



# PRODUCT DATA SHEET



## BEL-RAY® NO-TOX® SYNTRA OIL

**Bel-Ray No-Tox Syntra Oil** is a series of full synthetic PAO-based, premium H1 rated food grade, high performance lubricants. It is available in 11 grades from ISO VG 15 to 1000. It is designed to give exceptional wear and corrosion protection for hydraulic, gear, chain, compressor, bearing and other applications found in the "clean" industries such as food, beverage, pharmaceutical and personal care products.

### *Applications*

- ◆ Suitable for multi-service applications
- ◆ Hydraulic pumps, motors and actuators - vane, piston, radial piston and gear
- ◆ Compressors and vacuum pumps
- ◆ Enclosed gears including spur, bevel and worm gears
- ◆ Circulating systems, chains, bearings, spindles, joints and others

### *Features and Benefits*

- |                                    |   |
|------------------------------------|---|
| ◆ NSF H1 registered                | Use where incidental food contact may occur.  |
| ◆ Bacteriological protection       | Effectively inhibits the growth of certain bacteria, yeast and mold in the lubricant. |
| ◆ Fully synthetic                  | Long life, extended drain intervals.  |
| ◆ Elastomer compatible             | Long seal life, less leakage.   |
| ◆ Outstanding anti-wear properties | Excellent equipment protection.   |
| ◆ Rust and oxidation protection    | Reduces sludge and varnish build-up.  |

### *General Description*

**Bel-Ray No-Tox Syntra Oil** is water-white in color, odorless and tasteless. It exhibits excellent anti-wear properties, high Viscosity Index, exceptional water separability, foam resistance and excellent rust and oxidation protection properties. **Bel-Ray No-Tox Syntra Oil** is also filtered through a 2-micron filter system to achieve the highest cleanliness standards. ISO VG 15 to 100 is filtered to a minimum ISO 4406:1999 cleanliness level of 16/14/12. ISO VG 150 to 1000 is filtered to a minimum ISO 4406:1999 cleanliness level of 18/15/12.

**Bel-Ray No-Tox Syntra Oil**, formulated with the highest quality synthetic oils and food grade additives, meets NSF H1 and FDA requirements for materials that may have incidental contact with food as defined under Title 21 CFR, 178.3570. It is Kosher and Pareve approved, as well as Halal certified.

**Product No. 64233, 64234, 64235, 64236, 64237, 64238, 64239, 64240, 64241, 64242, 64243**

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10/1/2010

*With continual research and development, Bel-Ray Company, Inc. reserves the right to change the information contained herein. The Company is not responsible for misuse or misapplication of its products.*

# BEL-RAY® NO-TOX® SYNTRA OIL

## TYPICAL PROPERTIES

<u>Product No.</u>	<u>64233</u>	<u>64234</u>	<u>64235</u>	<u>64236</u>
ISO Viscosity Grade	15	32	46	68
Viscosity, ASTM D445				
@ 40°C, cSt	15.6	31.4	45.8	67.8
@ 100°C, cSt	3.69	6.04	7.85	10.5
Viscosity, ASTM D2161				
@ 100°F, SUS	84.7	161	234	347
@ 210°F, SUS	38.7	46.5	52.5	61.9
Viscosity Index, ASTM D2270	125	142	142	143
Pour Point, ASTM D97				
°C	-68	-63	-60	-59
(°F)	(-90)	(-81)	(-76)	(-74)
Rust Test, ASTM D665, Procedure A & B	Pass	Pass	Pass	Pass
Foam Test, ASTM D892				
Sequence I, II, III, ml/ml	Nil	Nil	Nil	Nil
Falex EP Test, ASTM D3233 Method B				
Non-seizure Load, lbf	2000	2000	2000	2000
4-Ball Wear Test, ASTM D4172				
@ 1200 rpm, 40 kg, 1 hr, 75°C				
Scar Diameter, mm	0.40	0.40	0.40	0.40
Vickers Vane Pump Test, ASTM D7043				
Total Mass Loss, mg	<15	<15	<15	<15
FZG Visual Test, ASTM D5182				
Failure Load Stage	--	--	--	--
Specific Gravity, ASTM D1298, 60/60°F	0.810	0.835	0.838	0.841
Color	Colorless to Pale Yellow	Colorless to Pale Yellow	Colorless to Pale Yellow	Colorless to Pale Yellow

# BEL-RAY® NO-TOX® SYNTRA OIL

## TYPICAL PROPERTIES

<b><u>Product No.</u></b>	<b><u>64237</u></b>	<b><u>64238</u></b>	<b><u>64239</u></b>	<b><u>64240</u></b>
ISO Viscosity Grade	100	150	220	320
Viscosity, ASTM D445				
@ 40°C, cSt	102	150	220	320
@ 100°C, cSt	14.6	19.3	26.1	34.6
Viscosity, ASTM D2161				
@ 100°F, SUS	523	768	1138	1662
@ 210°F, SUS	77.9	97.8	128	168
Viscosity Index, ASTM D2270	148	148	151	153
Pour Point, ASTM D97				
°C	-55	-53	-47	-45
(°F)	(-67)	(-63)	(-53)	(-49)
Rust Test, ASTM D665, Procedure A & B	Pass	Pass	Pass	Pass
Foam Test, ASTM D892				
Sequence I, II, III, ml/ml	Nil	Nil	Nil	Nil
Falex EP Test, ASTM D3233 Method B				
Non-seizure Load, lbf	2000	2000	2000	2000
4-Ball Wear Test, ASTM D4172				
@ 1200 rpm, 40 kg, 1 hr, 75°C				
Scar Diameter, mm	0.40	0.40	0.40	0.40
Vickers Vane Pump Test, ASTM D7043				
Total Mass Loss, mg	--	--	--	--
FZG Visual Test, ASTM D5182				
Failure Load Stage	12+	12+	12+	12+
Specific Gravity, ASTM D1298, 60/60°F	0.849	0.850	0.852	0.854
Color	Colorless to Pale Yellow	Colorless to Pale Yellow	Colorless to Pale Yellow	Colorless to Pale Yellow

# BEL-RAY® NO-TOX® SYNTRA OIL

## TYPICAL PROPERTIES

<b><u>Product No.</u></b>	<b><u>64241</u></b>	<b><u>64242</u></b>	<b><u>64243</u></b>
ISO Viscosity Grade	460	680	1000
Viscosity, ASTM D445			
@ 40°C, cSt	460	674	1000
@ 100°C, cSt	45.8	61.2	84.1
Viscosity, ASTM D2161			
@ 100°F, SUS	2397	3527	5249
@ 210°F, SUS	221	295	406
Viscosity Index, ASTM D2270	156	159	165
Pour Point, ASTM D97			
°C	-42	-39	-33
(°F)	(-44)	(-38)	(-27)
Rust Test, ASTM D665, Procedure A & B	Pass	Pass	Pass
Foam Test, ASTM D892			
Sequence I, II, III, ml/ml	Nil	Nil	Nil
Falex EP Test, ASTM D3233 Method B			
Non-seizure Load, lbf	2000	2000	2000
4-Ball Wear Test, ASTM D4172			
@ 1200 rpm, 40 kg, 1 hr, 75°C			
Scar Diameter, mm	0.40	0.40	0.40
Vickers Vane Pump Test, ASTM D7043			
Total Mass Loss, mg	--	--	--
FZG Visual Test, ASTM D5182			
Failure Load Stage	12+	12+	12+
Specific Gravity, ASTM D1298, 60/60°F	0.856	0.856	0.859
Color	Colorless to Pale Yellow	Colorless to Pale Yellow	Colorless to Pale Yellow



## Mobilux™ EP 0, 1, 2, 3, 004 and 023

### Grease

#### Product Description

Mobilux™ EP 0, 1, 2, 3, 004 and 023 products are a high performance family of five general-purpose industrial greases and two special-duty semi-fluid greases. These lithium hydroxystearate greases are formulated to provide extra protection against wear, rusting and water washout. They are available in NLGI grades ranging from 00 to 3, with base oil viscosities ISO VG 150 and 320.

Mobilux EP 0, 1, 2 and 3 greases are recommended for most types of industrial applications including heavy-duty applications where high unit pressures or shock loads are present. These greases provide excellent protection against rust and corrosion and resist water wash-out which makes them particularly suitable for equipment where moist or wet conditions are common. Mobilux EP 0 and 1 are suitable for centralised systems. Mobilux EP 2 and 3 are general-purpose greases. The recommended operating temperature range is from -20°C to 130°C but they may be used at higher temperatures if the lubrication frequency is increased accordingly.

Mobilux EP 004 and Mobilux EP 023 are particularly suitable for the lubrication of enclosed gears and bearings in poorly sealed gear cases they can also be used in many other industrial applications where conventional gear oils cannot be retained in gear cases, chain cases, etc. because of leakage due to worn or missing seals. The recommended operating temperature range is -25 to 120°C for Mobilux EP 004 and -15 to 120°C for Mobilux EP 023.

#### Features and Benefits

Mobilux EP greases have a long history of proven performance and have demonstrated good performance in the areas of corrosion protection, low temperature pumpability and high temperature service life. A Timken OK load of 40 lb illustrates their load carrying and extreme pressure capability.

- Reduced wear under heavy or shock loading and vibration for good equipment reliability and availability
- Protection against rust and corrosion and resistance to water washout for equipment protection and good lubrication even in presence of water
- Extended bearing life potential in wet environments for reduced bearing costs and unanticipated downtime
- Good pumpability in centralised systems (Mobilux EP 0 and 1)
- Effective leakage control (Mobilux EP 004 and Mobilux EP 023)

#### Applications

- Mobilux EP 0 and EP 1 provide good low temperature pumpability and are suitable for centralised lubrication systems and other applications where low temperature performance is required.
- Mobilux EP 2 is recommended for multipurpose applications in antifriction and plain bearings, bushings and pins under normal operating conditions.
- Mobilux EP 3 is a stiffer NLGI grade 3 grease recommended for applications where maximum protection against penetration of water or solid contaminants is required.
- Mobilux EP 004 and Mobilux EP 023 are particularly suitable for the lubrication of enclosed gears and bearings in poorly sealed gear cases on most underground mining machinery with the exception of electric motor gearings. Mobilux EP 004 and Mobilux EP 023 can also be used in many other industrial applications where conventional gear oils cannot be retained in equipment such as gear cases, chain cases, because of leakage due to worn or missing seals. Mobilux EP 004 passes the SEW 1008 hour gear test requirement DR.EM.203 mod.

#### Specifications and Approvals

Mobilux EP meets or exceeds the requirements of:	Mobilux EP 0	Mobilux EP 1	Mobilux EP 2	Mobilux EP 3	Mobilux EP 004	Mobilux EP 023
DIN 51825: (2004-06)		KP1K-30	KP2K-30	KP3K-20		
DIN 51826: (2005-01)	GP0G-20				GP00G-20	GP000G-20

Mobilux EP has the following builder approvals	Mobilux EP 0	Mobilux EP 1	Mobilux EP 2	Mobilux EP 3	Mobilux EP 004	Mobilux EP 023
SEW Eurodrive/ PS C Gears					X	

## Typical Properties

	Mobilux EP 0	Mobilux EP 1	Mobilux EP 2	Mobilux EP 3	Mobilux EP 004	Mobilux EP 023
NLGI Grade	0	1	2	3	00	000
Thickener Type	Lithium	Lithium	Lithium	Lithium	Lithium	Lithium
Color, Visual	Brown	Brown	Brown	Brown	Brown	Brown
Penetration, Worked, 25°C, ASTM D 217	370	325	280	235	415	460
Viscosity of Oil, ASTM D 445						
cSt @ 40°C	160	160	160	160	160	320
Timken OK Load, ASTM D 2509, lb	40	40	40	40	40	40
4-Ball Wear, ASTM D 2266, Scar, mm	0.4	0.4	0.4	0.4	0.5	0.4
4-Ball Weld Load, ASTM D 2596, Kg	250	250	250	250	250	250
Dropping Point, D 2265, C	190	190	190	190		
Rust Protection, ASTM D 6138, Distilled Water	0-0	0-0	0-0	0-0	0-0	0-0

## Health and Safety

Based on available information, this product is not expected to produce adverse effects on health when used for the intended application and the recommendations provided in the Material Safety Data Sheet (MSDS) are followed. MSDS's are available upon request through your sales contract office, or via the Internet. This product should not be used for purposes other than its intended use. If disposing of used product, take care to protect the environment.

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9-2015

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1-800-ASK MOBIL (275-6624)

Typical Properties are typical of those obtained with normal production tolerance and do not constitute a specification. Variations that do not affect product performance are to be expected during normal manufacture and at different blending locations. The information contained herein is subject to change without notice. All products may not be available locally. For more information, contact your local ExxonMobil contact or visit [www.exxonmobil.com](http://www.exxonmobil.com)

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## Mobilgrease CM Series

### Grease

#### Product Description

Mobilgrease CM Series products are a family of extra high performance extreme-pressure greases. Mobilgrease CM-P and CM-S are NLGI Grade 2, while Mobilgrease CM-W and CM-L are NLGI Grade 1. All four products are manufactured with a proprietary high-temperature, lithium complex thickener system. They exhibit excellent resistance to softening under severe working, and provide good adhesion and cohesion. An extreme-pressure additive provides exceptional protection against wear, while additional additives enhance resistance to high-temperature oxidation and protection against rust. In addition, Mobilgrease CM-P and Mobilgrease CM-L contain 3% molybdenum sulphide for additional wear protection. Other formulation features provide low-temperature dispensing, very good resistance to water wash, and long service in bearings operating at high temperatures. These heavy-duty, severe-service greases have outstanding structural and chemical stability. Mobilgrease CM Series products won't corrode steel or copper-bearing alloys and are compatible with conventional seal materials.

Mobilgrease CM greases are recommended by ExxonMobil for use in for construction and mining sector applications. Mobilgrease CM-P is recommended by ExxonMobil for use in for highly loaded plain and antifriction bearings and other applications where the three percent molybdenum disulphide and high-temperature thickener system will provide extraordinary performance. Mobilgrease CM-S is recommended by ExxonMobil for use in plain and antifriction bearings in contractor and mining vehicles working under severe operating and weather conditions. The recommended application temperature range for Mobilgrease CM-P and CM-S is -20° C to +145° C Mobilgrease CM-L and CM-W are winter-grade products and are recommended for cold-temperature service. The recommended application temperature range for Mobilgrease CM-L and CM-W is -30° C to +145° C

#### Features and Benefits

Mobilgrease CM Series greases are leading members of the Mobilgrease brand of products, which has gained a world-wide reputation for innovation and performance excellence. Mobilgrease CM Series grease products are designed by our formulation technologists and backed by our world-wide technical support staff.

Mobilgrease CM Series greases are designed specifically to meet the needs of customers with heavily loaded equipment that require high EP/antiwear performance which remain in place even in tough conditions of water wash, high sliding and high temperature. These greases are targeted especially for the severe construction and mining sector and offer the following features and potential benefits:

Features	Advantages and Potential Benefits
Excellent resistance to water, including spray	Maintains excellent lubrication properties and protects equipment in conditions of water contamination
Very good EP and anti-wear protection	Lower maintenance costs and less unanticipated downtime
Better stay-put properties at high temperatures	Excellent performance in high shear, high load applications, especially where grease re-supply is limited
Resists rust and corrosion	Protects equipment in presence of water for reduced maintenance and longer equipment life
Good pumpability at low temperatures	Excellent low temperature properties including start-up in remote locations

#### Applications

##### Recommended by ExxonMobil for use in:

Heavily loaded applications or environments highly contaminated with water, especially in the contractor / mining sector. Specific examples of such applications include:

- Heavy-duty trucks especially, hinge and bucket pins

- Mining and construction equipment

## Specifications and Approvals

**Mobilgrease CM Series meets or exceeds the requirements of the following industry specification:**

DIN 51825: (2004-06)

CM-L

CM-P

CM-W

CM-S

KPF2N-20

## Typical Properties

Mobilgrease CM	CM-L	CM-P	CM-W	CM-S
NLGI Grade	1	2	1	2
Thickener Type	Li-Complex	Li-Complex	Li-Complex	Li-Complex
Color, Visual	Grey	Grey	Orange	Orange
Penetration, Worked, 25° C, ASTM D 217, mm/10	325	280	325	280
Dropping Point, °C, ASTM D 2265	260	260	260	260
Viscosity of Oil, ASTM D 445				
KV @ 40° C	150	320	150	320
Penetration Consistency Change, ASTM D 1831, mm/10	-15	-3	-15	-4
4-Ball EP, Weld Load, ASTM D 2596, kg	250	250	250	250
4-Ball Wear Test, ASTM D 2266, Scar, mm	0.5	0.5	0.5	0.5
Corrosion Prevention, ASTM D 1743, Rating	Pass	Pass	Pass	Pass
Copper Strip Corrosion, ASTM D 4048	1A	1A	1A	1A
Water Washout, ASTM D 1264 1 hr. @ 79° C, %	12	6	12	6

## Health and Safety

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# Product Information



## Almasol® High Temperature Lubricant (1250-1251)

**Long-Lasting, Nonmelting Grease Provides Constant Protection for High-Temperature Bearing Applications**

Bearings operating in or near heat-generating equipment are subject to temperatures that cause ordinary greases to melt and run, leaving critical bearing surfaces unprotected. Almasol® High Temperature Lubricant is designed to withstand high temperatures, staying in place to provide constant lubrication. It also resists oxidation and vaporization. By ensuring longer lubrication intervals and fewer bearing failures, Almasol High Temperature Lubricant helps contribute to increased production and a healthier bottom line.



Source: Cjp24, via Wikimedia Commons

*A plastic extruder such as this is the type of high-temperature application for which Almasol 1250-1251 provides superior bearing protection.*

### Beneficial Qualities

#### **Withstands High Temperatures**

- Heavy base oil and R & O additive formulation ensures extended bearing protection
  - o Won't melt or run out of bearings
  - o Resists oxidation and vaporization
- 1251 (NLGI 1) offers easy pumpability in central lubrication systems

#### **Provides Superior Protection**

- Reduces wear by minimizing metal-to-metal friction, even under heavy loads
- Protects metal from rust and corrosion

#### **Provides Long-Lasting, Cost-Saving Service**

- Exhibits excellent mechanical stability
- Reduces lubricant consumption
- Extends lubrication intervals
- Reduces downtime associated with bearing failures and frequent regreasing

#### **Available Grades**

- NLGI 2 1/2 (1250)
- NLGI 1 (1251)

### Proprietary Additives

LE's proprietary additives are used exclusively in LE lubricants. Almasol High Temperature Lubricant contains Almasol.

**Almasol®** solid wear-reducing additive is able to withstand extremely heavy loads, chemical attack and temperatures up to 1,900°F (1,038°C). It is attracted to metal surfaces, forming a microscopic layer but not building on itself or affecting clearances. Almasol minimizes metal-to-metal contact and the resulting friction, heat and wear.

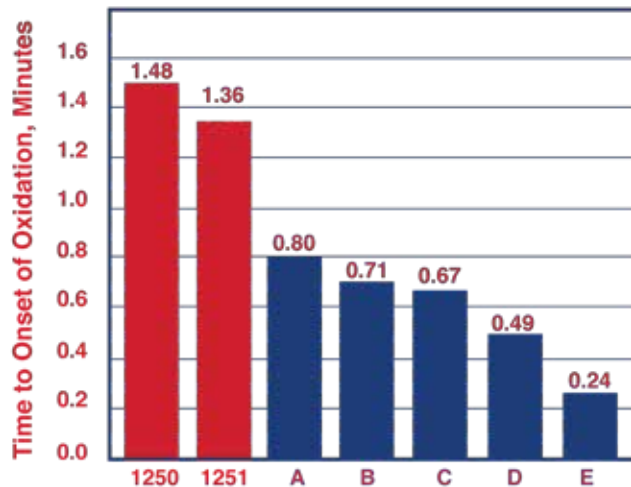




## Almasol® High Temperature Lubricant

### Differential Scanning Calorimetry

DSC is a sophisticated technique for evaluating the oxidation characteristics of a sample of lubricant in a static condition. It is a rapid and reproducible method that measures the heat flow under controlled conditions. Samples are put under pressure in a pure oxygen or air environment and the temperature raised until significant heat flow occurs. This heat flow indicates onset of oxidation. The longer the time taken for heat flow to occur indicates better resistance to oxidation and hence longer lubricant life in the application. Samples may also be run at a fixed temperature and time recorded until onset of oxidation. While there is no exact correlation to field conditions, several minutes in the DSC represents several hundred hours in operation.



### DSC Oxidation, ASTM D5483, 210°C

The DSC time to onset of oxidation of Almasol High Temperature Lubricant is almost double that of the nearest competitor tested. This shows the LE grease's superior resistance to oxidation and its ability to last longer in severe high-temperature applications.

	<u>1250</u>	<u>1251</u>
<b>Thickener Type</b>	Inorganic	Inorganic
<b>Texture</b>	Smooth, Buttery	Smooth, Buttery
<b>Color</b>	Red	Red
<b>NLGI Grade</b>	2 1/2	1
<b>Worked 60 Penetration</b> ASTM D217	250	320
<b>Dropping Point</b> °C (°F), ASTM D2265	None	None
<b>Base Fluid Characteristics</b>		
<b>Viscosity @ 100°C, cSt, ASTM D445</b>	30.9	30.9
<b>Viscosity @ 40°C, cSt, ASTM D445</b>	495	495
<b>Corrosion Prevention</b> DI H2O, ASTM D1743	Pass	Pass
<b>Corrosion Prevention</b> Sea H2O, ASTM D5969	Pass	Pass
<b>Corrosion Prevention</b> Emcor, ASTM D6138	1 Max	–
<b>Four-Ball EP Weld Point</b> kgf, ASTM D2596	160	200
<b>Four-Ball EP Load Wear Index</b> kgf, ASTM D2596	33.1	42.5
<b>Four-Ball Wear @ 75°C, 1,200 rpm, 40 kgf, 60 minutes, mm wear, ASTM D2266</b>	0.77	0.77

### Performance Requirements Met or Exceeded

- H2

### Recommendations

- Although this product is formulated with inorganic thickeners, it contains petroleum oil which, under very high temperatures, can ultimately form carbon and residues as do other greases with petroleum oils.
- May show high-starting torques due to heavy oil.

### Typical Applications

High-temperature applications, including: asphalt plants, brick/ceramic kilns, exhaust fans, kiln car bearings, lime kilns, oven conveyors, pellet mills, plastics and soot blowers

Almasol® is a registered trademark of Lubrication Engineers, Inc.  
LI30019 6-11, rev. 07-17



## Mobilux™ EP 0, 1, 2, 3, 004 and 023

### Grease

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Mobilux EP 004 and Mobilux EP 023 are particularly suitable for the lubrication of enclosed gears and bearings in poorly sealed gear cases they can also be used in many other industrial applications where conventional gear oils cannot be retained in gear cases, chain cases, etc. because of leakage due to worn or missing seals. The recommended operating temperature range is -25 to 120°C for Mobilux EP 004 and -15 to 120°C for Mobilux EP 023.

#### Features and Benefits

Mobilux EP greases have a long history of proven performance and have demonstrated good performance in the areas of corrosion protection, low temperature pumpability and high temperature service life. A Timken OK load of 40 lb illustrates their load carrying and extreme pressure capability.

- Reduced wear under heavy or shock loading and vibration for good equipment reliability and availability
- Protection against rust and corrosion and resistance to water washout for equipment protection and good lubrication even in presence of water
- Extended bearing life potential in wet environments for reduced bearing costs and unanticipated downtime
- Good pumpability in centralised systems (Mobilux EP 0 and 1)
- Effective leakage control (Mobilux EP 004 and Mobilux EP 023)

#### Applications

- Mobilux EP 0 and EP 1 provide good low temperature pumpability and are suitable for centralised lubrication systems and other applications where low temperature performance is required.
- Mobilux EP 2 is recommended for multipurpose applications in antifriction and plain bearings, bushings and pins under normal operating conditions.
- Mobilux EP 3 is a stiffer NLGI grade 3 grease recommended for applications where maximum protection against penetration of water or solid contaminants is required.
- Mobilux EP 004 and Mobilux EP 023 are particularly suitable for the lubrication of enclosed gears and bearings in poorly sealed gear cases on most underground mining machinery with the exception of electric motor gearings. Mobilux EP 004 and Mobilux EP 023 can also be used in many other industrial applications where conventional gear oils cannot be retained in equipment such as gear cases, chain cases, because of leakage due to worn or missing seals. Mobilux EP 004 passes the SEW 1008 hour gear test requirement DR.EM.203 mod.

#### Specifications and Approvals

Mobilux EP meets or exceeds the requirements of:	Mobilux EP 0	Mobilux EP 1	Mobilux EP 2	Mobilux EP 3	Mobilux EP 004	Mobilux EP 023
DIN 51825: (2004-06)		KP1K-30	KP2K-30	KP3K-20		
DIN 51826: (2005-01)	GP0G-20				GP00G-20	GP000G-20

Mobilux EP has the following builder approvals	Mobilux EP 0	Mobilux EP 1	Mobilux EP 2	Mobilux EP 3	Mobilux EP 004	Mobilux EP 023
SEW Eurodrive/ PS C Gears					X	

## Typical Properties

	Mobilux EP 0	Mobilux EP 1	Mobilux EP 2	Mobilux EP 3	Mobilux EP 004	Mobilux EP 023
NLGI Grade	0	1	2	3	00	000
Thickener Type	Lithium	Lithium	Lithium	Lithium	Lithium	Lithium
Color, Visual	Brown	Brown	Brown	Brown	Brown	Brown
Penetration, Worked, 25°C, ASTM D 217	370	325	280	235	415	460
Viscosity of Oil, ASTM D 445						
cSt @ 40°C	160	160	160	160	160	320
Timken OK Load, ASTM D 2509, lb	40	40	40	40	40	40
4-Ball Wear, ASTM D 2266, Scar, mm	0.4	0.4	0.4	0.4	0.5	0.4
4-Ball Weld Load, ASTM D 2596, Kg	250	250	250	250	250	250
Dropping Point, D 2265, C	190	190	190	190		
Rust Protection, ASTM D 6138, Distilled Water	0-0	0-0	0-0	0-0	0-0	0-0

## Health and Safety

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# Blasolube 590

Art. 590

**Description:** Blasolube 590 is an extremely water-resistant high performance grease on a calcium/lithium base, of semi-liquid consistency.

**Application:** Blasolube 590 is suitable for the lubrication of highly loaded roller and friction bearings under difficult operating conditions such as exposure to weather, wetness, dust and high pressure load. It is eminently suitable for the use on excavators, concrete pumps, lifting devices, etc. gravel plants, sewage treatment plants and wherever a high influence of water can be expected. Due to its good eligibility conditions of -30°C the grease is extremely well-suited for the use in grease central lubrication systems and lubricant dispensers.

## Product characteristics

- High resistance to water
- Particular high pressure additives
- High work stability
- Optimum wear protection
- Good adherence and good resistance
- High corrosion protection

## Advantages

- ➔ The lubricity and the sealing properties will remain also under the influence of water
- ➔ The lubrication characteristic is guaranteed also under high pressure
- ➔ The grease consistency will remain also under strong mechanical stress
- ➔ Guarantees a long service life and protection of machine parts
- ➔ Long operating life of the lubricant
- ➔ Machine parts are protected and remain operable for a long time

**Attention!** The maximal permissible steady-state temperature is **+100°C**

## Physical / chemical data:

	Unit	Parameter	Test method
Application temperature range:	-	-30°C to +100°C	
Grease type:	-	Calcium-/Lithium grease	
Colour, appearance:	-	yellow-green fluorescent	
Alloy type:	-	GPOG-30	DIN 51502
Penetration class:	-	NLGI 0	DIN 51818
Normal penetration Pw 60 (60 hub at +25°C):	1/10 mm	355-385	ISO 2137
Density at +20°C:	g/cm <sup>3</sup>	0.918	DIN 51757
Pour point:	°C	140	ISO 2176
Oil viscosity at 40°C:	mm <sup>2</sup> /s	75	DIN 51562-1
Oil separation (after 7 days at 40°C):	weight-%	3	DIN 51817
Shell-Roller Test (mechanical stability):	1/10 mm	390	ASTM D 1831/ISO 2137
EMCOR corrosion protection test:	-	0 / 0	DIN 51802
Speed characteristic (dm x n)	m/min	up to 450	
Flow pressure at -30°C:	mbar	300	DIN 51805

**Resistance:** See overleaf

# Blasolube 590

Art. 590

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<b>Resistance:</b>	Resistant against media:	<ul style="list-style-type: none"><li>– cold water</li><li>– warm water</li><li>– alcalin solutions</li><li>– acid solutions</li></ul>
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<b>Safety and environmental aspects:</b>	ADR/RID:	Not classified as hazardous by transport regulations.
	Precautions:	Do not allow product to get into ground water, water course or sewage system. Danger to drinking water if even small quantities leak into the ground.
	Water hazard class:	Slightly water endangering (WGK 1)
	EC waste code:	12 01 12
	CH waste code:	Identical to EC waste code (as per VeVA of 01.01.06)



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**Conditionnements:** Drum: 180/50 kg • Canister: 14 kg

*The data given on this sheet are based on properties and application possibilities as known to us. Blaser Swissslube AG will assume no liability for damage resulting from the improper use of its products. No general liability can be derived from these data.* 31.549 E (1215)



## Mobil SHC™ Grease 100 EAL Series

### Grease

#### Product Description

Mobil SHC™ Grease 101 EAL and 102 EAL are superior performance greases designed specifically for applications that require environmentally sensitive lubricants. These high performance greases are biodegradable and virtually non-toxic. They are formulated from a biodegradable synthetic ester base oil, carefully chosen high performance additives and a lithium soap thickener. The wax-free nature of the synthetic base fluid, together with its low traction coefficient, provide excellent low temperature pumpability and very low starting and running torque - a significant benefit considering that many environmentally sensitive applications are outdoors.

The Mobil SHC Grease 100 EAL Series is formulated for applications where grease leakage or run out could contaminate soil, groundwater, surface water systems, or indoor plant water systems. They are recommended for plain and rolling element bearings and couplings that operate at temperatures from -40°C to 120°C, with appropriate adjustments to re-lubrication interval. Mobil SHC Grease 101 EAL and 102 EAL are NLGI grade 1 and 2 respectively.

#### Features and Potential Benefits

The Mobil™ EAL brand of environmentally sensitive products has gained an exceptional reputation with OEMs and customers for its excellent performance. These greases provide the optimum balance between the need for environmentally friendly lubricants and the requirement for high performance lubricants for mobile and stationary mechanical equipment. Mobil SHC Grease 100 EAL Series greases are compatible with the previous generation Mobilgrease EAL 100 Series.

Mobil SHC Grease 101 EAL and 102 EAL offer the following benefits:

Features	Advantages and Potential Benefits
Virtually non-toxic in the OECD 203 Method Aquatic Toxicity Test	Minimal effects of spills on environment
Formulated from biodegradable synthetic ester base oil	Biodegradation of material in sensitive areas with minimal non-biodegradable residue, avoidance of costly clean-up in some jurisdictions
Good adhesion and water resistance	Resists water washout, avoiding need for frequent re-greasing
Excellent rust and corrosion protection	Excellent bearing protection in wet conditions, with long bearing life

#### Applications

Mobil SHC Grease 101 EAL and 102 EAL are members of the Mobil family of Environmental Awareness Lubricants (EAL) and are specifically designed for applications where contamination of the environment is a risk.

- Marine equipment
- Water treatment plants
- Dams, locks and water ways
- Construction equipment
- Farm machinery
- Hydroelectric generation plants



## Specifications and Approvals

Mobil SHC Grease 100 EAL meets or exceeds the requirements of:	101	102
DIN 51825: (2004-06)	KPE1K-40	KPE2K-40

## Typical Properties

Mobil SHC 100 Grease EAL Series	101	102
NLGI Grade	1	2
Thickener Type	Lithium	Lithium
Color, Visual	Tan	Tan
ISO Viscosity Grade of Oil	100	100
Dropping Point, ASTM D 2265, °C	180	180
Worked Penetration, ASTM D 217, mm/10 @ 25°C	325	280
Water Washout @ 79°C, ASTM D 1264, wt%	8.0	6.5
EMCOR Bearing Corrosion in Distilled Water, ASTM D 6138, Rating	0,0	0,0
Copper Corrosion, ASTM D 4048, Rating	1a	1a
Four Ball Weld, ASTM D 2596, kgf	200	200
Four Ball Load Wear Index, ASTM D 2596, kgf	35	34
US Steel Mobility @ -18°C, g/min	-	50
Low Temperature Torque @ -30°C, Start/Run, ASTM D 1478, gcm	-	800/170
Biodegradability of ester base oil, OECD 301B, wt%	74	74
Aquatic Toxicity, OECD 203, LL50 ppm	>10000	>10000

## Health and Safety

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## Mobilgrease™ FM 101 and FM 222

### Grease

#### Product Description

Mobilgrease™ FM 101 and FM 222 are high performance multi-purpose products designed specifically for the lubrication of food processing machinery. Mobilgrease FM 101 and FM 222 are formulated with components meeting the requirements of CFR 178.3570, Chapter 21, and are NSF registered as H1 classified lubricants. The Mobilgrease FM 101 and FM222 are manufactured at ISO 22000 certified facilities that also meet the requirements of ISO 21469 helping to ensure that the highest levels product integrity are maintained.

Food processing equipment often operates in a variety of environments, covering the extremes of temperatures from oven to freezer operations, as well as a high level of contamination from water, steam and **cleaning agents**. Mobilgrease FM 101 and FM 222 were developed as multipurpose grease lubricants capable of providing excellent lubrication in all of these environments. Mobilgrease FM 101 and FM 222 are engineered with excellent water resistance to withstand periodic washdown and cleaning operations frequent in the food processing industry. Rust inhibition is a critical property for the industry. Mobilgrease FM 101 and FM 222 are formulated with an excellent rust inhibition package which, working in concert with the water resistance properties, will provide protection against rust. The select base oils coupled with excellent thickener shear stability translates into an ability to provide lubrication over a wide range of speeds, loads and temperatures. Mobilgrease FM 101 and FM 222 are also formulated to handle a variety of loads, exhibiting good protection against wear and shock load conditions.

Mobilgrease FM 101 and FM 222 were designed to meet many global performance and cultural requirements, including:

- NSF H1 Registered
- DIN 51825 KPF1K -20 (for Mobilgrease FM 101)
- DIN 51825 KPF2K-20 (for Mobilgrease FM 222)
- Kosher/Parve
- Halal

#### Features and Benefits

Mobilgrease FM 101 and FM 222 belong to the Mobilgrease brand of products, which has gained a worldwide reputation for innovation and performance excellence. Mobilgrease FM 101 and FM 222 are designed by ExxonMobil formulation technologists and backed by its worldwide technical support staff.

Mobilgrease FM 101 and FM 222 greases have been designed specifically to meet the needs of the food processing industry that requires excellent water resistance, rust protection and a lubricant able to provide oil to the load zones reliably under high shear conditions. These greases offer the following features and potential benefits:

Features	Advantages and Potential Benefits
Excellent water resistance and rust protection	Helps provide superb equipment protection during frequent equipment cleaning operations
Excellent thickener shear stability	Product exhibits excellent stability for long periods of time, helping to provide oil more consistently between relubrication cycles
NSF H1 registered, DIN 51825 certified, Kosher/Parve, Halal	Engineered to meet global requirements, presenting a multi-purpose solution to the food processing industry around the world
Manufactured in facilities registered to ISO 21469	Product integrity assurance through independent verification

#### Applications

Mobilgrease FM 101 and FM 222 greases are recommended for multi-purpose lubrication of food processing equipment where NSF H1 registration is required. The food industry includes food processing, beverage, medical and packing industries for a wide range of cultures.

Applications include:

- General rotating equipment lubrication
- Conveyor bearings
- Equipment central lubrication systems (Mobilgrease FM 101)
- Anti-friction roller bearings under heavy or shock loading
- Linkages and slides
- Joints

## Specifications and Approvals

<b>Mobilgrease FM meets or exceeds the requirements of:</b>	<b>FM 101</b>	<b>FM 222</b>
FDA 21 CFR 178.3570	X	X
DIN 51825 (2006:06)	KPF1K -20	KPF2K -20

<b>Mobilgrease FM has the following builder approvals:</b>	<b>FM 101</b>	<b>FM 222</b>
Fives Cincinnati	P-72	P-64
Kosher/Parve	X	X
Halal	X	X

<b>Mobilgrease FM is Registered to the requirement of:</b>	<b>FM 101</b>	<b>FM 222</b>
NSF H1	X	X
NSF Registration Number	141881	136449

## Typical Properties

	<b>Mobilgrease FM 101</b>	<b>Mobilgrease FM 222</b>
NLGI Grade	1	2
Thickener Type	Aluminum Complex	Aluminum Complex
Color, Visual	White	White
Penetration, Worked, 25° C, ASTM D 217, mm/10	325	280
Dropping Point, °C, ASTM D 2265	260	260
Viscosity of Oil, ASTM D 445		
cSt @ 40° C	100	220
Penetration Consistency Change, 100,000 Stroke, Change from Worked Pen, ASTM D 1831, mm/10	+20	+20
4-Ball Wear Test, ASTM D 2266, Scar, mm	0.50	0.50
Corrosion Prevention, ASTM D 1743, Rating	Pass	Pass
Copper Strip Corrosion, DIN 51811	1b	1b
4-Ball Weld Load, ASTM D 2596, Kg	315	315
FE-9 (DIN 51821, A-Unshielded), L50, 100 hours, Deg. C	120	120

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**ISO 12924: L-XDCEB2**  
**DIN 51502: KPHC2K-40**



EXTREME  
PRESSURE



FOOD  
GRADE



HEAVY  
LOADS



WATER  
RESISTANT

## PRODUCT DESCRIPTION

ALUTAC 662 FM is an H1 approved, high performance, universal food machinery grease based on an aluminium complex thickener system, pharmaceutical grade synthetic PAO oils and polymer.

The thickener system and high viscosity base oil combine with antioxidant and EP/AW additives to give a product with very good load carrying capability as well as excellent resistance to both water and oxidation.

The properties of ALUTAC 662 FM make it suitable for a variety of bearing applications used within the food

industry operating across a wide temperature range and under medium speed, highly loaded conditions. It can also be used in automatic, centralised lubrication systems where pump pressures are sufficient.

ALUTAC 662 FM is registered under No. 139855 at NSF according to H1 regulations for lubricants with the potential for incidental food contact.

This product is manufactured in an ISO 21469 certified facility.



Nonfood Compounds  
Program Listed H1  
Registration N° 139855



KOSHER  
CERTIFIED



HALAL  
CERTIFIED

Excellent water resistance  
Good load carrying capacity  
Excellent resistance to shock loads

## TYPICAL TECHNICAL DATA

Thickener		Aluminium Complex
Base fluid		Synthetic white oils / Polymer
Texture		Smooth
Colour	Visual	White
NLGI Grade	ASTM D 217 mod	2
Dropping point	IP 396	> 230°C
Base oil viscosity at 40°C	ASTM D 7152	330 mm <sup>2</sup> /s
Base oil viscosity at 100°C	ASTM D 7152	40 mm <sup>2</sup> /s
Penetration 60 strokes	ISO 2137	265 - 295
4-ball weld load	ASTM D 2596	> 400 Kg
Water resistance at 90°C	DIN 51807:1	0 - 90
Water wash out at 79°C	ISO 11009	< 10 %
SKF R2F B at 120°C	SKF	Pass
Density	IP 530	920 kg/m <sup>3</sup>
Temperature range*		-40 to +120°C (short time 130°C)

## RECOMMENDATIONS:

Store the product at ambient temperature in inside area and segregated from other non-H1 lubricants.

Avoid exposure of the product to temperatures above 35°C.

Shelf life : 3 years from manufacturing date (unopened)

The information above is based on current production data and can vary within given tolerances.

\*Temperature range is given as a guideline only.

Information and data can be changed without previous notification. This information replaces prior editions.

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## Mobil Vactra™ Oil Numbered Series

### Way and Slide Lubricants

#### Product Description

The Mobil Vactra™ Oil Numbered Series are premium-quality slideway lubricants specifically designed to meet the requirements for accuracy, aqueous coolant separability, and equipment protection of precision machine tools.

The Mobil Vactra Oil Numbered Series is carefully formulated from high-quality base stocks and performance balanced with an advanced additive system that provides controlled frictional properties, compatibility with aqueous metal working fluids and corrosion protection of parts and equipment. The unique additive package provides exceptional frictional properties on a wide variety of way materials, including steel on steel and steel on polymer, reducing stick-slip and chatter. This allows smooth, uniform motion at design travel speeds enhancing machine productivity and accuracy helping to prolong tool life and enhance surface finish. The Mobil Vactra Oil Numbered Series has been optimized to provide separability from many aqueous coolants while minimizing the corrosive effects of high pH coolants on lubricated surfaces.

#### Features and Benefits

The Mobil Vactra Oil Numbered Series has been developed and specifically designed to provide an extra margin of machinery protection by satisfying the stringent demands of slide ways. The oils exhibit excellent lubricity and load-carrying performance contributing significantly to improving the production of quality parts. The Mobil Vactra Oil Numbered Series provides separability from many water and aqueous coolants reducing the potential negative effects of cross contamination which helps to enhance the service life and performance of both the lubricant and coolant.

#### Advantages and Potential Benefits

Feature	Advantages and Benefits
Controlled Frictional Characteristics	Helps eliminate stick slip; allows consistently accurate machining
Multi-material Capabilities	Suitable for a wide range of way material combinations allowing for product consolidation
Water and Aqueous Coolant Separability	Helps improve the life and performance of many aqueous coolants
Adhesiveness	Prevents removal of lubricant from critical surfaces
Long Term Rust and Corrosion Protection	Helps reduce the deterioration of sliding surfaces in the presence of water and aqueous coolants

#### Applications

Mobil Vactra Oil Numbered Series products are recommended for the lubrication of machine tool slideway systems. They are designed for use with combinations of cast iron, steel and non-metallic way materials. Mobil Vactra Oil Numbered Series may be applied by hand, forced-feed lubricator or in flood application by circulation system.

- Mobil Vactra Oil No. Series of products are suitable for use in applications that require Fives Cincinnati specifications P53, P47, and P50.
- Mobil Vactra Oil No. 1 and No. 2 are recommended for horizontal slideways on small to medium size machine tools. They are also suitable for circulating application in large machines and as a moderate duty hydraulic fluid.
- Mobil Vactra Oil No. 3 and No. 4 are normally recommended for large machines where way pressures are high and good precision is required. They are also recommended for vertical and inclined slideways where drain-down can be a problem and for moderate service machine tool gear drive mechanisms.

- Mobil Vactra Oil Numbered Series can be used for lubrication of ball screws, linear guides, headstocks, translating screws.
- Mobil Vactra Oil Numbered Series is recommended for applications where oil contamination of the aqueous coolants shortens coolant batch life.

## Typical Properties

Mobil Vactra Oil Numbered Series	No. 1	No. 2	No. 3	No. 4
ISO Viscosity Grade	32	68	150	220
cSt @ 40 C, ASTM D445	32	68	156	221
Flash Point, ASTM D92, °C	216	228	248	240
Pour Point, ASTM D97, °C	-30	-18	-6	-3
Copper Strip Corrosion, ASTM D 130C, 3 h	1B	1B	1B	1B
Rust Protection, ASTM D 665B	Pass	Pass	Pass	Pass
FZG Load Support, ISO 14635, Fail Stage	13	13	13	13

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## Mobil Polyrex™ EM

### Electric Motor Bearing Grease

#### Product Description

Super-premium Mobil Polyrex™ EM Series greases are specially formulated for electric-motor bearings. The advanced thickener formulation and proprietary manufacturing techniques provide improved bearing performance and protection for long electric motor life.

#### Features and Benefits

Mobil Polyrex EM and Mobil Polyrex EM 103 offer the following features and benefits:

Features	Advantages and Potential Benefits
Outstanding grease life	Outstanding long-life, high-temperature lubrication of ball and roller bearings, particularly in sealed-for-life applications
Advanced polyurea thickener	Increased durability versus conventional polyurea greases when subjected to mechanical shear forces
Excellent corrosion resistance	Mobil Polyrex EM and Mobil Polyrex EM 103 provide protection against rust and corrosion. Mobil Polyrex EM provides additional protection under mild salt-water wash conditions versus Polyrex EM 103
Low-noise properties	Mobil Polyrex EM is suitable for lubrication of ball bearings in many noise-sensitive applications

#### Applications

Mobil Polyrex EM greases are recommended by many major bearing and electric motor manufacturers for long-life lubrication of electric motor ball and roller bearings.

Mobil Polyrex EM 103 is more specifically recommended for applications such as vertically mounted bearings, or very large motors where a stiffer grease consistency may be required by the OEM, and low noise properties are not required.

Mobil Polyrex EM greases have been shown to be compatible with a number of ExxonMobil lithium complex greases, as well as competitive electric motor mineral polyurea products, as determined by the methodology of ASTM D6185. For specific questions about grease compatibility, contact your Mobil representative.

Key applications include:

- Electric motor bearings
- Fin fan bearings
- High-temperature pump bearings
- Factory-filled, sealed-for-life ball bearings
- Ball or roller bearings operating at high temperatures where low oil separation is required
- Mobil Polyrex EM for ball or roller bearings operating in noise sensitive environments

#### Specifications and Approvals

Mobil Polyrex EM meets or exceeds the requirements of:	Mobil Polyrex EM	Mobil Polyrex EM 103
DIN 51825: (2004-06)	K2P-20	

## Typical Properties

	Mobil Polyrex EM	Mobil Polyrex EM 103
NLGI Grade	2	3
Color	Blue	Blue
Base Oil Viscosity, ASTM D 445		
cSt @ 40°C	115	115
cSt @ 100°C	12.2	12.2
Viscosity Index, ASTM D 2270	95	95
Penetration, ASTM D217 worked, 60x, mm/10	285	250
Penetration Change after 100.000 strokes, ASTM D217, mm/10 40		40
Dropping Point, ASTM D 2265, °C (°F)	260	270
Oil separation test, ASTM D 1742, %	0.5	0.1
High Temperature Grease Life, ASTM D 3336, Hours @ 177°C	750+	750+
4-Ball Wear Scar, ASTM D 2266, @ 40kg, 1200 rpm, 75°C, 1 hr, mm	0.41	0.6
Low Temperature Torque, ASTM D 1478, g-cm @ -29°C		
Starting	7500	9300
Running	800	1000
EMCOR Corrosion Performance, 10% Synthetic Sea Water ASTM D 6138 (Prepared As Per ASTM D 665B)	0,1 (No Rust)	
Rust Protection, ASTM D 1743, Distilled Water	Pass	Pass
Copper Corrosion Resistance, ASTM D 4048	1A	1A
Water Washout, ASTM D 1264, %	1.9	0.8

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# Mobil SHC Polyrex Series

## High Temperature Synthetic Polyurea Greases

### Product Description

The Mobil SHC Polyrex series of greases are specifically designed to improve your productivity by solving high temperature lubrication problems in both general industry and food processing applications. Developed using advanced Polyurea technology, these synthetic, polymer-enhanced greases bring a high temperature solution to the market while carrying a full NSF H1 registration.

The Mobil SHC Polyrex Series of greases are designed to offer a combination of high temperature performance, excellent water resistance, and the balanced wear performance consistent with Mobil grease products. Using advanced Polyurea thickener technology, ExxonMobil researchers developed a unique combination of synthetic oils that achieve excellent high temperature performance able to provide lubrication up to 170°C. Even at these extreme temperatures, Mobil SHC Polyrex resists oxidation and loss of structural stability allowing re-lubrication intervals to be extended while maintaining equipment protection. The carefully balanced combination of thickener, base oils, and additives yields a grease with excellent load carrying capabilities and rust protection. Mobil SHC Polyrex is also highly resistant to water and has excellent corrosion protection providing added protection to equipment in wet, humid environments and applications where water wash downs are frequent.

All Mobil SHC Polyrex greases are NSF H1 registered and meet the requirements of Kosher/Parve enabling their use in food processing applications in equipment that is both above and below the processing line as a high temperature and general purpose H1 grease.

### Features and Benefits

The Mobil brand of oils and greases is recognized around the world for its innovation and outstanding performance. Mobil SHC Polyrex utilizes the advanced thickener technology of the Mobil Polyrex family of greases to deliver a high performance, problem solving product for some of industries' toughest lubrication problems. Mobil SHC Polyrex brings that performance to another level through the addition of a unique combination of synthetic oils, polymer enhancement and a balanced additive package that is geared to deliver solutions to tough lubrication problems.

Features	Advantages and Potential Benefits
Outstanding high temperature performance, up to 170C.	Provides protection under harsh conditions and allows for extended re-lubrication or maintenance intervals.
Excellent load carrying capability	Reduced bearing wear under heavy loads
Excellent Water Resistance and corrosion protection	Reduces lubricant consumption and increase bearing protection where water wash downs are common. Reduced rust and corrosion extends equipment life.

### Applications

Application Considerations: While Mobil SHC Polyrex Series greases are compatible with many Polyurea and lithium complex greases, admixture may detract from their performance. Consequently it is recommended that



before changing a system to one of the Mobil SHC Polyrex greases, it should be thoroughly cleaned out to achieve the maximum performance benefits. While the Mobil SHC Polyrex greases share many performance benefits, their applications are best described in terms of each product grade:

- Mobil SHC Polyrex 005 is NLGI 00 grade grease specifically designed for use in central grease systems. The enhanced pump ability and low temperature mobility make it an ideal choice for grease systems subject to low ambient temperatures, such as those found in food processing freezers or in outdoor applications. Mobil SHC Polyrex 005 may also be used for the lubrication of enclosed gears where oil leakage may be a concern. Its recommended operating temperature range is –30 to 160 °C.
- Mobil SHC Polyrex 222 is a multi-purpose, NLGI 2 grease recommended for heavy-duty plain and anti friction bearings. It uses an ISO VG 220 synthetic base fluid. Mobil SHC Polyrex 222 has a recommended operating temperature range of -30° C to 160° C.
- Mobil SHC Polyrex 462 is NLGI 2 Grade grease with ISO VG 460 synthetic base fluid and is recommended for heavily loaded plain and antifriction bearings. It is also recommended for bearings where extreme temperatures are a concern such as steam heated rolls, exhaust fan bearings, felt roll bearings, and oven conveyor bearings. The recommended operating temperature range is -20C to 170°C.

## Specifications and Approvals

Mobil SHC Polyrex greases meet or exceeds the following industry specifications*	Mobil SHC Polyrex 005	Mobil SHC Polyrex 222	Mobil SHC Polyrex 462
DIN 51825 (2004:06)	GPF00K-30	KPF2P-30	KPF2P-20
NSF H1 Registration #	141947	141946	139558
Kosher/Parve	X	X	X

## Typical Properties

Mobil SHC Polyrex Series	Mobil SHC Polyrex 005	Mobil SHC Polyrex 222	Mobil SHC Polyrex 462
NLGI Grade	00	2	2
Thickener Type	Polyurea	Polyurea	Polyurea
Viscosity, ASTM D 445:			
cSt @ 40°C	220	220	460
cSt @ 100°C	37	40	40
Color	White	White	White
Penetration, Worked, 25 C, ASTM D 217, 0.1 mm	415	275	280
Dropping Point, ASTM D 2265, Deg C	----	260	270
Water Washout, 79 C, ASTM D 1264, % Wt. Loss	37	7	5
Water Spray-Off, ASTM D 4049, % Wt. Loss	----	28	30
4-Ball Wear, ASTM D 2266, Scar, mm	0.38	0.48	0.46
4-Ball Weld Point, ASTM D 2596, kg	315	315	400
Bearing Corrosion, ASTM D 1743, Rating	Pass	Pass	Pass

Mobil SHC Polyrex Series	Mobil SHC Polyrex 005	Mobil SHC Polyrex 222	Mobil SHC Polyrex 462
EMCOR Rust Test, ASTM D 6138, Distilled Water, Rating	0,0	0,0	0,0
Wheel Bearing Leakage, ASTM D 4290, 160 °C, Grams Leakage	----	1	<1
FE9, DIN 51821, Var. A, 160 Deg C, L50, Hours	----	350	>350
Pumpability, USS DM-43, grams/minute @ -18 °C	40	18	7

### Health and Safety

Based on available information, this product is not expected to produce adverse effects on health when used for the intended application and the recommendations provided in the Material Safety Data Sheet (MSDS) are followed. MSDS's are available upon request through your sales contract office, or via the Internet. This product should not be used for purposes other than its intended use. If disposing of used product, take care to protect the environment.

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ExxonMobil Lubricants & Specialties

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## Mobil Polyrex EP 2

### Multi-purpose Grease

#### Product Description

Mobil Polyrex EP 2 is a shear-stable polyurea grease with excellent extreme-pressure (EP) and load-carrying characteristics. The proprietary polyurea thickener system exhibits excellent resistance to oxidation and oil separation at operating temperatures as high as 160°C (320°F). With its outstanding high-temperature oxidation stability, load-carrying capability, shear stability, water resistance and wide operating temperature range, Mobil Polyrex EP 2 is an excellent multi-purpose grease for a wide array of industrial and construction applications.

#### Features and Benefits

##### EXTREME-PRESSURE PROTECTION AND THERMAL STABILITY

Mobil Polyrex EP 2 contains a proprietary extreme-pressure (EP) additive package that provides load-carrying capability without degrading the thermal stability of the grease at high temperatures. Conventional sulfur- and phosphorus-base EP additives used in other multi-purpose greases begin to oxidize rapidly at temperatures above 250°F. Mobil Polyrex EP 2, on the other hand, continues to provide a high level of wear and extreme-pressure protection up to 160°C (320°F) without rapid oxidation of the anti-wear or EP additives.

The outstanding high temperature lubrication life of Mobil Polyrex EP 2 is impressively demonstrated in the ASTM D 3336 grease life test - with an average ASTM D 3336 life of 490 hours, 3 to 5 times better than the high-temperature lubrication life of competitive multi-purpose lithium-base greases.

##### SUPERB SHEAR STABILITY

The proprietary polyurea thickener system in Mobil Polyrex EP 2 exhibits excellent durability and stability when subjected to a mechanical shearing force. For example, in the ASTM D 217 cone penetration test, the consistency of Mobil Polyrex EP 2 changed by approximately one NLGI grade after being worked for 100,000 strokes - similar to the performance of high-quality lithium-complex greases, which are the benchmark for excellent shear stability. By contrast, competitive polyurea greases containing shear-unstable thickener technology can soften by three NLGI grades under the same test conditions. Good mechanical shear stability is important in roller bearing applications where excessive grease softening may lead to grease leakage or purging from the bearing.

##### EXCELLENT WATER RESISTANCE

The Mobil Polyrex EP 2 formulation is enhanced with water-resistant polymers that enable it to form a tenacious protective film in applications that are heavily contaminated with water. The excellent results obtained for Mobil Polyrex EP 2 in the water washout (ASTM D 1264) and water spray-off (ASTM D 4049) tests demonstrate the grease's ability to stay in place, even in the presence of a pressurized water spray.

In summary, Mobil Polyrex EP 2 offers the following features and benefits:

- Outstanding high-temperature oxidation stability
- Excellent mechanical shear stability
- Thermally stable extreme-pressure (EP) protection
- Wide operating temperature range -20°C (-4°F) to 160°C (320°F)
- Exceptional resistance to water spray-off and water washout

#### Applications

Mobil Polyrex EP 2 is an excellent multi-purpose grease for a wide array of industrial and construction applications.

## Typical Properties

### Mobil Polyrex EP 2

Thickener Type	Polyurea
NLGI Grade	2
Color	Green
Base Oil Viscosity, ASTM D 445	
cSt @ 40°C	235
cSt @ 100°C	18.4
Mineral Oil Viscosity Index, ASTM D 2270	85
Penetration, ASTM D217 worked, 60x, mm/10	280
Penetration, ASTM D217 worked, 100,000, mm/10	310
Dropping Point, ASTM D 2265, °C (°F)	280 (535)
High Temperature Grease Life, ASTM D 3336, Hours @ 177°C	490
4-Ball Weld, ASTM D 2596, kg	500
4-Ball Wear Scar Diameter, @1200 rpm, 40kg, 75°C, 1 Hour, mm	0.4
Timken OK Load, ASTM D 2509, lb	45
Low Temperature Torque, ASTM D 4693, -40°C, Nm	12.2
Low Temperature Torque, ASTM D 1478, Torque @ Startup/1 Hour in gcm and -20C°	1600/180
Oil separation test, ASTM D 1742, %	0.3
Water Spray-off, ASTM D 4049, %	15
Water Washout, ASTM D 1264, @ 79°C, %	2.7
Rust Protection, ASTM D 1743	Pass

## Health and Safety

Healthy skin condition depends on cleanliness. Oils and greases in contact with skin can result in plugging of sweat glands and hair follicles. This may lead to skin irritation or dermatitis. Accordingly, protective gloves, clothing and equipment should be worn and good personal hygiene should always be practiced. Oils, greases, and other foreign materials should be removed from the skin promptly. Soiled clothing should not remain in contact with the skin. Mobil Polyrex EP 2 is readily removed from the skin by waterless hand cleaners followed by washing with soap, warm water, and a skin brush. It can be removed from clothing by dry-cleaning with solvents or by washing with laundry detergents. If Mobil Polyrex EP 2 comes in contact with the eyes, flush the eyes with fresh water until the irritation subsides.

As in the case of all greases, if there is a puncture wound with grease contamination, or an injury where grease is injected into body tissue, such as a "grease gun injury," prompt medical assistance should be obtained.

**WARNING:** "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks or other sources of ignition; they may explode and cause injury or death. Do not attempt to clean since residue is difficult to remove, and even a trace of remaining material constitutes an explosive hazard. "Empty" drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Based on available information, this product is not expected to produce adverse effects on health when used for the intended application and the recommendations provided in the Material Safety Data Sheet (MSDS) are followed. MSDS's are available upon request through your sales contract office, or via the Internet. This product should not be used for purposes other than its intended use. If disposing of used product, take care to protect the environment.

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1-2015

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Typical Properties are typical of those obtained with normal production tolerance and do not constitute a specification. Variations that do not affect product performance are to be expected during normal manufacture and at different blending locations. The information contained herein is subject to change without notice. All products may not be available locally. For more information, contact your local ExxonMobil contact or visit [www.exxonmobil.com](http://www.exxonmobil.com)

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## Chainsaw oils

Art. 762 / 763

**Description:** Mineral-oil based chainsaw oils Art. 762 and 763 with high efficiency and a wide application range. Selected additives guarantee excellent adhesion and wear protection properties. The different viscosities of these two oils enable optimal choice of product according to application.

**Application range:** – These oils are ideal for lubricating chainsaws at all operating temperatures according to climatic conditions.  
– Also ideal for other lubrication points requiring an oil with good adhesion.

### Product characteristics

- Excellent adhesion
- Outstanding lubrication, high load capacity
- No resin deposits on lubricated components
- Contains anti-corrosion additives
- Good penetration properties

### Benefits

- The oil is not rejected by centrifugal force; ensures efficient ongoing lubrication of the chain and blade.
- Cooling and lubrication viable with chainsaw equipment, limits wear, extends chain and blade life.
- Prevents malfunctioning due to sticking or resin deposits on machine components.
- Effectively protects metallic components against corrosion.
- Rapidly penetrates the chain links and pins to prevent wear.

**Safety and environmental aspects:** – Old unusable chainsaw oil must be disposed of according to the «Decree on Special Category Waste Disposal» (ODS).  
– Waste material code: 1481, Waste material code LMD/CE: 13 02 04  
– Not classified as toxic  
– OFSP T No 611500  
– ADR/SRD: Not classified as hazardous  
– Precautions: weak water pollutant

### Physical/ chemical data:

Art. Nr.	Viscosity class ISO VG	Viscosity index VI	Pour point	Flashpoint	Density	Load capacity to Brugger:
	DIN 51519 ISO 3448	DIN ISO 2909	DIN ISO 3016	DIN ISO 2592	DIN 51757	
762	68	110	-24°C	200°C	0.875 g/cm <sup>3</sup>	38 N/mm <sup>2</sup> (380 bar)
763	100	90	-15°C	> 200°C	0.9 g/cm <sup>3</sup>	30 N/mm <sup>2</sup> (300 bar)



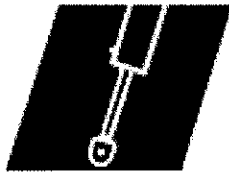
### Container sizes:

Drum: 50 kg • 180 kg

Canister: 10 kg (Art. 762 only) • 25 kg

*The data given on this sheet are based on properties and application possibilities as known to us. Blaser Swissslube AG will assume no liability for damage resulting from improper use of the products. No general legal liability can be derived from these data. 30.530 E (0805)*

# SYNTEMP CHAIN OIL



LUBRICATION



**TOTAL**

## Synthetic (Diester) Chain and Conveyor Oil.

### APPLICATIONS

Chains and conveyors.

- **SYNTEMP CHAIN OILS** are fully synthetic lubricants designed to lubricate bearings, chains, slides, and gears in applications where temperatures often exceed 500°F.
- **SYNTEMP CHAIN OILS** are formulated with special synthetic diesters and polymers that provide exceptional performance in severe conditions encountered in drying ovens, leaving no carbon or solid residues.
- Uses include: roller chains and sliding conveyors at low and high temperatures, plain and anti-friction bearings, cams, slides, circulating oil systems, lithographing ovens, tenter frames, annealing ovens, gypsum board kilns, plywood kilns, and building insulation.
- When tested on oven chains against standard SAE 50 mineral oil at 450°F for 2 hours: 75% of **SYNTEMP 220M** remained, 50% of **SYNTEMP 150M** remained, and only 3% SAE 50 mineral oil remained.

#### Recommendations for use:

- When a light colored product is needed, use **SYNTEMP 150**.
- For the lowest volatility rate, use **SYNTEMP 320**.
- For minimum consumption, use **SYNTEMP 320**.
- For the slowest evaporation rate, use **SYNTEMP 220M**.

### ADVANTAGES

Long equipment life and high operating reliability.

- Temperature stable.
- High protection against wear insuring maximum equipment life.
- Resistance to hydrolysis and oxidation.
- Low volatility which reduces consumption.
- Longer life of chains, conveyors, and rails.
- No varnish, carbon, or solid deposits.
- Low friction reduces amperage.

TYPICAL CHARACTERISTICS	METHODS	SYNTEMP CHAIN OIL				
		32	150	150M	220M	320
Appearance	Visual	Yellow	Yellow	Green	Green	Yellow
Viscosity at 40°C, cSt.	ASTM D 445	32.0	150.0	150.0	220.0	320.0
Viscosity at 100°C, cSt	ASTM D 2270	5.6	15.0	15.0	16.4	23.0
Viscosity Index	ASTM D 2270	130	100	100	80	80
Flash Point, COC, °F	ASTM D 92	470	450	480	540	465
Fire Point, COC, °F	ASTM D 92	530	540	540	590	540
Pour Point, °F	ASTM D 97	-50	-20	-20	-25	-20
Contains "Soluble Moly"		No	No	Yes	Yes	No

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