (124616) | 3H/H1 (124609) | 3H/H1 (124612) | 3H/H1 (124618) |
| NSF/ANSI/CAN Standard 61 Certified | — | — | ✓ | ✓ | — |
| FDA 21 CFR | | | | | |
| 172.878 | ✓ | ✓ | ✓ | ✓ | ✓ |
| 178.3620(a) | ✓ | ✓ | ✓ | ✓ | ✓ |

NOTE: All oils above are colorless (Saybolt +30 Color), odorless, and tasteless and surpass the requirements of FDA and U.S. Pharmacopeia standard for Neutrality, Sulfur Compounds, Solid Paraffins, Readily Carbonizable Substances, and Residual Solvents.

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CL10107

CLARION® FG White Mineral Oil Spray



OVERVIEW



- A high purity National Formulary (NF) white mineral oil packaged with propellant in an aerosol container.
- Provides a convenient means of application for direct food contact machinery and process lubrication applications.

FEATURES & BENEFITS



- The white mineral oil component is colorless (Saybolt +30 Color), odorless, and tasteless, and surpasses the requirements of FDA and U.S. Pharmacopeia standard for Neutrality, Sulfur Compounds, Solid Paraffins, Readily Carbonizable Substances and Residual Solvents.
- Meet the requirements of U.S. FDA regulation 21 CFR 172.878 for contact with food for human consumption.
- Registered as 3H, lubricants for direct food contact by NSF International, for use in food processing plants under the jurisdiction of the USDA.
- The white mineral oil component meets current standards of the National Formulary (NF).

APPLICATIONS



CLARION FG White Mineral Oil Spray provides:

- Release agent on grills, pans and other food processing equipment.
- General lubrication and rust prevention for food processing machinery.
- DANGER: Extremely flammable aerosol. Refer to SDS for proper transport, storage and handling. Always check with local jurisdictions for warehouse requirements.
- Refer to equipment owner's manual for proper lubricant recommendation.

PROPERTIES



Typical Properties for CLARION FG White Mineral Oil Spray:

| | |
|-------------------------------------|--------------------|
| Material and Package Code | 633595009190 |
| Propellant | Propane and Butane |
| Flash Point, °C (°F) ASTM D92 | 188 (370) |
| Spray Pattern | Fine Stream |
| Texture | Medium Oil Film |
| Oil Base | |
| Specific Gravity @ 60 °F ASTM D1298 | 0.76 |
| Flash Point, °C (°F) ASTM D92 | 188 (370) |
| Viscosity ASTM D445 | |
| cSt at 40°C | 22 |
| cSt at 100°C | 4.3 |
| Viscosity Index ASTM D2270 | 94 |
| NSF Registered | 3H |
| (Registration Number) | 152456 |
| Meets FDA 21 CFR 172.878 | |

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CL10179

CLARION® Food Machinery A/W Oils



OVERVIEW



- Designed specifically for use as lubricants for food processing equipment.
- Formulated with a high purity white mineral oil and additive system for food processing applications.
- Does not contain any natural products derived from animals, nuts or genetically modified organisms (GMOs).
- Suitable for use where vegetarian and nut-free food is prepared.

FEATURES & BENEFITS



- Colorless, odorless, tasteless, non-staining lubricants that provide excellent wear, rust, and oxidation protection.
- Meet the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.
- Certified under NSF/ANSI/CAN Standard 61 (ISO 32 and 68 grades only).
- Certified as Kosher (Passover) with the Union of Orthodox Jewish Congregations of America (U)•*
- Certified as Halal with the Islamic Food and Nutrition Council of America (M)•*



Certified to
NSF/ANSI/CAN
Standard 61

Clarion Food Machinery
A/W 32 and A/W 68 Oils
(ONLY)

APPLICATIONS

- General purpose lubricants for machinery that processes, packages, or transports food for human consumption.
- Recommended for medium pressure hydraulic systems and circulating systems in food processing, canning, and bottling operations. Can also be used in air line lubrication applications.
- ISO 68 and 100 grades may be used in food machinery worm gears, spur gears, and valves.

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Manufactured in USA

CL10102

PROPERTIES



Typical Properties for CLARION Food Machinery A/W Oils:

| ISO Grade | 32 | 46 | 68 | 100 |
|---|-------------|-------------|--------------|-------------|
| Material Code | 633541009 | 633542009 | 633543009 | 633544009 |
| Gravity, °API ASTM D4052 | 31.5 | 31.4 | 31.1 | 29.9 |
| Density, lb/gallon | 7.23 | 7.23 | 7.25 | 7.30 |
| Flash Point, COC, °C (°F) ASTM D92 | 202 (396) | 206 (402) | 242 (468) | 250 (482) |
| Pour Point, °C (°F) ASTM D97 | -18 (0) | -16 (3) | -9 (15) | -7 (19) |
| Viscosity ASTM D445 | | | | |
| cSt at 40°C | 32.8 | 46.7 | 64.15 | 100 |
| cSt at 100°C | 5.56 | 6.96 | 8.52 | 11.0 |
| Viscosity Index ASTM D2270 | 107 | 105 | 103 | 105 |
| Color ASTM D1500 | L1.0 | L1.0 | L1.0 | L1.0 |
| Water Separability, mL-mL-mL (min) ASTM D1401 | | | | |
| @ 130°F | 40-40-0 (5) | 40-40-0 (5) | 40-40-0 (10) | - |
| @ 180°F | - | - | - | 40-40-0 (5) |
| Rust Test ASTM D665A | Pass | Pass | Pass | Pass |
| Four-Ball Wear, ASTM D4172 | | | | |
| mm @ 20kg | 0.32 | 0.32 | 0.32 | 0.34 |
| mm @ 40kg | 0.40 | 0.40 | 0.40 | 0.42 |
| Vickers Pump Wear, mg ASTM D2882 | 15 | 15 | 15 | 15 |
| FZG Scuffing Load Capacity ASTM D5182 | 11 | 11 | >12 | >12 |
| ANSI/AGMA 9005-E02 | - | - | 2EP | 3EP |
| Oxidation Stability, hr ASTM D943 | >8000 | >8000 | >8000 | >8000 |
| Tackifier | No | No | No | Yes |
| Kosher* | Ⓢ | Ⓢ | Ⓢ | Ⓢ |
| Halal* | Ⓜ | Ⓜ | Ⓜ | Ⓜ |
| NSF Registered (Registration Number) | H1 (124625) | H1 (124628) | H1 (124632) | H1 (124620) |
| NSF/ANSI/CAN Standard 61 Certified* | ✓ | - | ✓ | - |
| FDA, 21CFR 178.3570 | ✓ | ✓ | ✓ | ✓ |

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*Excludes product delivered by bulk transport.

CLARION® Food Grade FR Fluid



OVERVIEW



- Food grade water-glycol fire-resistant hydraulic fluid.
- Designed for food process applications such as fryers, ovens, cookers, and others where a fire resistant hydraulic fluid is required or desired.

FEATURES & BENEFITS



- Very high viscosity index, low pour point, and excellent heat transfer properties allow use over a wide range of applications and operating conditions.
- Demonstrates lower overall system temperatures, thereby providing better system performance.
- Demonstrated lower power consumption resulting in additional energy savings.
- Approved by Factory Mutual under Group 1 (HFC) as a less flammable fluid. Approval number 3021353.
- Meets the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.

APPLICATIONS



- Designed for food process applications such as fryers, ovens, cookers and others where a fire resistant hydraulic fluid is desired.
- **Note:** The water concentration in the fluid must be monitored and adjusted as needed to ensure proper fire resistance properties.

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Manufactured in USA

CL10105

PROPERTIES



Typical Properties for CLARION Food Grade FR Fluid:

| | |
|--------------------------------------|-------------------------|
| ISO Grade | 46 |
| Commodity Code | 632503009 |
| Specific Gravity @ 60°F ASTM D1298 | 1.06 |
| Density, lbs/gallon | 8.84 |
| Color | Water White |
| Appearance | Slight Haze |
| Viscosity, cSt at 40°C ASTM D445 | 46 |
| Pour Point, °C (°F) ASTM D97 | -50 (-58) |
| Flash Point, COC, °C (°F) ASTM D92 | None |
| Copper Corrosion ASTM D130 | 1A |
| pH | 8.9 |
| Vane Pump Wear Test, mg wear | <25 |
| Rust Test ASTM D665A | Pass |
| Bulk Modulus, kPa ASTM D6793 | 2.189 x 10 ⁶ |
| NSF Registered (Registration Number) | H1 (134001) |
| FDA, 21 CFR 178.3570 | ✓ |

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CLARION® Food Machinery Gear Oils



OVERVIEW



- Designed for use in food machinery worm gears, spur gears, and valves.
- Formulated with a high-purity white mineral oil and additive system for food processing applications.
- Available in ISO grades 150, 220, 320, and 460.
- Do not contain any natural products derived from animals, nuts, or genetically modified organisms (GMOs).
- Suitable for use where vegetarian and nut-free foods are prepared.

FEATURES & BENEFITS



- Colorless, odorless, tasteless, non-staining lubricants that provide excellent wear, rust, and oxidation protection.
- Meet the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSH H1 registered for use in food processing plants under the jurisdiction of the USDA.
- Certified under NSF/ANSI/CAN Standard 61 Drinking Water System Components -Health Effects (ISO 220 only)
- Certified as Kosher (Passover) with the Union of Orthodox Jewish Congregations of America (U).
- Certified as Halal with the Islamic Food and Nutrition Council of America (M).



Certified to
NSF/ANSI/CAN
Standard 61

Clarion Food Machinery
Gear Oil 220 (ONLY)

APPLICATIONS



- General purpose lubricants for machinery that processes, packages, or transports food for human consumption.
- Recommended for use in food machinery worm gears, spur gears, and valves.
- ISO 150 grade is recommended for lubrication of rotary can seaming machines equipped with a total loss system, such as those made by Angelus Sanitary Can Seaming Company.
- Recommended for water well pumps and water system machinery where an NSF/ANSI/CAN Standard 61 certified lubricant is required or desired (ISO 220 only).

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CL10172

PROPERTIES



Typical Properties for CLARION Food Machinery Gear Oils

| ISO Grade | 150 | 220 | 320 | 460 |
|---|--------------|--------------|--------------|--------------|
| Material Code | 633547009 | 633546009 | 633563009 | 633548009 |
| Gravity, °API ASTM D4052 | 30.3 | 29.3 | 30.3 | 28.9 |
| Density, lb/gallon | 7.28 | 7.33 | 7.28 | 7.35 |
| Flash Point, COC, °C (°F) ASTM D92 | 238 (460) | 240 (464) | 246 | 242 (468) |
| Pour Point, °C (°F) ASTM D97 | -7 (+19) | -7 (+19) | -7(+19) | -7 (+19) |
| Viscosity ASTM D445 | | | | |
| cSt at 40°C | 148 | 220 | 320 | 460 |
| cSt at 100°C | 15.0 | 18.8 | 25.8 | 29.6 |
| Viscosity Index ASTM D2270 | 105 | 105 | 105 | 105 |
| Color ASTM D1500 | L0.5 | L0.5 | L0.5 | L0.5 |
| Water Separation @ 180°F, mL-mL-mL (min) ASTM D1401 | 40-38-2 (10) | 40-38-2 (10) | 40-40-0 (15) | 40-39-1 (15) |
| Rust Test ASTM D665A | Pass | Pass | Pass | Pass |
| Four-Ball Wear ASTM D4172 | | | | |
| Scar, mm @ 20 Kg | 0.32 | 0.34 | 0.34 | 0.34 |
| Scar, mm @ 40 Kg | 0.40 | 0.44 | 0.44 | 0.44 |
| FZG Scuffing Load Capacity ASTM D5182 | >12 | >12 | >12 | >12 |
| ANSI/AGMA 9005-E02 | 4EP | 5EP | 6EP | 7EP |
| Oxidation Stability, hrs., ASTM D943 | 6000+ | 6000+ | 6000+ | 6000+ |
| Kosher | Ⓢ | Ⓢ | Ⓢ | Ⓢ |
| Halal | Ⓜ | Ⓜ | Ⓜ | Ⓜ |
| NSF Registered (Registration Number) | H1 (139651) | H1 (124623) | H1 (166634) | H1 (124630) |
| NSF/ANSI/CAN Standard 61 Certified | — | ✓ | — | — |
| FDA, 21CFR 178.3570 | ✓ | ✓ | ✓ | ✓ |

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CLARION® Synthetic Gear Fluids



OVERVIEW



- Provide excellent performance in gear boxes, bearings, blowers, reciprocating compressors, and hydraulic systems where an NSF H1 lubricant is required or desired.
- Provide excellent performance in food and beverage canning machinery.
- Formulated with high-purity synthetic fluids and additives for food processing machinery applications.
- Do not contain any natural products from animals, nuts, or genetically modified organisms (GMOs).
- Suitable for use where vegetarian and nut-free food is prepared.

FEATURES & BENEFITS



- Odorless, tasteless, non-staining lubricants.
- Provide excellent wear, rust, and oxidation protection.
- Exceptional heat resistance and low temperature fluidity make them ideal for high and low temperature applications.
- Can lower machinery operating temperatures and energy consumption.
- Meet the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.

APPLICATIONS



- Highly recommended for applications where low temperature pumpability is required.
- Designed for use in can seamers such as those made by Angelus Sanitary Can Seaming Company (ISO 150 and 220 only). The ISO 150 is recommended for high speed and the ISO 220 for low speed.
- Recommended for enclosed helical, herringbone, straight, spiral bevel, and spur gears, and bearings operating in food and beverage processing facilities.

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Manufactured in USA

CL10145

PROPERTIES



Typical Properties for CLARION Synthetic Gear Fluids:

| ISO Grade | 150 | 220 | 320 | 460 |
|---|-----------|-----------|-----------|------------|
| Material Code | 632510009 | 632511009 | 632512009 | 632513009 |
| Specific Gravity ASTM D1298 | 0.8459 | 0.8490 | 0.8520 | 0.8545 |
| Density, lb/gallon | 7.04 | 7.07 | 7.09 | 7.11 |
| Viscosity ASTM D445 | | | | |
| cSt at 40°C | 159 | 228 | 328 | 452 |
| cSt at 100°C | 20 | 26 | 34 | 44 |
| Viscosity Index ASTM D2270 | 142 | 145 | 148 | 151 |
| Color ASTM D1500 | L0.5 | L0.5 | L0.5 | L0.5 |
| Pour Point, °F (C°) ASTM D97 | -54 (-48) | -54 (-48) | -44 (-42) | -44 (-42) |
| Flash Point, °F (C°) ASTM D92 | 529 (276) | 532 (278) | 540 (282) | 5309 (276) |
| Rust Test ASTM D665 A/B | Pass | Pass | Pass | Pass |
| Four-Ball Weld Point, kgf ASTM D2783 | 160 | 160 | 160 | 160 |
| Four-Ball Load Wear Index, kgf ASTM D2783 | 50 | 50 | 50 | 50 |
| Four-Ball Wear, mm @40 kg ASTM D4172 | 0.43 | 0.35 | 0.35 | 0.36 |
| ANSI/AGMA 9005-E02 | 4EP | 5EP | 6EP | 7EP |
| FZG Failure Load Stage ASTM D5182 | >12 | >12 | >12 | >12 |
| NSF Registered | H1 | H1 | H1 | H1 |
| FDA, 21 CFR 178.3570 | ✓ | ✓ | ✓ | ✓ |

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CL10145

CLARION® CompressorGard®



OVERVIEW



- Designed for air compressors used in the food service industry.
- Separate readily from water and offer superior protection against wear, rust and corrosion, and deposits.
- Available in ISO viscosity grades 32, 46, and 68.
- Do not contain any natural products derived from animals, nuts, or genetically modified organisms (GMOs).
- Suitable for use where vegetarian and nut-free food is prepared.

FEATURES & BENEFITS



- Low-foaming, fully synthetic formula.
- Outstanding wear, rust, and corrosion protection.
- Very low pour point and high-temperature stability -- an ideal choice for a wide temperature range.
- Excellent oxidation stability and long service life.
- Minimize deposits in the discharge area of rotary screw compressors.
- Meet the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.

APPLICATIONS



- Recommended for rotary screw and vane compressors in meat and poultry processing plants, bakeries, and fruit and vegetable processing plants.
- Compatible with seal and gasket materials normally used in hydraulic and compressor systems.
- Recommended as a hydraulic fluid where extreme temperatures exist.
- ISO 68 grade provides excellent service in vacuum pump applications.

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Manufactured in USA

CL10104

PROPERTIES



Typical Properties for CLARION CompressorGard:

| ISO Viscosity Grade | 32 | 46 | 68 |
|-------------------------------------|-----------|-----------|-----------|
| Material Code | 632545009 | 632541009 | 632540009 |
| Gravity, °API ASTM D4052 | 39.4 | 38.6 | 37.8 |
| Specific Gravity ASTM D1298 | 0.828 | 0.832 | 0.836 |
| Density, lb/gal, 60/60 °F | 6.89 | 6.93 | 6.96 |
| Viscosity ASTM D445 | | | |
| cSt @ 40°C | 30 | 44 | 66 |
| cSt @ 100°C | 5.7 | 7.5 | 10 |
| Viscosity Index ASTM D2270 | 134 | 136 | 135 |
| Flash Point, °F (°C) ASTM D92 | 471 (244) | 491 (255) | 536 (280) |
| Pour Point, °F (°C) ASTM D97 | -87 (-66) | -65 (-54) | -65 (-54) |
| Color ASTM D1500 | L0.5 | L0.5 | L0.5 |
| Cu Corrosion ASTM D130 | 1A | 1B | 1A |
| Rust Test ASTM D665 | Pass | Pass | Pass |
| Four-Ball Wear, mm, 40kg ASTM D4172 | 0.35 | 0.36 | 0.36 |
| Foam Test ASTM D892 | | | |
| Sequence I, II, III | Pass | Pass | Pass |
| Carbon Residue, mg, ASTM D524 | 0.06 | 0.06 | 0.05 |
| FDA 21 CFR 178.3570 | ✓ | ✓ | ✓ |
| NSF Registered | H1 | H1 | H1 |

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CLARION[®] Synthetic Refrigeration Fluid



OVERVIEW



- High-performance refrigeration compressor lubricant formulated to provide outstanding thermal stability and oxidation resistance over a wide range of temperatures.
- Does not contain paraffin wax component to form deposits in expansion valves or capillary area, and is compatible with petroleum-based products.
- Does not contain any natural products derived from animals, nuts, or genetically modified organisms (GMOs).
- Suitable for use where vegetarian and nut-free food is prepared.

FEATURES & BENEFITS



- Outstanding thermal and oxidation stability.
- Outstanding low-temperature performance.
- Compatible with most paints and elastomers used in refrigeration systems.
- Meets the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.

APPLICATIONS



- Designed for use in rotary screw compressors.
- Recommended for use with many refrigerants, including ammonia, carbon dioxide, chlorofluorocarbons (CFC) such as R-12, hydrochlorofluorocarbons (HCFC) such as R-22, and mixtures such as R-501.
- Not recommended for use with hydrofluorocarbons (HFC) such R-134A.

PROPERTIES



Typical Properties for CLARION Synthetic Refrigeration Fluid:

| ISO Grade | 68 |
|--------------------------------------|-----------|
| Material Code | 632552009 |
| Specific Gravity, 60/60°F ASTM D1298 | 0.835 |
| Density, lb/gal | 6.95 |
| Viscosity ASTM D445 | |
| cSt @ 40°C | 66 |
| cSt @ 100°C | 10 |
| Viscosity Index, ASTM D2270 | 137 |
| Color, Saybolt, ASTM D156 | +25 |
| Flash Point, °F (°C) ASTM D92 | 510 (266) |
| Pour Point, °F (°C) ASTM D97 | -54 (-48) |
| NSF Registered | H1 |
| FDA 21 CFR 178.3570 | ✓ |

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www.ClarionLubricants.com

Manufactured in USA

CL10091

CLARION® SynBar® Fluids



OVERVIEW



- Formulated using premium polyalphaolefin synthetic fluids and additives to perform in mechanical seals where superior lubrication and cooling properties are a must to promote seal longevity.
- Enhanced additive system designed to promote the natural properties of the polyalphaolefin base fluid and meet the special requirements for mechanical seals.

FEATURES & BENEFITS



- Formulated to minimize system impurities and reduce catalyst poisoning.
- Excellent low-temperature fluidity and high-temperature stability to cover a wide service temperature range.
- Compatible with commonly used seal materials.
- Meets the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.

APPLICATIONS



- Pressurized and non-pressurized dual mechanical seals manufactured by companies such as John Crane, FlowServe, and others, where a superior buffer/barrier fluid is required.
- Mechanical seals found in chemical/hydrocarbon processing, food processing, gas compression, fluid pumps, etc., where a fluid with its unique properties are called for.
- Clarion SynBar Fluid 22 can be used in low temperature hydraulic systems as replacement for Mil-5606 type fluids in non-aviation applications.

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Manufactured in USA

CL10143

PROPERTIES**Typical Properties for CLARION SynBar Fluids:**

| Grade | 5 | 22 |
|---|-----------|-----------|
| Material Code | 632505009 | 632507009 |
| API Gravity, °API ASTM D287 | 45.4 | 41.4 |
| Specific Gravity ASTM D1298 | 0.8003 | 0.8184 |
| Density, lb/gal | 6.66 | 6.814 |
| Viscosity ASTM D445 | | |
| cSt at 40°C | 5.5 | 18.6 |
| cSt at 100°C | 1.70 | 4.14 |
| Color, Saybolt, D156 | +25 | +25 |
| Copper Corrosion ASTM D130 | 1B | 1A |
| Flash Point, °F (°C) ASTM D92 | 316 (158) | 432 (222) |
| Fire Point, °F (°C) ASTM D92 | 345 (174) | 489 (254) |
| Pour Point, °F (°C) ASTM D97 | -65 (-54) | -86 (-66) |
| Rust Test ASTM D665 A/B | Pass | Pass |
| Foam Test ASTM D892, Sequence I, II, III | Pass | Pass |
| Brookfield, Viscosity, cP at -40°C ASTM D2983 | | 2700 |
| Dielectric Strength, kV ASTM D877 | | 35 |
| Four-Ball Wear, mm @40 ASTM D4172 | 0.39 | 0.35 |
| NSF Registered | H1 | H1 |
| FDA 21 CFR 178.3570 | ✓ | ✓ |

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CLARION® Food Machinery HT EP Greases



OVERVIEW



- High temperature, extreme pressure (EP), water resistant greases in NLGI No. 1 and 2 grades.

FEATURES & BENEFITS



- Superior extreme pressure (EP) and antiwear performance.
- Excellent rust protection.
- High dropping point and oxidation inhibited for high temperature use.
- Excellent adhesion for sealing and water washout resistance.
- Excellent pumpability (NLGI No.1).
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.
- Certified under NSF/ANSI/CAN Standard 61 (NLGI No. 2 only)



APPLICATIONS



- For use with food processing and packaging machinery where there is a possibility of incidental contact with food.
- NLGI No. 1 grade is ideal for use in centralized lubrication systems such as those used with beverage bottle fillers.

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Manufactured in USA

CL10103

PROPERTIES**Typical Properties for CLARION Food Machinery HT EP Greases:**

| | | |
|--|------------------------|------------------------|
| NLGI No. | 1 | 2 |
| Material Code | 655701009 | 655700009 |
| Thickener Type | Aluminum Complex | Aluminum Complex |
| Texture | Smooth, Tacky | Smooth, Tacky |
| Color, Observed | White to Off-White | White to Off-White |
| Worked Penetration, ASTM D217 | 310-340 | 265-295 |
| Dropping Point, ASTM D566, °F (°C) | 450 (232) | 500 (260) |
| Wheel Bearing Leakage, ASTM D1263, % loss | N/A | 4.5 |
| Water Washout, ASTM D1264, % loss | N/A | 7.7 @ 175°F |
| Water Spray Resistance, ASTM D4049, % loss | N/A | 9.2 |
| Rust Prevention, ASTM D1743, rating | Pass | Pass |
| Copper Corrosion, ASTM D4048, rating | 1a | 1a |
| Oil Separation, ASTM D1742, % loss | 2.0 | 2.0 |
| Timken Test, ASTM D2509, OK load, lbs | 40 | 40 |
| Four-Ball Wear, ASTM D2266, mm | 0.55 | 0.55 |
| Four-Ball EP Weld, ASTM D2596, kgf | 400 | 400 |
| Four-Ball Load Wear Index, ASTM D2596, kgf | 55 | 55 |
| Approximate Temperature Range, °F (°C) | -5 to 350 (-21 to 177) | 10 to 350 (-12 to 177) |
| NSF Registered (Registration Number) | H1 (142230) | H1 (124605) |
| NSF/ANSI/CAN Standard 61 Certified | - | ✓ |
| FDA, 21 CFR 178.3570 | ✓ | ✓ |

Characteristics of Oil Plus Oil Soluble Additives:

| | | |
|----------------------------|------|------|
| Viscosity ASTM D445 | | |
| cSt @ 40°C | 581 | 581 |
| cSt @ 100°C | 65.8 | 65.8 |
| Viscosity Index ASTM D2270 | 188 | 188 |

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CL10103

CLARION® PM Hi-Temp Food Machinery 100 Greases



OVERVIEW



- Specifically blended for grease lubrication of machinery used in the food industry.
- Designed for high temperatures and extreme pressure (EP).
- Excellent water resistance and effective resistance to corrosion, even in the presence of water.

FEATURES & BENEFITS



- Superior Four-Ball EP and anti-wear.
- Excellent rust protection.
- High dropping point and oxidation-inhibited for high-temperature use.
- Excellent sealing properties and resistance to water washout.
- Finished products meet the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.

APPLICATIONS



- Rolling element and plain bearings.
- Automatic and centralized lubrication systems.
- Animal feed pellet mills.

PROPERTIES



Typical Properties for CLARION PM Hi-Temp Food Machinery 100 Greases:

| NLGI No. | 1 | 2 |
|--|------------------------|-----------------------|
| Material Code | 655721009 | 655722009 |
| Thickener Type | Aluminum Complex | Aluminum Complex |
| Texture | Smooth, Tacky | Smooth, Tacky |
| Color, Observed | White to Off-White | White to Off-White |
| Worked Penetration, ASTM D217 | 310-340 | 265-295 |
| Dropping Point, ASTM D566, °F (°C) | 450 (232) | 500 (260) |
| Rust Prevention, ASTM D1743, rating | Pass | Pass |
| Copper Corrosion, ASTM D4048, rating | 1a | 1a |
| Four-Ball Wear, ASTM D2266, mm | 0.48 | 0.48 |
| Four-Ball EP Weld, ASTM D2596, kgf | 400 | 400 |
| Approximate Temperature Range, °F (°C) | -5 to 350 (-21 to 177) | 15 to 350 (-9 to 177) |
| Modified Stability Test | 6% Change | 6% Change |
| NSF Registered (Registration Number) | H1 (144584) | H1 (144585) |

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Manufactured in USA

CL10174

CLARION® Food Machinery Grease, No. 2



OVERVIEW



- Effectively lubricates most machinery used to manufacture, process, package, and store food and beverage products.

FEATURES & BENEFITS



- Neutral mild petroleum odor, nonstaining and nonpigmented.
- Clear with a slight cloud.
- Very resistant to water washout and water insoluble.
- Smooth, buttery, adhesive texture.
- Approximate temperature range: -30 to 250°F (-34 to 121°C).
- Finished product meets the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.
- Certified under NSF/ANSI Standard 61



Certified to
NSF/ANSI CAN
Standard 61

APPLICATIONS



- Food processing and packaging machinery where there is a possibility of incidental food contact.
- Lubrication of water well pumps and water system machinery where an NSF/ANSI Standard 61 certified lubricant is required or desired.

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Manufactured in USA

CL10170

PROPERTIES



Typical Properties for CLARION Food Machinery Grease, No. 2:

| | |
|--|---|
| NLGI Consistency Number | 2 |
| Material Code | 655699009 |
| Thickener Type | Anhydrous Calcium Soap |
| Texture | Smooth, Buttery, Adhesive |
| Fillers | None |
| Color, Observed | Clear with Slight Cloud (May have slight yellow cast after storage) |
| Worked Penetration, ASTM D217 | 265-295 |
| Dropping Point, ASTM D566, °F (°C) | 290 (143) |
| Water Washout, ASTM D1264, % loss at 100°F | 2.4 |
| Oil Separation, ASTM D1742, % loss | 3.6 |
| Approximate Application Temperature Range, °F (°C) | -30 to 250 (-34 to 121) |
| NSF Registered (Registration Number) | H1 (124598) |
| NSF/ANSI/CAN Standard 61 Certified | ✓ |
| FDA, 21 CFR 178.3570 | ✓ |
| Oil and Oil Soluble Polymer: | |
| Viscosity @ 40°C (cSt) | 92.1 |
| Viscosity @ 100°C (cSt) | 16.8 |
| Viscosity Index | 199 |

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CLARION® Chain and Trolley Lube



OVERVIEW



- Designed to effectively lubricate chains and trolleys used to manufacture, process, package, and store food products (not suitable for high temperature applications).

FEATURES & BENEFITS



- Neutral mild petroleum odor, non-staining and non-pigmented.
- Very resistant to water washout and water insoluble.
- Additized to inhibit corrosion, oxidation, and wear.
- Provides outstanding lubrication even under heavy loads.
- Reduces sluggish bearings or sticking trolleys.
- Fluid in most low temperature applications and ensures lubrication of equipment in chilled areas.
- Excellent tackiness makes it highly resistant to water wash-off, thus reducing the frequency of re-lubrication.
- Apply by brush on, drip feed, or centralized lubrication systems.
- Clean up is quick and easy in case of incidental contact.
- Finished product meets the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA (143464).

APPLICATIONS



- Food processing and packaging machinery where there is a possibility of incidental contact.
- Chains and conveyors on food processing machinery.
- Hooks and trolley systems in meat processing facilities.

PROPERTIES



Typical Properties for CLARION Chain and Trolley Lube:

| NLGI Consistency Grade | (approximate) 0000 |
|---------------------------------|-------------------------|
| Material Code | 655695009 |
| Thickener Type | Anhydrous Calcium Soap |
| Texture | Smooth, Buttery |
| Water or Fillers | None |
| Color, Observed | Clear with Slight Cloud |
| Stormer Viscosity, KU ASTM D562 | 81-85 |
| Four-Ball Wear, mm ASTM D2266 | 0.40 |

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Manufactured in USA

CL10173

CLARION® FM Spray Grease



OVERVIEW



- An NSF H1 grease packaged with propellant in an aerosol container.
- Provides a convenient means of application for incidental contact grease lubrication applications.

FEATURES & BENEFITS



- Excellent resistance to water washout.
- Antiwear and extreme pressure (EP) protection.
- Pressure separation resistance.
- Excellent rust and corrosion protection.
- Very good compatibility with common food grade greases.
- Meet the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.

APPLICATIONS



- Recommended for use as a general lubricant and rust preventative grease for food processing machinery.
- Trolley chains (**DO NOT use as an oven chain lubricant**), casters, hinges and sliding mechanisms.
- DANGER: Extremely flammable aerosol. Refer to SDS for proper transport, storage, and handling. Always check with local jurisdictions for warehouse requirements.
- Refer to equipment owner's manual for proper lubricant recommendation.

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Manufactured in USA

CL10181

PROPERTIES**Typical Properties for CLARION FM Spray Grease:**

| | |
|--------------------------------|--------------------|
| Material and Package Code | 633594009190 |
| Propellant | Propane and Butane |
| Flash Point, ASTM D92, °C (°F) | 188 (370) |
| Spray Pattern | Fine Stream |
| Texture | Medium Oil Film |
| Oil Component | |
| Specific Gravity, ASTM D | 0.76 |
| Viscosity, cSt at 40°C | 150 |
| cSt at 100°C | 16.5 |
| Viscosity Index | 94 |
| NSF Registered | H1 |
| (Registration Number) | 152455 |
| Meets FDA 21 CFR 178.3570 | |

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Manufactured in USA

CL10181

CLARION® FM Silicone Spray



OVERVIEW



- A fast drying aerosol spray.
- Provides long-lasting dry film lubrication.

FEATURES & BENEFITS



- Convenient aerosol spray application.
- High quality silicone fluid content.
- Rapid drying time.
- Long lasting dry lubricant film.
- Once dry, will not attract particulates such as dirt, dust, fibers, etc.
- Meets the requirements of U.S. FDA regulation 21 CFR 178.3570 for incidental food contact.
- NSF H1 registered for use in food processing plants under the jurisdiction of the USDA.

APPLICATIONS



- Food and beverage manufacturing facilities as an incidental food contact dry film lubricant.
- Levers, hinges, and sliding mechanisms.
- Fork lift tines when unloading slip sheets.
- Zippers, snaps.
- Packaging machinery.
- Leather, vinyl, and rubber protectant.
- DANGER: Extremely flammable aerosol. Refer to SDS for proper transport, storage and handling. Always check with local jurisdictions for warehouse requirements.
- Refer to equipment owner's manual for proper lubricant recommendation.

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Manufactured in USA

CL10180

PROPERTIES



Typical Properties for CLARION FM Silicone Spray:

| | |
|-----------------------------------|--------------------|
| Material and Package Code | 633593009189 |
| Propellant | Propane and Butane |
| Silicone Fluid Component, typical | |
| Flash Point, °C (°F) ASTM D92 | 326 (620) |
| Pour Point, °C (°F) ASTM D97 | -65 (-85) |
| Viscosity, cSt at 40°C ASTM D445 | 266 |
| Specific Gravity at 60°F D1298 | 0.977 |
| Spray Pattern | Fine Mist |
| Texture | Evaporating Mist |
| Appearance | Clear |
| Consistency | Light |
| NSF Registered | H1 |
| (Registration Number) | 152457 |
| Meets FDA 21 CFR 178.3570 | |

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CL10180

CLARION® Green Bio



OVERVIEW



- Readily biodegradable anti-wear hydraulic fluids formulated with premium high oleic natural esters derived from renewable resources.
- Formulated with zinc-free, ashless additives. Zinc compounds are regulated as priority pollutants under provisions of the Clean Water Act and SARA Title 313.
- Provide protection for demanding hydraulic systems, especially those operating in environmentally sensitive areas.

FEATURES & BENEFITS



- Meet EPA Vessel General Permit (December 2013) requirements for Environmentally Acceptable Lubricants (EAL).
- Readily biodegradable.
- Zinc-free, ashless formulation with outstanding rust and corrosion protection.
- Contain inhibitors to minimize foaming and air entrainment.
- Premium anti-wear protection for vane, piston, and gear pumps, motors and other hydraulic components.
- All components on US EPA SCIL and/or European Ecolabel LuSC

APPLICATIONS



- Recommended for hydraulic system applications operating in environmentally sensitive areas where the use of a zinc-free, ashless, low aquatic toxicity, readily biodegradable fluid is desired.
- Marine — marine vessels, offshore and inshore rigs, tugs, dredges, dock equipment, cranes, pile-drivers, marine construction equipment.
- Forestry — scalpers, excavators, wheel loaders.
- Construction & Mining — bulldozers, graders, backhoes, conveyors, crawlers, hole drillers.
- Oil & Gas Exploration – oil and gas drilling rigs.
- Fluid monitoring through LubeAlert Oil Analysis is recommended to maximize service life. Moisture content should be maintained at less than 500 ppm.

- ZINC-FREE
- READILY BIODEGRADABLE
- MEETS 2013 EPA VGP REQUIREMENTS

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Manufactured in USA

CL10175

PROPERTIES



Typical Properties for CLARION Green Bio:

| ISO Grade | 32 | 46 | 68 |
|--|------------|------------|------------|
| Material Code | 633580009 | 633581009 | 633582009 |
| Gravity, °API ASTM D4052 | 27.17 | 28 | 21.52 |
| Flash Point, (COC) °C (°F) ASTM D92 | 200 (392) | 229 (445) | 256 (492) |
| Viscosity ASTM D445 | | | |
| cSt @ 40°C | 34 | 47.6 | 69 |
| cSt @ 100°C | 8.1 | 10.7 | 13.4 |
| Viscosity Index, ASTM D2270 | 223 | 225 | 200 |
| Pour Point, °C (°F) ASTM D97 | -36 (-33) | -39 (-38) | -33 (-27) |
| Color, ASTM D1500 | 1.0 | 1.5 | 3.0 |
| Copper Corrosion, ASTM D130 | | | |
| 3 hrs @ 100°C | 1A | 1A | 1A |
| Rust Test, ASTM D665A/B | Pass | Pass | Pass |
| Four Ball Wear ASTM D4172 | | | |
| @ 40 kg, mm | | 0.47 | |
| Foam Test ASTM D892 | | | |
| Seq. I, ml | 0-0 | 10-0 | 0-0 |
| Seq. II, ml | 20-0 | 30-0 | 20-0 |
| Seq. III, ml | 0-0 | 20-0 | 0-0 |
| Water Separability ASTM D1401 | | | |
| @ 130°F | 40/40/0/30 | 40/40/0/30 | 40/40/0/30 |
| Dielectric Strength ASTM D877 | | | |
| KV, minimum | 35 | 35 | 35 |
| Certified Biobased Content: | 64% | 64% | 64% |
|  Biodegradability | | | |
| ASTM D7373, % | >60 | >64 | >60 |
| Vickers V-104C Pump, | | | |
| Total Ring & Vane Loss (mg) | — | Pass | — |

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Dielectric strength is extremely sensitive to humidity and contamination. Once the containers are opened, the dielectric strength cannot be expected to remain at its original value. Containers should be kept tightly sealed and stored in a dry environment.

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Manufactured in USA

CL10175

CLARION® Green Synthetic Fluids



Environmental Products

OVERVIEW



- High-performance, readily biodegradable anti-wear hydraulic fluids formulated with premium synthetic fluid components.
- Formulated with zinc-free, ashless additives. Zinc compounds are regulated as priority pollutants under provisions of the Clean Water Act and SARA Title 313.
- Provide protection for demanding hydraulic systems, especially those operating in environmentally sensitive areas.

FEATURES & BENEFITS



- Meet 2013 EPA Vessel General Permit (VGP) requirements for Environmentally Acceptable Lubricants (EAL).
- Low acute aquatic toxicity (as shown by LC-50 test)
- Readily biodegradable.
- Fully synthetic, zinc-free, ashless formulation with outstanding rust and corrosion protection.
- Excellent low-temperature performance.
- Contain inhibitors to minimize foaming and air entrainment.
- Premium anti-wear protection for vane, piston, and gear pumps, motors, and other hydraulic components when used in accordance with the manufacturer's recommendations.

APPLICATIONS



- Recommended for hydraulic system applications operating in environmentally sensitive areas where the use of a zinc-free, ashless, low aquatic toxicity, readily biodegradable fluid is desired.
- Marine — marine vessels, offshore and inshore rigs, tugs, dredges, dock equipment, cranes, pile-drivers, marine construction equipment, subsea equipment.
- Forestry — scalpers, excavators, wheel loaders.
- Construction & Mining — bulldozers, graders, backhoes, conveyors, crawlers, hole drillers.
- Oil & Gas Exploration – oil and gas drilling rigs.
- Fluid monitoring through LubeAlert Oil Analysis is recommended to maximize service life. Moisture content should be maintained at less than 500 ppm.

- ZINC-FREE
- READILY BIODEGRADABLE
- MEETS 2013 EPA VGP REQUIREMENTS
- NON-TOXIC PER LC-50 AQUATIC TOXICITY TEST

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Manufactured in USA

CL10176

PROPERTIES



Typical Properties for CLARION Green Synthetic Fluids:

| ISO Viscosity Grade | 22 | 32 | 46 | 68 |
|---|------------|------------|------------|------------|
| Material Code | 633585009 | 633586009 | 633587009 | 633588009 |
| Gravity, °API ASTM D4052 | 34.3 | 32.4 | 29.7 | 26.1 |
| Flash Point, (COC) °C (°F) ASTM D92 | 180 (356) | 180 (356) | 180 (356) | 190 (374) |
| Viscosity ASTM D445 | | | | |
| cSt @ 40°C | 22.8 | 31.1 | 45.8 | 69.1 |
| cSt @ 100°C | 5.4 | 6.6 | 8.8 | 12.0 |
| Viscosity Index, ASTM D2270 | 188 | 178 | 188 | 172 |
| Pour Point, °C (°F) ASTM D97 | -57 (-70) | -57 (-70) | -57 (-70) | -54 (-65) |
| Color, ASTM D1500 | L1.5 | L1.5 | L1.5 | L1.5 |
| Foam Test ASTM D892 | | | | |
| Seq. I, ml | 10-0 | 10-0 | 5-0 | 0-0 |
| Seq. II, ml | 25-0 | 30-0 | 30-0 | 40-0 |
| Seq. III, ml | 15-0 | 10-0 | 5-0 | 15-0 |
| Water Separability at 130°F ASTM D1401 | 40/40/0/15 | 40/40/0/20 | 40/40/0/15 | 40/40/0/20 |
| Dielectric Strength, kV, minimum ASTM D877 | 35 | 35 | 35 | 35 |
| Total Acid No. mg KOH/g ASTM D664 | 0.1 | 0.1 | 0.1 | 0.1 |
| RPVOT minutes ASTM D2272 | 1140 | 1050 | 850 | 780 |
|  Biodegradability % ASTM D7373 | >60 | >60 | >60 | >60 |

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Dielectric strength is extremely sensitive to humidity and contamination. Once the containers are opened, the dielectric strength cannot be expected to remain at its original value. Containers should be kept tightly sealed and stored in a dry environment.

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CLARION® Green A/W Oils

OVERVIEW



- Designed for use in the pumps and gears of high-pressure hydraulic equipment operating in environmentally sensitive areas.
- High-performance, ashless, zinc-free, anti-wear hydraulic oils.

FEATURES & BENEFITS



- Inherently biodegradable, easily recycled, and compatible with other premium mineral oil-based lubricants.
- Excellent thermal and oxidative stability.
- A state-of-the-art, ashless additive package provides excellent wear protection for pump components, excellent rust and corrosion protection, hydrolytic stability, and longer service life.
- Pass the U.S. Coast Guard static sheen test requirements.
- Non-toxic to aquatic life, exceeding U.S. EPA LC50 test requirements for mysid shrimp, rainbow trout, and fathead minnow.
- Meet or exceed ANSI/AGMA 9005-E02 requirements for antiscuff/antiwear (EP) oils.

APPLICATIONS



- Recommended for high-pressure, high-temperature, vane, piston, and gear-type hydraulic pumps operating in environmentally sensitive areas.
- Used in hydraulic lifts and cranes on off shore drilling and production platforms.
- Used in scalpers, excavators, and wheel loaders in the forestry industry.
- Used in dredges, kelp cutters, and pile drivers in the marine industry.

Environmental Products

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CL10027

PROPERTIES**Typical Properties for CLARION Green A/W Oils:**

| ISO VIS Grade | 22 | 32 | 46 | 68 |
|---|------------|------------|------------|------------|
| Material Code | 633550009 | 633551009 | 633552009 | 633553009 |
| Gravity, °API ASTM D4052 | 33.5 | 32.5 | 32.3 | 31.6 |
| Flash Point (COC), °F (°C) ASTM D92 | 376 (191) | 400 (204) | 402 (206) | 468 (242) |
| Pour Point, °F (°C) ASTM D97 | 5 (-15) | 0 (-18) | 3 (-16) | 15 (-9) |
| Viscosity ASTM D445 | | | | |
| cSt @ 40°C | 21 | 33.1 | 46.7 | 64.2 |
| cSt @ 100°C | 4.1 | 5.6 | 7.2 | 9.3 |
| Viscosity Index, ASTM D2270 | 101 | 106 | 104 | 102 |
| Color | Green | Green | Green | Green |
| Water Separability, mL-mL-mL(min) ASTM | | | | |
| D1401 @ 130°F | 40-40-0(5) | 40-40-0(5) | 40-40-0(5) | 40-40-0(5) |
| Four Ball Wear, mm D4172 | | | | |
| 20kg | 0.47 | 0.46 | 0.43 | 0.42 |
| 40kg | 0.56 | 0.56 | 0.55 | 0.55 |
| Rust Prevention ASTM D665 A/B | Pass | Pass | Pass | Pass |
| Copper Corrosion | | | | |
| 3 hr @ 100°C ASTM D130 | 1A | 1A | 1A | 1A |
| FZG Scuffing Load Capacity | | | | |
| ASTM D5182 | 11 | 11 | 11 | >12 |
| Oxidation Stability, hr ASTM D943 | >8,000 | >8,000 | >8,000 | >8,000 |

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CLARION® Green Synthetic Gear Fluids



OVERVIEW



- High-performance, readily biodegradable extreme pressure gear lubricants formulated with premium synthetic fluid components.
- Formulated with zinc-free, ashless additives. Zinc compounds are regulated as priority pollutants under provisions of the Clean Water Act and SARA Title 313.
- Meet environmental compliance requirements while providing protection for heavily loaded machinery operating in environmentally sensitive areas.

FEATURES & BENEFITS



- Meet 2013 EPA Vessel General Permit (VGP) requirements for Environmentally Acceptable Lubricants (EAL).
- Low acute aquatic toxicity (as shown by LC-50 test)
- Readily biodegradable.
- Fully synthetic, zinc-free, ashless formulation with outstanding rust and corrosion protection.
- Excellent low-temperature performance.
- Contain inhibitors to minimize foaming and air entrainment.
- Premium extreme pressure (EP) protection for heavily loaded industrial gears and plain or rolling element bearings.

APPLICATIONS



- Recommended for lubrication of industrial gears and plain or rolling element bearings in environmentally sensitive areas where the use of a zinc-free, ashless, low aquatic toxicity, readily biodegradable fluid is desired.
- Marine — marine vessels, offshore and inshore rigs, tugs, dredges, dock equipment, cranes, pile-drivers, marine construction equipment, subsea equipment.
- Forestry — scalpers, excavators, wheel loaders.
- Oil & Gas Exploration – oil and gas drilling rigs.
- Fluid monitoring through Lubealert Oil Analysis is recommended to maximize service life. Moisture content should be maintained at less than 500 ppm.

- MEETS EPA 2013 VGP EAL REQUIREMENTS
- READILY BIODEGRADABLE
- NON-TOXIC PER LC-50 AQUATIC TOXICITY TEST
- EXTREME PRESSURE (EP) RATED
- ZINC-FREE

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CL10178

PROPERTIES



Typical Properties for CLARION Green Synthetic Gear Fluids:

| ISO Viscosity Grade | 150 | 220 | 320 |
|--|-------------|-------------|-------------|
| AGMA Grade | 4EP | 5EP | 6EP |
| Material Code | 633589009 | 633590009 | 633591009 |
| Gravity, °API ASTM D4052 | 22.1 | 18.92 | 16.42 |
| Flash Point, (COC) °C (°F) ASTM D92 | 220 (428) | 225 (437) | 227 (440) |
| Pour Point, °C (°F) ASTM D97 | -45 (-49) | -42 (-44) | -36 (-33) |
| Viscosity ASTM D445 | | | |
| cSt @ 40°C | 150 | 220 | 320 |
| cSt @ 100°C | 21.4 | 28.2 | 37.2 |
| Viscosity Index, ASTM D2270 | 164 | 165 | 165 |
| Color, ASTM D1500 | L2.0 | L2.0 | L2.0 |
| Foam Test ASTM D892 | | | |
| Seq. I, mL-mL | 0-0 | 0-0 | 10-0 |
| Seq. II, mL-mL | 0-0 | 20-0 | 15-0 |
| Seq. III, mL-mL | 0-0 | 0-0 | 0-0 |
| Water Separability@ 180°F, mL/mL/mL/min ASTM D1401 | >40/40/0/30 | >40/38/0/30 | >40/38/0/30 |
| Copper Corrosion, 3 hrs @ 100°C, ASTM D130 | 1A | 1A | 1A |
| Rust Test, ASTM D665 A/B | Pass | Pass | Pass |
| RPVOT, minutes ASTM D2272 | 150 | 144 | 121 |
| Four Ball Wear, mm ASTM D4172 | | | |
| 20 Kg | 0.43 | 0.43 | 0.43 |
| 40 Kg | 0.55 | 0.55 | 0.54 |
| Four Ball Weld Point Kgf ASTM D2783 | 315 | 315 | 500 |
|  Biodegradability, % ASTM D7373 | >60 | >60 | >60 |

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CLARION® Green Gear Lubes

OVERVIEW



- High-performance gear lubes, designed for use in the gears of equipment operating in environmentally sensitive areas.
- Refer to equipment owner’s manual for proper equipment lubrication.

FEATURES & BENEFITS



- Inherently biodegradable.
- Passes U.S. Coast Guard static sheen test requirements.
- Very low acute aquatic toxicity in U.S. EPA LC50 test requirements for mysid shrimp, rainbow trout, and fathead minnow.
- Excellent thermal and oxidative stability.
- Compatible with other premium mineral-oil-based lubricants.
- Formulated with a state-of-the-art, ashless additive technology.
- Excellent anti-wear protection.
- Optimum rust and corrosion protection.
- Excellent hydrolytic stability.
- Long service life.
- Easily recycled.

APPLICATIONS



- Recommended for enclosed helical, herringbone, straight, spiral bevel, and, spur gears, and bearings operating in environmentally sensitive areas such as off-shore drilling and production platforms.
- Consult owner’s manual for proper lubricant selection.

Environmental Products

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Manufactured in USA

CL10171

PROPERTIES**Typical Properties for CLARION Green Gear Lubes:**

| ISO Grade | 220 | 320 | 460 |
|-------------------------------|-------------|-------------|-------------|
| Material Code | 633558009 | 633556009 | 633554009 |
| Gravity, °API ASTM D4052 | 29.3 | 28.8 | 28.4 |
| Flash Point, COC, °F ASTM D92 | 464 | 468 | 468 |
| Pour Point, °C (°F) ASTM D97 | -7 (19) | -7 (19) | -7 (19) |
| Viscosity ASTM D445 | | | |
| cSt at 40°C | 200 | 315 | 460 |
| cSt at 100°C | 18.8 | 24.3 | 30.6 |
| Viscosity Index, ASTM D2270 | 100 | 98 | 96 |
| Color | Green | Green | Green |
| Water Separation @ 180°F | | | |
| mL-mL-mL (min) ASTM D1401 | 40-38-2(10) | 40-38-2(20) | 40-37-3(10) |
| Four-Ball Wear, mm ASTM D4172 | | | |
| mm @ 20kg | 0.34 | 0.34 | 0.34 |
| mm @ 40kg | 0.44 | 0.44 | 0.44 |
| FZG Scuffing Load Capacity | | | |
| ASTM D5182 | >12 | >12 | >12 |
| ANSI/AGMA 9005-E02 | 5EP | 6EP | 7EP |

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CLARION® ClariPac Oils



OVERVIEW



- Refined by high pressure hydrotreating to produce a technical grade white mineral oil of the highest quality, stabilized with Vitamin E.

FEATURES & BENEFITS



- Exceeds the requirements of U.S. FDA regulation 21 CFR 178.3620 (b), for use as a component of non-food articles in contact with food for human consumption.
- NSF H1 Registered for use in food processing plants under the jurisdiction of the USDA.
- NSF/ANSI/CAN Standard 61: Drinking Water System Components - Health Effects (Grades 90, 200 and 350 only).



ClariPac 90, 200, 350 (only)

APPLICATIONS



- Drawing, stamping, forming, and rolling of aluminum foil used in food packaging.
- As a defoamer in the manufacture of paper and adhesives intended for food packaging.
- Lubrication of textile fibers/fabric used to process food.
- As a plasticizer for rubber used on conveyor belts, hoses, and rollers.
- As a lubricant cleaner and rust preventive for machinery and other equipment in food processing plants.
- As a base oil for the formulation of gel candles.
- As a dust control agent for aggregate materials as well as grains not intended for human consumption such as animal feeds. Not for use in dust control applications for grains intended for human consumption, which require a product meeting US FDA regulation 21 CFR 178.878 such as Clarion Food Grade White Mineral Oils.
- As a slitter oil or other applications where non-staining is critical.
- As a drip oil for water well pump lubrication systems where an NSF H1 food grade lubricant is required or desired. Always consult State and local regulatory agencies requirements for water system lubricant requirements.
- Grades 90, 200, and 350 are recommended for water well pump and other potable water system lubrication applications where an NSF/ANSI/CAN Standard 61 certified lubricant is required or desired.

Technical Grade Products

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Manufactured in USA

CL10113

PROPERTIES



Typical Properties for CLARION ClariPac Oils:

| | Clarion ClariPac 70 | Clarion ClariPac 90 | Clarion ClariPac 200 | Clarion ClariPac 350 | Clarion ClariPac 500 |
|------------------------------------|---------------------|---------------------|----------------------|----------------------|----------------------|
| Material Code | 633531009 | 633532009 | 633533009 | 633539009 | 633540009 |
| Gravity, ASTM D4052, °API | 34 | 33.4 | 32 | 32 | 31 |
| Density, lbs/gallon | 7.1 | 7.14 | 7.23 | 7.23 | 7.25 |
| Flash Point, °C (°F) ASTM D92 | 180 (356) | 190 (374) | 218 (424) | 246 (475) | 246 (475) |
| Pour Point, °C (°F) ASTM D97 | -23 (-9) | -27 (-17) | -12 (10) | -12 (10) | -9 (16) |
| Viscosity | | | | | |
| cSt at 40°C | 12.6 | 16.0 | 37.5 | 65.04 | 107 |
| cSt at 100°C | 3 | 3.5 | 6 | 8.6 | 12 |
| SUS @ 100°F | 72 | 87 | 193 | 337 | 562 |
| Color, Saybolt, ASTM D156 | +20 | +20 | +20 | +20 | +20 |
| NSF/ANSI/CAN Standard 61 Certified | — | ✓ | ✓ | ✓ | — |
| FDA 21 CFR 178.3620 (b) | ✓ | ✓ | ✓ | ✓ | ✓ |
| NSF | H1 | H1 | H1 | H1 | H1 |

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COMPARATIVE VISCOSITY CLASSIFICATIONS

ISO Viscosity Grade

| | 22 | 32 | 46 | 68 | 100 | 150 | 220 | 320 | 460 |
|---------------|------|------|------|-----------------|-------|-------|-------|-------|-------|
| Vis. @ 40 °C | 19.8 | 28.8 | 41.4 | 61.2 | 90 | 135 | 198 | 288 | 414 |
| | 24.2 | 35.2 | 50.6 | 74.8 | 110 | 165 | 242 | 352 | 506 |
| Vis. @ 100 °F | 96 | 135 | 191 | No Requirement* | | 615 | 900 | 1310 | 1880 |
| | 115 | 164 | 234 | 280 | 410 | 750 | 1110 | 1600 | 2300 |
| Vis. @ 100 °C | 4.0 | 4.97 | 6.22 | No Requirement* | | 13.56 | 17.50 | 22.40 | 28.30 |
| | 4.5 | 5.61 | 7.05 | 7.96 | 10.30 | 15.51 | 19.96 | 25.50 | 32.30 |

AGMA Lubricant Number

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------|------|------|-----------------|-------|-------|-------|-------|
| Vis. @ 40 °C | 41.1 | 61.2 | 90 | 135 | 198 | 288 | 414 |
| | 50.6 | 74.8 | 110 | 165 | 242 | 352 | 506 |
| Vis. @ 100 °F | 193 | 284 | No Requirement* | | 918 | 1335 | 1919 |
| | 235 | 347 | 417 | 626 | 1122 | 1632 | 2346 |
| Vis. @ 100 °C | 6.22 | 7.96 | No Requirement* | | 17.50 | 22.40 | 28.30 |
| | 7.05 | 9.09 | 10.30 | 13.56 | 19.96 | 25.50 | 32.30 |

*Viscosities given are not required; however, for “informational purposes,” viscosities listed are calculated assuming an oil with V.I. of 95.

NLGI GREASE CLASSIFICATIONS

The following table shows the worked penetration values for the various NLGI grades of grease.

| <u>NLGI Number</u> | <u>ASTM Worked Penetration at 77°F ± 1° (25°C ± 0.5°)</u> |
|------------------------|---|
| 000 | 445-475 |
| 00 | 400-430 |
| 0 | 355-385 |
| 1 | 310-340 |
| 2 | 265-295 |
| 3 | 220-250 |
| 4 | 175-205 |
| 5 | 130-160 |
| 6 | 85-115 |

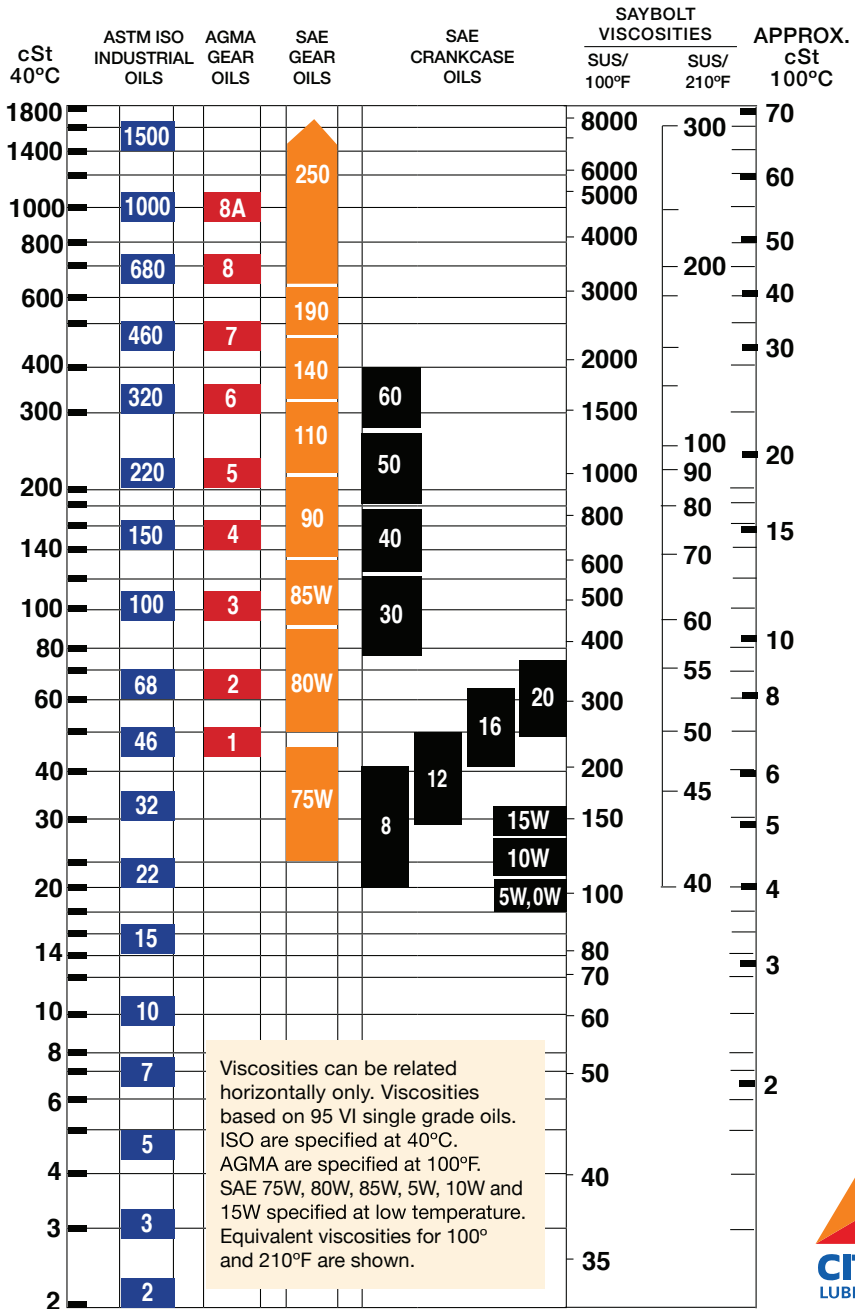
GREASE THICKENER COMPATIBILITY CHART

| | Aluminum Complex | Calcium Stearate | Calcium 12-Hydroxy † | Calcium Sulfonate | Clay | Lithium Stearate | Lithium 12-Hydroxy | Lithium Complex | Polyurea | Sodium Soap |
|----------------------|------------------|------------------|----------------------|-------------------|------|------------------|--------------------|-----------------|----------|-------------|
| Aluminum Complex | C | I | B | I | I | I | I | I* | I | I |
| Calcium Stearate | I | C | C | I | B | I | C | B | C | I* |
| Calcium 12-Hydroxy † | B | C | C | B | C | I | C | C | C | I* |
| Calcium Complex | I | I | B | C | I | I | I | B | C | I |
| Calcium Sulfonate | I | B | C | I | C | I | I | B | B | I |
| Clay | I | I | I | I | C | I | I | I | I | I |
| Lithium Stearate | I | C | C | I | I | C | C | C | C | I* |
| Lithium 12-Hydroxy | I | B | C | I | B | I | C | C | C | I* |
| Lithium Complex | I | C | C | B | B | I | C | C | C | I* |
| Polyurea | I* | I* | C | I | I | I* | I* | I* | C | I |
| Sodium Soap | I | I | I | I | I | I | I | I | I | C |

General Guide -
Exceptions Are Possible

- C - Compatible
- B - Borderline
- I - Incompatible
- I* - Dependent Upon Type
- † - Anhydrous Calcium

Approximate Equivalence of Viscosity Grading Systems



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