

*Your Technical Partner*

# **MasterLub** **Lubricants**

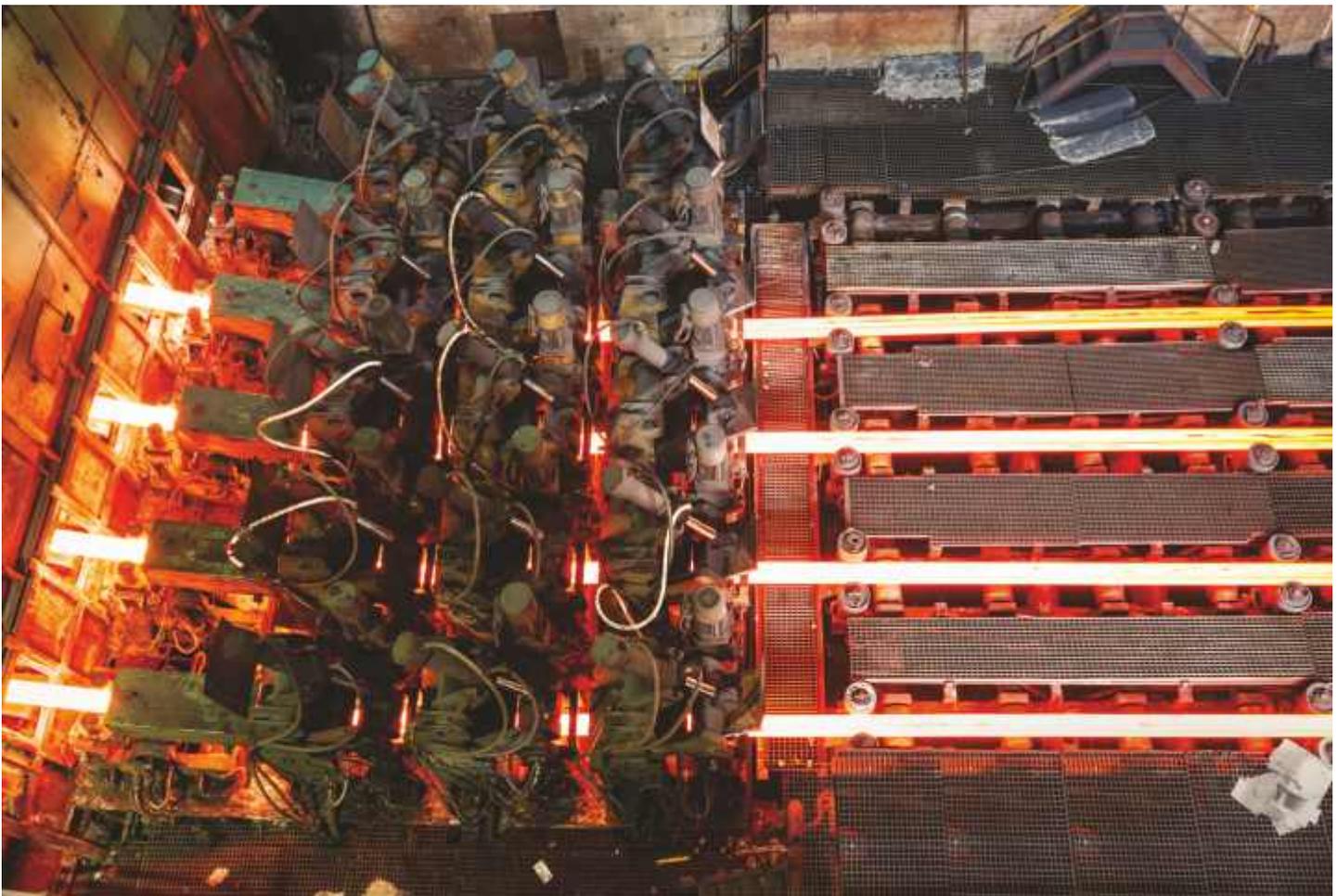


***High performance lubricants  
for Heavy Industries***



# Your Technical Partner **MasterLub** Lubricants

## *Specialized High-Performance Products for Steel Industry*



*Specialty lubricants play a vital role in the steel industry by providing effective lubrication and protection for a variety of equipment and machinery.*

*The steelmaking process is known for its harsh conditions, including process temperatures, abrasive dusts, and high shock loads. At **MasterLub**, we have developed specialty lubricants to ensure trouble-free operation, minimize wear, and prevent potential failures.*

## Continuous Casting Machine (CCM)

*The difficulties encountered in the operation of a Continuous Casting Machine are due to the operating conditions, including high temperatures and the adverse effects caused by cooling water. Resilient lubricants are required throughout the entire production process to withstand temperature variations and the adverse effects of cooling water. The lubricant used should be compatible with the central lubrication system, not carbonize at high temperatures (80-200 degrees Celsius), and should not mix with cooling water or deplete in the bearings. Additionally, it should provide a seal to prevent tufal entry into the bearings.*



*Products we recommend for under these challenging conditions are as follows:*

**Mastergrease** H 460/1,460/2 Therm  
**Mastersteel** CK 460 Therm  
**Mastersynth** HT 460/1 Special  
**Mastersynth** CK .. HP Special series

## Rolling Mill

*The problems encountered in rolling mill roll neck bearings include the entry of cooling water into the bearing, which leads to the deterioration and depletion of the lubricating oil in the bearing, necessitating frequent lubrication. Excessive grease consumption also contributes to the degradation of the cooling water. The weak sealing properties of the lubricant used result in tufal entry into the bearings and lead to bearing damage. Excessive and shock loads cause the rupture of the oil film, consequently resulting in bearing damage.*

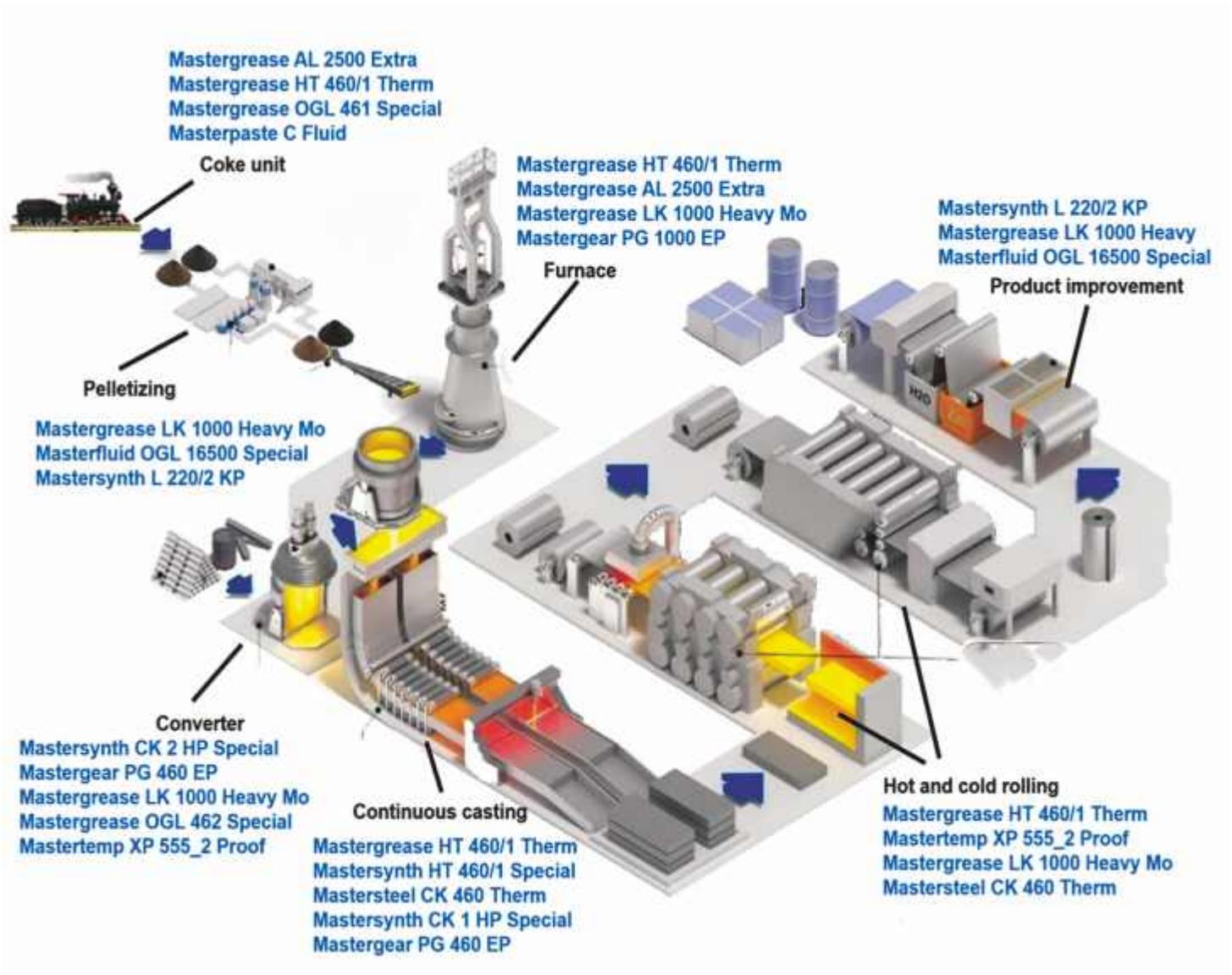


*The products we recommend for continuous production under these challenging conditions are as follows;*

**Mastersteel** CK 460 Therm  
**Mastergrease** LM 460/2 Black

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# Your Technical Partner **MasterLub** Lubricants

## **High-Performance Speciality Lubricants for the Mining Industry**



*Reliable, cost-effective lubrication under difficult operating conditions such as high and low temperatures necessitates the use of high-performance lubricants. An incorrectly selected lubricant can cause rapid structural deterioration at high and low ambient temperatures and can cause problems in the system. In addition, in variable climate conditions, the pumpability of greases becomes even more important.*

**Masterlub** products can withstand these harsh environmental conditions as well as high mechanical and thermal stress, meeting the targeted performance and long service life at a high level. In addition, thanks to the special additive package, our products stand out with their advantages such as wear protection, longer service intervals and minimum energy loss in both mobile and process equipment.

### Lubricants for Mobil Equipments:

| Applications                              | Product                                      | Lubricant Properties   |
|---|--|--|
| Central system lubrication                | Mastergrease LM 150/1 Black                  | Suitable for lubrication points for rolling bearings and plain bearings in all industries. Heavy-duty trucks hinge and bucket pins especially in the Mining and construction equipment   |
| Hydraulic system                          | Masterhydro HS..V series                     | Developed for highly stressed hydraulic systems that require high anti-wear performance and good filtration. Outdoor equipment operating in wide temperature ranges such as machines exposed to cold starting conditions and continuous high temperature operation in off-highway and marine applications. |
| Rear differentials, planetary gear system | Mastergear M..EP series (ISO VG 100 to 1000) | High quality heavy duty gear oils that contain high load and wear protection additives and do not contain lead.  |
|   | Mastergear SH..EP series (ISO VG 46 to 1000) | High temperature resistant synthetic gear oil with very good AW and EP properties.   |

### Lubricants for the crusher :

| Applications  | Product                                      | Lubricant Properties  |
|---|--|---|
| Roller Bearings   | Mastergrease LM 150/1 Black                  | Suitable for lubrication points for rolling bearings and plain bearings in all industries. Very good wear and corrosion protection. Speed factor 500.000 mm/min           |
|   | Mastergrease CSK 220 HP                      | Shows superior performance in applications exposed to heavy loads, temperature and water / steam / chemicals. Speed factor 350.000 mm/min                                 |
|   | Mastergrease CM 460/2 Black                  | Formulated with highly refined mineral oils and MoS2. It provides long lubrication periods and excellent protection thanks to its improved adhesion. Speed factor 200,000 |
|   | Mastergrease LK 1000 Heavy MO                | Multi-purpose extreme pressure high load , low speed and water resistant grease.Speed factor 100.000 mm/min   |
| Gears, Bushes, Plain bearings, Shafts, Rolling bearings | Mastergear M..EP series (ISO VG 100 to 1000) | High quality heavy duty gear oils that contain high load and wear protection additives and do not contain lead.   |
|   | Mastergear SH..EP series (ISO VG 46 to 1000) | High temperature resistant synthetic gear oil with very good AW and EP properties.  |

## Grinding Mill and Rotary Kiln

*Open Gear: The expectation in open gear lubricant is to provide safe operation. There are two types of basic lubricants for open gears: graphite based and transparent lubricants that do not contain solid lubricants. There are lubricants produced according to the needs of open gears and containing special additives. The most important selection criterion is viscosity. The product to be used should be selected according to the condition of the gear surface, load, temperature distribution, vibration, mechanical condition of the bevel and pinion gear. Black lubricants containing graphite are available with three different base oil viscosities as Mastergrease AL .. Extra series, transparent lubricants without solid lubricants are Masterfluid OGL ... Special series.*

## Lubricants for girth gear / pinion drives :

| Step       | Product   | Application method              | Lubricant Properties  |
|------------|---|---------------------------------|---|
| Priming    | <b>Mastergrease OGL 461</b>   | Manuel                          | Developed as a priming lubricant for large open girth gear drives, small open drives and slow-running rolling bearings. |
| Running in | <b>Mastergrease RN Extra</b>  | Sprey and immersion lubrication | Smoothen roughness of flank surface, increases load-carrying capacity   |
| Operation  | <b>Masterfluid OGL series (transparent product)</b><br><b>Mastergrease AL .. Extra series</b> | Sprey and immersion lubrication | High load-carrying capacity, excellent adhesion, maximum wear protection and very good sprayability.                    |
| Repair     | <b>Mastergrease CL Extra</b><br><b>Masterfluid CL Special</b>                                 | Sprey                           | Repair of tooth flank damage and forced running in  |

## Lubricant for the kiln shell :

| Applications                                 | Product                    | Composition  | Lubricant properties   |
|--|----------------------------|--|--|
| The inner surfaces of the tyres and the kiln | <b>Masterpaste C Fluid</b> | Solid lubricants, metal pigments and an inorganic thickener. | Developed as a liquid paste for applications subject to high thermal loads. For example; such as cement kilns, iron ore plants etc |

## Additional product selection :

| Application                                  | Products  | Lubricant properties   |
|--|---|--|
| Mill&Kiln<br>main drive<br>bearing           | Sliding bearing<br><b>Mastergrar M .... EP seires</b> | High-performance mineral oil   |
|  | Roller bearing<br><b>Mastergrase LK 1000 Heavy Mo</b> | Multi-purpose extreme pressure high load and water resistant grease.   |
| Electric motor bearings                      | <b>Mastergrase L 160 EP series</b>                    | General purpose grease. Can be used in all industries for the lubrication of rolling bearings and plain bearings.          |
| Couplings                                    | <b>Mastergrase LK 1000 Heavy Mo</b>                   | Multi-purpose extreme pressure high load and water resistant grease.   |
| Chains, transport drive and small open gears | <b>Masterchain MP Plus Sprey</b>                      | creates a stronger film on the chains than conventional oils.  |
| Anti-seize, anti-fretting paste              | <b>Masterpaste L 401</b>                              | multipurpose lubricating paste containing specially selected base oils, lithium soap and special solid lubricant additives |
| Screw air compressors                        | <b>Masterkomp SH .. Ultra Series</b>                  | Low energy and spare parts costs, long oil change interval.  |

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Lubricants

## **Special product range developed for the cement industry**



*Speciality lubricants play a key role in the cement industry by providing effective lubrication and protection for a variety of equipment and machinery. Cement production takes place in a very challenging environment. In no other sector are machines exposed to such high loads, strong vibrations and extreme temperatures. To meet these tough demands, you need a lubrication partner with the expertise and in depth knowledge to support you - throughout and after the production process.*

*Our innovative product solutions will meet all your lubrication needs. Our application specific - solutions help to effectively protect your key machines against wear, increase maintenance intervals and extend the life of your equipment.*

*Our application experts will be at your side as a solution partner to analyze, inspect and help you select the right lubricant, from optimizing lubricant quantities to optimizing lubricant quantities.*

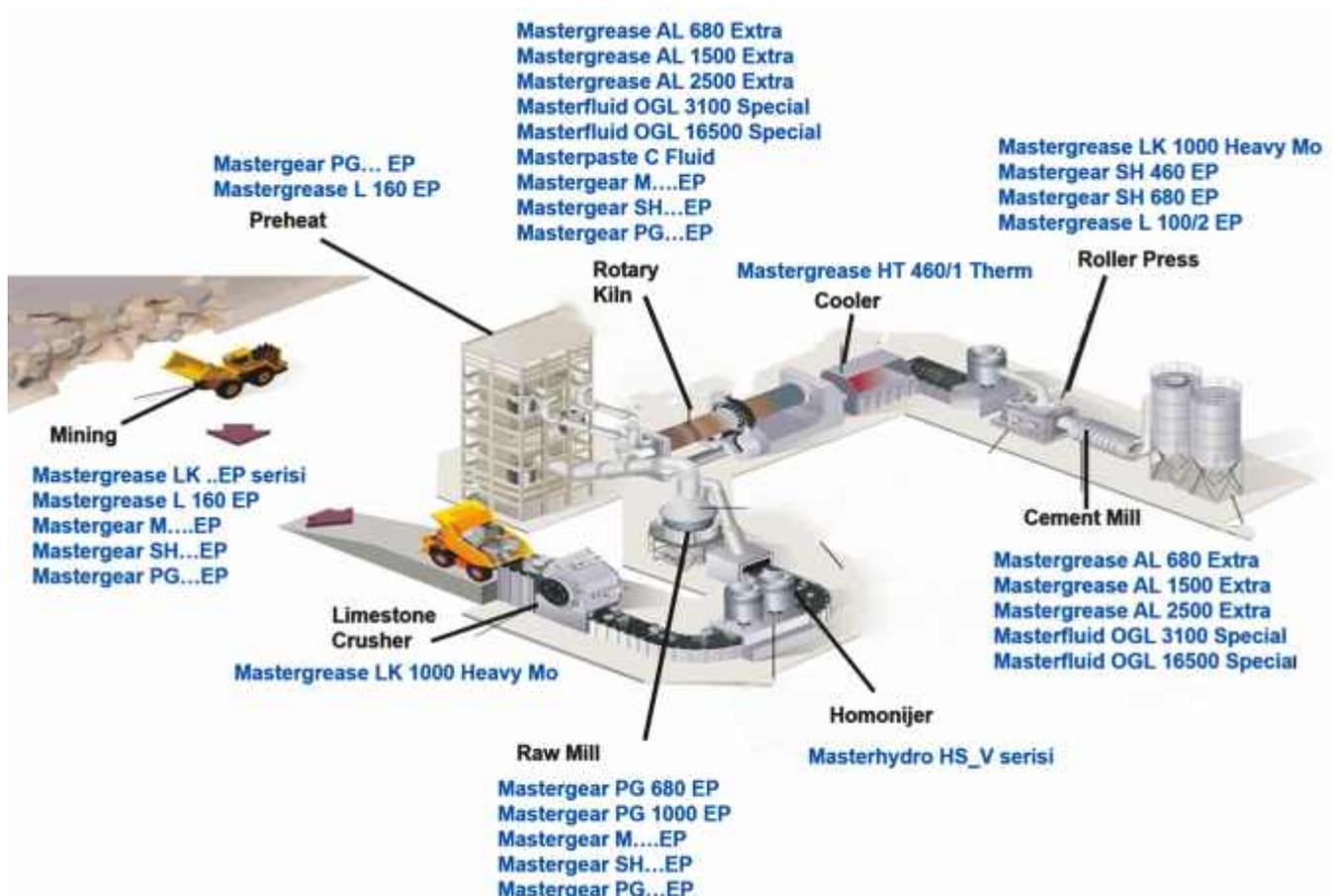
## Special product range developed for the cement industry

### Product selection:

| Equipment |               | Lubrication Point | Lubricant Properties  | Products   |
|-----------|---------------|-------------------|---|--|
| Crusher   |               | Gear Box          | High temperature resistant synthetic gear oil with very good AW and EP properties.          | Mastergear SH .... EP series   |
|           |               | Roller Bearing    | Multi-purpose extreme pressure high load and water resistant grease.                        | Mastergrease LK 1000 Heavy Mo  |
| Raw Mill  | Vertical Mill | Gear Box          | High temperature resistant synthetic gear oil with very good AW and EP properties           | Mastergear SH .... EP series   |
|           |               | Roller Bearing    | High temperature and load resistant polyglycol gear oil with very good AW and EP properties | Mastergear PG 680 EP<br>Mastergear PG 1000 EP  |
|           | Ball Mill     | Open Gear Drive   | Sprayable lubricants specially added for open gears running under heavy load and low speed. | Mastergrase AL 680 Extra<br>Mastergrease AL1500 Extra<br>Mastergrease AL 2500 Extra<br>Masterfluid OGL 3100 Special<br>Masterfluid OGL 16500 Special |
|           |               |                   | Gear Box  | High temperature resistant synthetic gear oil with very good AW and EP properties.   |

## Product selection:

| Equipment    | Lubrication Point | Lubricant Properties   | Products   |   |
|--------------|-------------------|--|--|---|
| Kiln         | Open Gear Drive   | Sprayable lubricants specially added for open gears running under heavy load and low speed | Mastergrease AL 680 Extra<br>Mastergrease AL 1500 Extra<br>Mastergrease AL 2500 Extra<br>Masterfluid OGL 3100 Special<br>Masterfluid OGL 16500 Special |   |
|              | Gear Box          | High temperature resistant synthetic gear oil with very good AW and EP properties.         | Mastergear SH .... EP series   |   |
|              | Kiln Shell        | Liquid paste containing solid particle for high temperature applications                   | Masterpaste C Fluid  |   |
| Cooler       | Roller Bearing    | High temperature resistant, long-term polyurea grease.                                     | Mastergrease H 460 Therm   |   |
| Roller Press | Gear Box          | High temperature resistant synthetic gear oil with very good AW and EP properties.         | Mastergear SH .... EP series   |   |
|              | Roller Bearing    | Multi-purpose extreme pressure high load and water resistant grease.                       | Mastergrease LK 1000 Heavy Mo  |   |
| Cement Mill  | Vertical Mill     | Gear Box   | High temperature resistant synthetic gear oil with very good AW and EP properties.   | Mastergear SH .... EP series  |
|              |                   | Roller Bearing   | High temperature and load resistant polyglycol gear oil with very good AW and EP properties  | Mastergear PG 680 EP<br>Mastergear PG 1000 EP   |
|              | Ball Mill         | Open Gear Drive  | Sprayable lubricants specially added for open gears running under heavy load and low speed   | Mastergrease AL680 Extra<br>Mastergrease AL 1500 Extra<br>Mastergrease AL 2500 Extra<br>Masterfluid OGL 3100 Special<br>Masterfluid OGL 16500 Special |
|              |                   | Gear Box   | High temperature resistant synthetic gear oil with very good AW and EP properties..  | Mastergear SH .... EP series  |



## Technical data of recommended products

| Definition                       | Mastergrease H 460/1 Therm                    |
|----------------------------------|---|
| Appearance / Structure           | Beige / Homogeneous                           |
| Oil type                         | Mineral                                       |
| Thickener type                   | Polyurea                                      |
|                                  | 460   |
| Penetration (1/10 mm) ASTM D 217 | 310-340                                       |
| NLGI No                          | 1   |
| 4 Balls test ASTM D 2596         | >250  |
| Service temperature range        | -20°C / 180°C ( continuous lubrication 200°C) |
| Dropping point, °C ASTM D 2265   | >250  |
| Emcor test DIN 51802             | 0/1   |

| Definition  | Mastersteel CK 460 Therm                     |
|---|--|
| Appearance / Structure                            | Brown / Homogeneous                          |
| Oil type  | Mineral                                      |
| Thickener   | calcium sulfonate complex                    |
| Base oil kinematic viscosity 40°C,cSt, ASTM D 445 | 460  |
| Penetration (1/10 mm) ASTM D 217                  | 295-310                                      |
| NLGI No   | 1,5  |
| Water resistance DIN 51807                        | 0  |
| Service temperature range                         | -20°C / 160°C (continuous lubrication 200°C) |
| Dropping point, °C, ASTM D 2265                   | >275   |
| 4 Ball welding ASTM D 2596                        | -  |
| Copper corrosion DIN 51811                        | Max 1b                                       |

| Definition  | Mastersynth HT 460/1 Special |
|---|------------------------------|
| Appearance / Structure                            | Beige / Homogeneous          |
| Oil type  | Synthetic                    |
| Thickener type                                    | Polyurea                     |
| Base oil kinematic viscosity 40°C,cSt, ASTM D 445 | 460                          |
| Penetration (1/10 mm) ASTM D 217                  | 295-310                      |
| NLGI No   | 1,5                          |
| Service temperature range                         | -35°C / 200°C                |
| Water wash out, ASTM D 1264, % Weight             | Max. 2                       |
| Speed factor (n x dm), approximate value          | 400.000 mm/min               |
| Dropping Point, °C ASTM D 2265                    | >240                         |
| Emcor Test DIN 51802                              | passing                      |

| <b>Definition</b>                                    | <b>Mastersynth CK 1 HP<br/>Special</b> | <b>Mastersynth CK 2 HP<br/>Special</b> |
|--|--|--|
| Appearance / Structure                               | Beige / Homogeneous                    | Beige / Homogeneous                    |
| Oil type   | Synthetic                              | Synthetic                              |
| Thickener type                                       | Calcium complex / Sulfonate            | Calcium complex / Sulfonate            |
| Base oil kinematic viscosity 40°C,cSt,<br>ASTM D 445 | 460                                    | 460                                    |
| Penetration (1/10 mm) ASTM D 217                     | 310-340                                | 265-295                                |
| NLGI No  | 1                                      | 2                                      |
| Water resistance DIN 51807                           | 0                                      | 0                                      |
| Service temperature range                            | -20°C / 160°C                          | -20°C / 160°C                          |
| Dropping Point, °C ASTM D 2265                       | >300                                   | >300                                   |
| Emcor Test DIN 51802                                 | 0                                      | 0                                      |

| <b>Definition</b>                                 | <b>Mastergrease LM 460/2 Black</b> |
|---|------------------------------------|
| Appearance / Structure                            | Black / Homogeneous                |
| Oil type  | Mineral                            |
| Thickener type                                    | Lithium complex + MoS2             |
| Base oil kinematic viscosity 40°C,cSt, ASTM D 445 | 460                                |
| Penetration (1/10 mm) ASTM D 217                  | 265-295                            |
| NLGI No   | 2                                  |
| Service temperature range                         | -20°C / 140°C                      |
| Dropping point, °C ASTM D 2265                    | >240                               |
| Bearing corrosion test @ 52°C ASTM D 1743         | Passed                             |

| <b>Definition</b>                                    | <b>Mastergrease<br/>LM 150/1 Black</b> | <b>Mastergrease<br/>LM 150/2 Black</b> |
|--|--|--|
| Appearance / Structure                               | Black / Homogeneous                    | Black / Homogeneous                    |
| Oil type   | Mineral                                | Mineral                                |
| Thickener type                                       | Lithium complex + MoS2                 | Lithium complex + MoS2                 |
| Base oil kinematic viscosity 40°C,cSt,<br>ASTM D 445 | 150                                    | 150                                    |
| penetration (1/10 mm) ASTM D 217                     | 310-340                                | 265-295                                |
| NLGI No  | 1                                      | 2                                      |
| Service temperature range                            | -30°C / 150°C                          | -30°C / 150°C                          |
| Dropping Point, °C ASTM D 2265                       | >240                                   | >240                                   |
| Bearing Rust Test @ 52°C<br>ASTM D 1743              | passing                                | passing                                |

| Definition   | Mastergrease<br>AL 680 Extra | Mastergrease<br>AL 1500 Extra | Mastergrease<br>AL 2500 Extra |
|--|------------------------------|-------------------------------|-------------------------------|
| Appearance / Structure   | Black /<br>Homogeneous       | Black /<br>Homogeneous        | Black /<br>Homogeneous        |
| Oil type   | Mineral                      | Mineral                       | Mineral                       |
| Thickener  | Aluminum complex             | Aluminum complex              | Aluminum complex              |
| Base oil kinematic viscosity, mm <sup>2</sup> /sn,<br>ASTM D 445 | 680                          | 1500                          | 2500                          |
| Penetration (60 d) ASTM D 217, mm/10                             | 355-450                      | 355-450                       | 360-400                       |
| NLGI No  | 0/00                         | 0/00                          | 0/00                          |
| Water wash out, ASTM D 1264, % Weight                            | 1,1                          | 1,1                           | 1,1                           |
| Service temperature range  | -20°C / 165°C                | -20°C / 165°C                 | -20°C / 165°C                 |
| Dropping point °C ASTM D 2265                                    | >210                         | >210                          | >250                          |
| 4 Ball welding, Kg, ASTM D2596                                   | 800                          | 800                           | 800                           |
| 4 Ball AW, ASTM D 2266, mm                                       | Max 0,7                      | Max 0,7                       | Max 0,7                       |

| Definition  | Masterfluid OGL 16500 Special |
|---|-------------------------------|
| Colour  | Brown                         |
| Oil type  | Semi synthetic                |
| Base oil kinematic viscosity, 40°C mm <sup>2</sup> /sn, ASTM D 445  | 16500                         |
| Base oil kinematic viscosity, 100°C mm <sup>2</sup> /sn, ASTM D 445 | 500                           |
| Viscosity index, ASTM D2270   | >160                          |
| Service temperature range   | 15°C / 120°C                  |
| Pour Point  | >10                           |
| Flash Point ASTM D92  | >200                          |
| 4 Ball welding, Kg, ASTM D2596                                      | >800                          |
| 4 Ball AW, ASTM D 2266, mm  | 0,6                           |

| Definition  | Masterfluid OGL 3100 Special |
|---|------------------------------|
| Colour  | Brown                        |
| Oil type  | Semi synthetic               |
| Base oil kinematic viscosity, 40°C mm <sup>2</sup> /sn, ASTM D 445  | 3100                         |
| Base oil kinematic viscosity, 100°C mm <sup>2</sup> /sn, ASTM D 445 | 165                          |
| Viscosity index, ASTM D2270   | >155                         |
| Service temperature range   | -30°C / 110°C                |
| Application in automatic spray systems                              | 0 - 80 °C                    |
| Pour Point  | >-5°C                        |
| Flash Point ASTM D92  | >190°C                       |
| 4 Ball welding, Kg, ASTM D2596                                      | >700                         |
| 4 Ball AW, ASTM D 2266, mm  | 0,6                          |

| Definition   | Mastergrease<br>LK 1000 Heavy Mo |
|--|----------------------------------|
| Appearance / Structure                             | Black                            |
| Oil type   | Mineral                          |
| Thickener  | Special Lithium+MoS2             |
| Base oil kinematic viscosity 40°C, cSt, ASTM D 445 | 1000                             |
| Penetration (1/10 mm), (60 D9 ASTM D 217)          | 280-295                          |
| NLGI No  | 2                                |
| Service temperature range                          | -10°C / +150°C                   |
| Dropping point °C ASTM D 2265                      | >190                             |
| 4 Ball welding, Kg, ASTM D2596                     | 500                              |
| 4 Ball AW, ASTM D 2266, mm                         | 0,52                             |
| Speed factor (n x dm) approx.                      | 100,000 mm/min                   |
| Water wash out, ASTM D 1264, % Weight              | 1,3                              |

| Definition  | Mastergrease<br>L 160/1 EP | Mastergrease<br>L 160/2 EP | Mastergrease<br>L 160/3 EP |
|---|----------------------------|----------------------------|----------------------------|
| Appearance  | Brown                      | Brown                      | Brown                      |
| Oil type  | Mineral                    | Mineral                    | Mineral                    |
| Thickener   | Lithium                    | Lithium                    | Lithium                    |
| Base oil kinematic viscosity<br>40°C, cSt, ASTM D 445 | 160                        | 160                        | 160                        |
| Penetration (1/10 mm) ASTM D 217                      | 300-335                    | 265-295                    | 220-250                    |
| NLGI No   | 1                          | 2                          | 3                          |
| Service temperature range                             | -15°C / 125°C              | -15°C / 125°C              | -10°C / 125°C              |
| Dropping point, °C ASTM D 2265                        | >180                       | >180                       | >180                       |
| Corrosion test @ 52°C ASTM D 1743                     | Pass                       | Pass                       | Pass                       |
| 4 Ball Welding Load ASTM D 2596                       | >300                       | >300                       | >300                       |
| 4 Ball AW ASTM D 2266 (mm)                            | < 0,54                     | < 0,54                     | < 0,54                     |
| Oil Separation ASTM D 6184                            | <2 %                       | <2 %                       | <2 %                       |

| Definition                                  | Mastergrease<br>L 100/1 EP | Mastergrease<br>L 100/2 EP | Mastergrease<br>L 100/3 EP |
|---|----------------------------|----------------------------|----------------------------|
| Appearance                                  | Brown                      | Brown                      | Brown                      |
| Oil type                                    | Mineral                    | Mineral                    | Mineral                    |
| Thickener                                   | Lithium                    | Lithium                    | Lithium                    |
| Base oil viscosity 40°C, cSt,<br>ASTM D 445 | 100                        | 100                        | 100                        |
| Penetration (1/10 mm) ASTM D 217            | 300-335                    | 265-295                    | 220-250                    |
| NLGI No                                     | 1                          | 2                          | 3                          |
| Service temperature range                   | -20°C / 120°C              | -15°C / 120°C              | -10°C / 120°C              |
| Dropping point, °C ASTM D 2265              | >190                       | >190                       | >190                       |
| Corrosion Test @ 52°C ASTM D 1743           | Pass                       | Pass                       | Pass                       |

| Definition   | Mastergrease<br>LK 1 EP | Mastergrease<br>LK 2 EP | Mastergrease<br>LK 3 EP |
|--|-------------------------|-------------------------|-------------------------|
| Appearance   | Brown                   | Brown                   | Brown                   |
| Oil type   | Mineral                 | Mineral                 | Mineral                 |
| Thickener  | Lithium<br>Complex      | Lithium<br>Complex      | Lithium<br>Complex      |
| Base oil kinematic viscosity 40°C,cSt,<br>ASTM D 445 | 220                     | 220                     | 220                     |
| Penetration (1/10 mm) ASTM D 217                     | 300-335                 | 265-295                 | 220-250                 |
| NLGI No  | 1                       | 2                       | 3                       |
| Service temperature range                            | -20°C / 140°C           | -15°C / 140°C           | -10°C / 140°C           |
| Dropping point, °C ASTM D 2265                       | >240                    | >240                    | >240                    |
| Corrosion test @ 52°C ASTM D 1743                    | Pass                    | Pass                    | Pass                    |

| Definition   | Mastergrease OGL 461<br>Special | Mastergrease OGL 462<br>Special |
|--|---------------------------------|---------------------------------|
| Appearance / Structure                               | White / Homogeneous             | White / Homogeneous             |
| Oil type   | Mineral                         | Mineral                         |
| Thickener  | Aluminum complex                | Aluminum complex                |
| Base oil kinematic viscosity<br>40°C,cSt, ASTM D 445 | 460                             | 460                             |
| NLGI No  | 1                               | 2                               |
| Water resistance DIN 51807                           | 0-90                            | 0-90                            |
| Effectiveness of the lubricating film*, [°C]         | -40                             | -40                             |
| Dropping point, °C, ASTM D 2265                      | >180                            | >180                            |
| Solid lubricant content, [wt. %], approx.            | 20                              | 20                              |

| Definition   | Mastergrease CSK 100 HP   | Mastergrease CSK 220 HP   |
|--|---------------------------|---------------------------|
| Appearance / Structure                               | Brown / Homogeneous       | Brown / Homogeneous       |
| Oil type   | Mineral                   | Mineral                   |
| Thickener  | calcium sulfonate complex | calcium sulfonate complex |
| Base oil kinematic viscosity<br>40°C,cSt, ASTM D 445 | 100                       | 220                       |
| Penetration (1/10 mm) ASTM D 217                     | 280-310                   | 280-310                   |
| NLGI No  | 1-2                       | 1-2                       |
| Water resistance DIN 51807                           | 0                         | 0                         |
| Service temperature range                            | -20°C / 180°C             | -20°C / 180°C             |
| Dropping point, °C, ASTM D 2265                      | >300                      | >300                      |
| 4 Ball welding ASTM D2596                            | >500                      | >500                      |
| Copper corrosion DIN 51811                           | Max 1b                    | Max 1b                    |

| <b>Definition</b>                   | <b>Masterpaste C Fluid</b> |
|-------------------------------------|----------------------------|
| Texture                             | Homogeneous, viscous       |
| Colour                              | Grey                       |
| Density at 20°C                     | 1,03 g/cm <sup>3</sup>     |
| Service temperature range           | -25°C / 1050°C             |
| Auto ignition temperature           | >370 °C                    |
| Solid lubricants, percentage        | approx. 16 % by weight     |
| Kinematic viscosity of the base oil | 150 mm <sup>2</sup> /s     |

| <b>Definition</b>         | <b>Masterpaste TOP Fluid</b>    |
|---------------------------|---------------------------------|
| Texture                   | Viscous                         |
| Colour                    | Grey                            |
| Density at 20°C           | 1,12 g/cm <sup>3</sup>          |
| Service temperature range | -25°C / 1000°C                  |
| Chemical composition      | Solid lubricant                 |
| Chemical composition      | Synthetic hydrocarbon + mineral |

| <b>Definition</b>                         | <b>Masterspaste L 401</b>      |
|---|--------------------------------|
| Colour                                    | White                          |
| Chemical composition, type of oil         | Mineral+synthetic oil          |
| Chemical composition, thickener           | Lithium                        |
| Chemical composition                      | solid lubricant                |
| Density at 20 °C                          | approx. 1.23 g/cm <sup>3</sup> |
| Dropping Point ASTM D2265 °C              | >190                           |
| Four Ball test welding load ASTM D2596 Kg | >475                           |
| Four Ball AW ASTM D2266 mm                | <0,6                           |
| Lower service temperature                 | -40 °C                         |
| Upper service temperature                 | +150 °C                        |

## Closed System Gear Oils:

**Mastergear M EP Series** are high quality heavy duty gear oils that contain high load and wear protection additives and do not contain lead. Provides superior and safe lubrication with highly refined mineral oil and special additive package.

| Definition                                    | M 100<br>EP | M 150<br>EP | M 220<br>EP | M 320<br>EP | M 460<br>EP | M 680<br>EP | M 1000<br>EP |
|---|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| ISO viscosity, DIN ISO 3448                   | 100         | 150         | 220         | 320         | 460         | 680         | 1000         |
| Density 15°C, g/cm <sup>3</sup> , ASTM D 4052 | 0,891       | 0,897       | 0,899       | 0,903       | 0,912       | 0,920       | 0,931        |
| Kinematic viscosity 40°C, ASTM D 445          | 100         | 150         | 220         | 320         | 460         | 680         | 1000         |
| Kinematic viscosity 100°C,cSt, ASTM D 445     | 11,4        | 15          | 19,4        | 25          | 30,8        | 38          | 45,5         |
| Viscosity index, ASTM D 2270                  | 100         | 100         | 100         | 100         | 97          | 92          | 85           |
| Flash point, °C, ASTM D 92                    | ...         | ≥ 240       | ≥ 240       | ≥ 255       | ≥ 260       | ≥ 272       | ≥ 290        |
| Drop point, °C, ASTM D 97                     | ≤ -24       | ≤ -24       | ≤ -20       | ≤ -15       | ≤ -12       | ≤ -9        | ≤ -6         |
| Service temperature, °C,                      | -20/100     | -20/100     | -15/100     | -10/100     | -8/100      | -5/100      | 0/100        |

**Mastergear SH EP Series** are fully synthetic gear oils based on polyalphaolefin (PAO) developed with strong additives. Provides trouble-free and safe lubrication in gear systems where high efficiency is expected. Their performance is very high compared to mineral oils and provides energy saving up to 5%.

| Definition                                    | SH 68<br>EP | SH 100<br>EP | SH 150<br>EP | SH 220<br>EP | SH 320<br>EP | SH 460<br>EP | SH 680<br>EP | SH 1000<br>EP |
|---|-------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| ISO viscosity, DIN ISO 3448                   | 68          | 100          | 150          | 220          | 320          | 460          | 680          | 1000          |
| Density 15°C, g/cm <sup>3</sup> , ASTM D 4052 | 0,847       | 0,847        | 0,849        | 0,853        | 0,856        | 0,865        | 0,869        | 0,872         |
| Kinematic viscosity 40°C,cSt, ASTM D 445      | 68          | 100          | 150          | 220          | 320          | 460          | 680          | 1000          |
| Kinematic viscosity 100°C,cSt, ASTM D 445     | 10,4        | 14,3         | 19,7         | 25,8         | 33,4         | 45,5         | 62,6         | 92,2          |
| Viscosity index, ASTM D 2270                  | 150         | 150          | 150          | 150          | 150          | 160          | 160          | 165           |
| Flash point, °C, ASTM D 92                    | 200         | 200          | 210          | 230          | 230          | 240          | 250          | 260           |
| Pour point, °C, ASTM D 97                     | -48         | -42          | -41          | -37          | -35          | -32          | -29          | -26           |
| Highest service temperature, °C,              | -45/140     | -40/140      | -40/140      | -35/140      | -35/140      | -30/140      | -25/140      | -25/140       |
| FZG test, DIN 51324                           | ...         | ≥ 12         | ≥ 12         | ≥ 12         | ≥ 12         | ≥ 12         | ≥ 12         | ≥ 12          |
| Copper corrosion test, ASTM D 130             | 1b          | 1b           | 1b           | 1b           | 1b           | 1b           | 1b           | 1b            |

**Mastergear PG EP Series** are high performance polyglycol gear oils developed for gear systems operating under high power and temperature effect. Its additives provide trouble-free and safe lubrication even under the most difficult working conditions.

| Definition                                    | PG 68<br>EP | PG 100<br>EP | PG 150<br>EP | PG 220<br>EP | PG 320<br>EP | PG 460<br>EP | PG 680<br>EP | PG 1000<br>EP |
|---|-------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| ISO viscosity, DIN ISO 3448                   | 68          | 100          | 150          | 220          | 320          | 460          | 680          | 1000          |
| Density 15°C, g/cm <sup>3</sup> , ASTM D 4052 | 1,067       | 1,068        | 1,068        | 1,069        | 1,070        | 1,070        | 1,071        | 1,071         |
| Kinematic viscosity 40°C,cSt, ASTM D 445      | 68          | 100          | 150          | 220          | 320          | 460          | 680          | 1000          |
| Kinematic viscosity 100°C,cSt, ASTM D 445     | 11,8        | 17,3         | 26,1         | 38,1         | 55,2         | 77,2         | 112,4        | 165,8         |
| Viscosity index, ASTM D 2270                  | 170         | 190          | 210          | 225          | 240          | 250          | 265          | 285           |
| Flash point, °C, ASTM D 92                    | ≥ 220       | ≥ 250        | ≥ 250        | ≥ 250        | ≥ 250        | ≥ 250        | ≥ 250        | ≥ 260         |
| Drop point, °C, ASTM D 97                     | ≤ -40       | ≤ -35        | ≤ -35        | ≤ -30        | ≤ -30        | ≤ -25        | ≤ -25        | ≤ -20         |
| Highest service temperature, °C,              | -40/160     | -35/160      | -35/160      | -30/160      | -30/160      | -25/160      | -25/160      | -20/160       |
| FZG test, DIN 51324                           | ≥ 12        | ≥ 12         | ≥ 12         | ≥ 12         | ≥ 12         | ≥ 12         | ≥ 12         | ≥ 12          |
| Copper corrosion test, ASTM D 130             | 1b          | 1b           | 1b           | 1b           | 1b           | 1b           | 1b           | 1b            |

## High-temperature paste

**Masterpaste HT 1000** is a grey high-temperature paste based on high-quality hydrocarbon oils and temperature-resistant solid lubricants. It is an effective high-pressure lubrication and assembly paste with high adhesion strength on metals. At high temperatures, solid lubricants remain in the friction contact area and prevent wear.

| Definition   | Masterpaste HT 1000   |
|--|-----------------------|
| Colour   | Grey                  |
| Density at 20°C  | 1,3 g/cm <sup>3</sup> |
| Service temperature range                                  | -25°C / 1000°C        |
| Chemical composition                                       | Solid lubricant       |
| Chemical composition                                       | Synthetic hydrocarbon |
| Worked penetration, DIN ISO 2137, 25 °C, lower limit value | 300 x 0.1 mm          |
| Worked penetration, DIN ISO 2137, 25 °C, upper limit value | 330 x 0.1 mm          |

## Wire Rope Lubrication

**Mastergrease GV 1500/1 EP** Aluminum complex soapy lubricant formulated with highly refined mineral oils. It contains solid lubricant particles. Provides excellent surface protection even under extreme loads and vibration. High protection against corrosion and oxidation.

| Definition  | Mastergrease GV 1500/1 EP |
|---|---------------------------|
| Appearance / Structure  | Black / Homogeneous       |
| Oil type  | Mineral                   |
| Thickener   | Aluminum complex          |
| Base oil kinematic viscosity, mm <sup>2</sup> /sn, ASTM D 445 | 1500                      |
| Penetration (60 d ) ASTM D 217, mm/10                         | 300-330                   |
| NLGI No   | 1                         |
| Water wash out, ASTM D 1264, % Weight                         | 1,1                       |
| Service temperature range                                     | -15°C / 165°C             |
| Dropping point °C ASTM D 2265                                 | >210                      |
| 4 Ball welding, Kg, ASTM D2596                                | 800                       |
| 4 Ball AW, ASTM D 2266, mm                                    | Max 0,7                   |

## Compressor oils



The oxidation and temperature resistance of lubricants used in all air compressors, whether rotary vane, screw or piston, plays an important role in terms of efficiency. As **Masterlub**, we have developed the fully synthetic **Masterkomp SH Ultra** series and the semi-synthetic **Masterkomp HM Special** series, which will provide long oil change periods, good protection against wear and high efficiency operation of compressors.

| Definition                                    | Masterkomp | SH 32   | SH 46   | SH 68   | SH 100  | SH 150  |
|---|------------|---------|---------|---------|---------|---------|
|   |            | Ultra   | Ultra   | Ultra   | Ultra   | Ultra   |
| ISO viscosity, DIN ISO 3448                   |            | 32      | 46      | 68      | 100     | 150     |
| Density 15°C, g/cm <sup>3</sup> , ASTM D 4052 |            | 0,846   | 0,849   | 0,856   | 0,861   | 0,868   |
| Kinematic viscosity 40°C, cSt, ASTM D 445     |            | 32      | 46      | 68      | 100     | 150     |
| Kinematic viscosity 100°C, cSt, ASTM D 445    |            | 6,21    | 8,52    | 11,72   | 16,24   | 21,25   |
| Viscosity index, ASTM D 2270                  |            | >125    | >125    | >130    | >135    | >135    |
| Flash Point, °C, ASTM D 92                    |            | 245     | 245     | 245     | 250     | 250     |
| Pour Point, °C, ASTM D 97                     |            | -48     | -45     | -45     | -41     | -35     |
| Corrosion test, ASTM D 665                    |            | passing | passing | passing | passing | passing |
| Copper Corrosion Test, ASTM D 130             |            | 1b      | 1b      | 1b      | 1b      | 1b      |

| Definition                                    | Masterkomp    | Masterkomp    | Masterkomp    |
|---|---------------|---------------|---------------|
|   | HM 32 Special | HM 46 Special | HM 68 Special |
| ISO viscosity, DIN ISO3448                    | 32            | 46            | 68            |
| Density 15°C, g/cm <sup>3</sup> , ASTM D 4052 | 0,82          | 0,83          | 0,84          |
| Kinematic viscosity 40°C, cSt, ASTM D 445     | 32            | 46            | 68            |
| Viscosity index, ASTM D 2270                  | 135           | 138           | 115           |
| Flash Point, °C, ASTM D 92                    | 240           | 265           | 265           |
| Pour Point, °C, ASTM D 97                     | -30           | -24           | -22           |
| Water Separation min, ASTM D 1401             | 10            | 10            | 10            |
| Copper Corrosion, ASTM D 130                  | 1b            | 1b            | 1b            |

## ***Your Technical Partner***

***As **Masterlub** Lubricants, our mission is to provide tribological solutions that meet our customers' demands and goals to the highest extent possible. Our principle is to offer high-quality and professional service to our customers throughout every corner of Türkiye with our expert and experienced team.***

***Masterlub Lubricants will continue to provide tribological solutions with advanced technological lubricants while prioritizing customer requests and satisfaction in the future, just as we do today.***

# ***MasterLub Lubricants***

**e-mail: [teknik@master-lub.com](mailto:teknik@master-lub.com)  
[www.master-lub.com](http://www.master-lub.com)**