Timken® Lubricants Boost Efficiency
Choose Timken® Lubricants for Optimal Performance

The right lubrication and lubricant delivery systems can help extend bearing life, protect your equipment, reduce costs and keep your operations running efficiently.

Timken expertise in tribology and bearings gives you a reliable line of lubricants developed for specific applications and environments. High-temperature, anti-wear and water-resistant additives help provide superior protection in particularly challenging environments where dirt, corrosion and other contaminants are common.

When you choose Timken as your lubrication resource, you gain exceptional customer service and technical support. Discover the benefits of our suite of products and services that extend from lubrication delivery systems to training and bearing maintenance. We can help analyze your operational performance and recommend solutions that make sense for your unique production demands.

For more information on Timken lubricants, contact your authorized Timken distributor or sales representative, or visit www.timken.com/lubricants.

Expertly Blended Greases for Specific Applications

<table>
<thead>
<tr>
<th>Environment</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrosive Media • Extreme Heat Heavy Loads • Wet Conditions Slow to Moderate Speeds</td>
<td>Aluminum Mills • Paper Mills Steel Mills • Offshore Rigs Power Generation</td>
</tr>
<tr>
<td>High Wear • Moderate Loads Moderate Speeds Moderate Temperatures</td>
<td>Agriculture • Bushings/Ball Joints Truck and Auto Wheel Bearings Heavy-Duty Industrial</td>
</tr>
<tr>
<td>Extreme Heat • Heavy Loads High Sliding Wear Dirty Environments Slow Speeds • Shock Loading</td>
<td>Agriculture/Mining • Cement Plants Construction/Off Road • Rock Quarry Earth-Moving Equipment Fleet Equipment • Heavy Industry Pivot Pins/Splined Shafts</td>
</tr>
<tr>
<td>Wet and Corrosive Conditions Quiet Environments • Light Loads Moderate to High Speeds Moderate Temperatures</td>
<td>Lightly Loaded Pillow Blocks Idler Pulleys • Oven Conveyors Electric Motors • Fans • Pumps</td>
</tr>
<tr>
<td>Incidental Food Contact Hot and Cold Temperatures Moderate to High Speeds Medium Loads</td>
<td>Food and Beverage Industries Pharmaceuticals (only for ball bearing applications)</td>
</tr>
<tr>
<td>Moderate Speeds Light to Moderate Loads Moderate Temperatures Moderate Water</td>
<td>General Industrial Applications Pins and Bushings • Track Rollers Water Pumps Plain and Antifriction Bearings</td>
</tr>
<tr>
<td>Extreme Load, High Wear, Moderate Speed, High Temperatures, Shock Loading</td>
<td>Metals, Mining, Aggregate, Power Generation, Material Handling, and Heavy Industries.</td>
</tr>
</tbody>
</table>

This selection guide is not intended to replace specific recommendations by the equipment builder who is responsible for its performance.

Smart lubrication delivery solutions

Timken offers a wide range of lubricant delivery systems to help you maintain the optimal levels of grease for your specific operations.

For single-point applications, we offer four products to help users manage release of Timken lubricant efficiently, depending on the specific environments and requirements:
- G-Power uses gas pressure
- D-Power depends on user-set dial settings
- T-Power releases lubricant based on ambient temperature
- M-Power uses an electromechanical automatic sensor to discharge lubricant.

Timken also offers two multi-point systems. C-Power can be programmed to dispense specific volumes of lubricant based on time schedules, temperature and other variables from a central unit to multiple locations. Timken® Interlube lubricators offer several options for reliably distributing lubricant into machine operations.

These devices may be filled with Timken lubricants or many other types of commercial lubricants. Optional mounting accessories are also available.
Identifying the optimal grease requires a good understanding of each specific application, particularly operating load, speed, temperature and ambient conditions. There is no universal anti-friction bearing grease. Each grease has limiting properties and characteristics.

Bearing grease is composed of a base-oil, a thickening agent and additives. Specific base-oils are designed to handle certain applications and environments:

<table>
<thead>
<tr>
<th>Demanding applications</th>
<th>Recommended base-oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-speed</td>
<td>Low viscosity</td>
</tr>
<tr>
<td>High-temperature</td>
<td>High viscosity with extreme pressure (EP) additive/solid lubricants</td>
</tr>
<tr>
<td>Low-speed, high-load</td>
<td>High viscosity</td>
</tr>
</tbody>
</table>

Thickening agents within grease manage the "bleed-rate" by releasing or retaining the base-oil. Some grease thickeners are incompatible with certain thickeners, as well as additives, resulting in undesirable softening or hardening of the grease. This may cause poor lubrication scenarios that can shorten the lives of components. Additives used within grease are designed to provide extra protection in demanding conditions.

If you need expert advice when selecting grease, consult your Timken engineer. Interchange guides are proved below.

**Timken® Mill Grease • Part #GR180, GR181, GR182, GR183**

- Calcium sulfonate-thickened grease
- Excellent resistance to water washout
- Superior protection against rust and corrosion, including salt spray
- Excellent high-temperature properties
- Timken Mill Grease is formulated with high VI paraffinic mineral oil, resulting in very good oxidation stability
- Operating temperatures from -40°C to 204°C (-40°F to 400°F)
- Applications: Steel mills, paper mills, aluminum mills, foundries, cement plants, power generation, off-road applications, mineral processing, offshore rigs and marine applications

This grease is available in three NLGI grades:
- Part #GR180-NLGI No. 1
- Part #GR182-NLGI No. 2
- Part #GR183-NLGI No. 2-with tackifiers

**Interchange Guide**

- Castrol Molub-Alloy 777-2ES™
- Chem & Lube Black Magic™
- Chevron Ulti-Plex EP 2™
- Ronex Extra Duty 2™
- FAG Arcanol Load 400™
- Kyodo Yushi Palmax RBG™
- Loctite ViperLube™
- LUBRIPLATE® 1444
- SKF LGHB2™

**Timken® Premium All Purpose Industrial LC-2 Grease • Part #GR217**

- NLGI No. 2 extreme pressure, lithium-complex thickened grease
- Solid protection against rust and corrosion
- Excellent protection against wear
- Operating temperature range of -40°C to 149°C (-40°F to 300°F)
- Applications: Ideal for industrial bearings operating at higher-than-average temperatures and/or subjected to shock loading, as well as heavy-duty on- and off-road applications, wheel bearings, axles, ball joints, U-joints, power takeoffs, king pins, bushings, trucks, buses and automobiles

Available in:
- 400 g (14.1 oz.) cartridges, 10/case
- 454 g (1 lb.) tubs, 6/case
- 1 kg (2.2 lb.) tubs
- 5 kg (11 lb.) pail
- 16 kg (35.3 lb.) pail
- 55 kg (121.3 lb.) keg
- 180 kg (396.8 lb.) drum

**Interchange Guide**

- Castrol 4020/220-2™
- Chevron Delo® EP 2
- Citgo Lithoplex MP2™
- Citgo Premium Lithium EP 2™
- Ronex MPTM
- Unirex EP 2™
- FAG LOAD220™
- Fuchs (Century) Uniwrl 2™
- Lubrication Engineers Almagard® 3752
- LUBRIPLATE® 1552
- Mobilgrease® XHP 222
- Petro-Canada Multipurpose EP 2™
- Royal Purple® Ultra-Performance® 2
- SKF LGWA2™
- SKF LGEP2™
- Texaco Starplex® 2
- 76 Multiplex Red

*Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.*
### Timken® Construction and Off-Highway Grease • Part #GR219

- NLGI No. 2 calcium sulfonate grease with 5 percent moly
- Provides resistance to extreme pressures caused by shock loading
- Timken OK Load – 65 lbs.
- Protects against rust and corrosion
- Offers excellent high-temperature properties
- Operating temperatures of -40° C to 204° C (-40° F to 400° F)
- Applications: High-load, low-speed applications such as mining, draglines, construction equipment, agriculture machinery, bulldozers, scrapers, earthmovers, cranes, backhoes, shovels, rollers, tractors, combines and cotton pickers
  - Available in: -400 g (14.1 oz.) cartridges, 10/case – Part #GR219C
  - 1 kg (2.2 lb.) tubs – Part #GR219F
  - 16 kg (35.3 lb.) pail – Part #GR219P
  - 55 kg (121.3 lb.) keg – Part #GR219K
  - 180 kg (396.8 lb.) drum – Part #GR219D

### Timken® Ball Bearing Pillow Block Grease • Part #GR220

- NLGI No. 2 polyurea-thickened grease
- Outstanding long-life, moderately high-temperature lubrication of ball bearings
- Maintains mechanical shear stability
- Provides corrosion resistance, even in the presence of salt water
- Features low-noise characteristics and excellent pumpability
- Does not contain extreme-pressure additives but is inhibited against rust and oxidation
- Operating temperatures from -40° C to 163° C (-40° F to 325° F)
- Applications: Lightly loaded ball bearings in pillow blocks and conveyors that operate in high-temperature environments, including kiln and glasswork applications, electric motors, chemical manufacturing and noise-sensitive environments, ball bearings operating at mid- to high-speeds (10,000 RPM maximum), pumps, fans, electric motors and idler pulleys
  - Available in: -400 g (14.1 oz.) cartridges, 10/case – Part #GR220C
  - 1 kg (2.2 lb.) tubs – Part #GR220F
  - 5 kg (11 lb.) pail – Part #GR220G
  - 16 kg (35.3 lb.) pail – Part #GR220P
  - 55 kg (121.3 lb.) keg – Part #GR220K
  - 180 kg (396.8 lb.) drum – Part #GR220D

### Timken® Food Safe Grease • Part #GR231

- NLGI No. 2 aluminum-complex thickened lubricating grease
- Provides for improved low- and high-temperature performance
- Contains extra-pressure, anti-wear additives and corrosion and oxidation inhibitors
- Operating temperatures from -40° C to 149° C (-40° F to 300° F)
- Applications: Food processing operations with ball bearing pillow blocks
  - Available in: -400 g (14.1 oz.) cartridges, 10/case – Part #GR231C
  - 1 kg (2.2 lb.) tubs – Part #GR231F
  - 16 kg (35.3 lb.) pail – Part #GR231P
  - 55 kg (121.3 lb.) keg – Part #GR231K
  - 180 kg (396.8 lb.) drum – Part #GR231D

### Timken® Synthetic Industrial LC-1.5 Grease • Part #GR232

- NLGI No. 1.5 multi-purpose, lithium-complex lubricating grease
- Contains extreme-pressure and anti-wear additives
- Inhibits corrosion
- Operating temperatures from -46° C to 180° C (-50° F to 356° F)
- Applications: Used in a variety of industrial, construction, agriculture and automotive applications
  - Available in: -400 g (14.1 oz.) cartridges, 10/case – Part #GR232C
  - 16 kg (35.3 lb.) pail – Part #GR232P
  - 55 kg (121.3 lb.) keg – Part #GR232K
  - 180 kg (396.8 lb.) drum – Part #GR232D

### Interchange Guide

#### Timken® Construction and Off-Highway Grease • Part #GR219
- Mobil Centaur Moly Series™
- Ronex Extra Duty Moly™
- Fuchs Moreplex 2™
- LUBRIPLATE® 3000
- Mobilgrease® Moly 52
- Petro-Canada Precision Moly EP 2™
- Schaeffer Moly Ultra Supreme ZSB™
- Texaco Starplex® Moly MFGM2
- Unocal 76 Megaplex™

#### Timken® Ball Bearing Pillow Block Grease • Part #GR220
- Conoco Phillips Polyurea 2™
- Chevron SRI™
- Citgo Polyurea 2™
- Mobil Polyrex® EM
- Mobil Unirex N™
- LUBRIPLATE® EM
- Petro-Canada EMG™
- Shell Dolumax® BRB
- SKF LGHP2™
- Mobil SHC Polyrex 462™

#### Timken® Food Safe Grease • Part #GR231
- SKF LGFP2™
- FAG Arcanol FOOD2™
- Keystone Nevastane HT/AW2™
- LE 4028 H1 Quinplex™
- LPS ThermaPlex Foodlube™
- LUBRIPLATE® FGL-2
- Mobilgrease® FM 102
- Petro-Canada Purity FG™
- Royal Purple® Ultra-Performance® Clear FDA Grease

#### Timken® Synthetic Industrial LC-1.5 Grease • Part #GR232
- Mobilith SHC™ 460
- Chevron Ultra-Plex Synthetic Grease EP™
- Exxon Mobil SHC® PM
- Texaco Starlube® PM
Timken® Multi-Use Lithium EP1 and EP2 Grease • Part # GR236, GR237

- Fortified with rust and oxidation inhibitors
- Lithium soap thickened grease
- Operating temperatures from -34.4° C to 121.1° C (-30° F to 250° F)
- Used in a variety of applications where extreme pressure is required
- This grease is available in two NLGI grades:
  - Part #GR236-NLGI No. 1, EP1
  - Part #GR237-NLGI No. 2, EP2

-400 g (14.1 oz.) cartridges, 10/case – Part #GR236C – Part #GR237C
-454 g (1 lb.) tubs, 6/case – Part #GR236T – Part #GR237T
-1 kg (2.2 lb.) pail – Part #GR236F – Part #GR237F
-5 kg (11 lb.) pail – Part #GR236G – Part #GR237G
-16 kg (35.3 lb.) pail – Part #GR236P – Part #GR237P
-55 kg (121.3 lb.) keg – Part #GR236K – Part #GR237K
-180 kg (396.8 lb.) drum – Part #GR236D – Part #GR237D

Interchange Guide

- Castrol Longtime™ PD
- Castrol Spheerol EPL
- Conoco Phillips
- Conolit EP
- Dow Molykote® BR2
- Exxon Mobil Beacon EP
- 76™ Unoba EP
- CITGO Premium
- Lithium EP-2
- Chevron Multifak® EP
- Fina Lithium EP
- Chevron Dura-Lith® EP
- FAG® Arcanol-MULTI2™
- LUBRIPLATE® 1200-2
- LUBRIPLATE® 1241, 1242
- LUBRIPLATE® 630-AA
- SKF™ LGMT2
- SKF™ LGEP2
- Shell® Alvania EP
- Mobilux® EP

Timken® High-Performance Roller Housed Unit Grease • Part # GR255

- NLGI No. 2, fully synthetic lithium-complex thickened grease
- Contains solid lubricant moly and EP/AW additives
- Excellent EP performance as well as wear-resistance
- Compatible with most industrial materials
- Wide operating temperature range
- Meets NLGI Certification GC-LB

-400 g (14.1 oz.) cartridges, 10/case – Part #GR255C
-454 g (1 lb.) tubs, 6/case – Part #GR255T
-16 kg (35.3 lb.) pail – Part #GR255P
-55 kg (121.3 lb.) keg – Part #GR255K
-180 kg (396.8 lb.) drum – Part #GR255D

Interchange Guide

- Molykote® G4700
- Mobilith SHC series
- Mobilgrease XHP series
- Shell Gadus S3 V460D
- Shell Gadus S3 V220C
- Chevron Ulti-Plex Synthetic Grease EP™
How do Timken lubricants measure up?

The American Society for the Testing of Materials (ASTM) established standards for the testing of lubricating greases. This table displays the typical range of test results reported by the lubricant companies for each test and ranks them as good, better or best, compared with the corresponding Timken grease characteristics.

<table>
<thead>
<tr>
<th>Grease</th>
<th>Test</th>
<th>Good</th>
<th>Better</th>
<th>Best</th>
<th>Timken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timken Mill Grease</td>
<td>Mobility, US Steel, 0° F, gms/sec</td>
<td>0.04</td>
<td>0.08</td>
<td>&gt;0.12</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>Rust Prevention, ASTM D6138, 10% Seawater, Rating</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Salt Fog, ASTM B117, hrs.</td>
<td>1,000</td>
<td>1,500</td>
<td>&gt;2000</td>
<td>2,500</td>
</tr>
<tr>
<td></td>
<td>Water Sprayoff, ASTM D4049, % loss</td>
<td>20</td>
<td>15</td>
<td>&lt;10</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Water Washout, ASTM D1264, 175° F, % loss</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>Timken OK Load, ASTM D2509, lbs.</td>
<td>40, 45</td>
<td>50, 55</td>
<td>&gt;60</td>
<td>60</td>
</tr>
<tr>
<td>Timken Premium All Purpose Industrial LC-2 Grease</td>
<td>Four Ball Wear, ASTM D2266, 40 kg, 167° F, scar mm</td>
<td>0.8</td>
<td>0.6, 0.7</td>
<td>0.4, 0.5</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>Four Ball Weld, ASTM D2596, kg</td>
<td>250</td>
<td>285</td>
<td>&gt;315</td>
<td>285</td>
</tr>
<tr>
<td></td>
<td>Timken OK Load, ASTM D2509, lbs.</td>
<td>40, 45</td>
<td>50, 55</td>
<td>&gt;60</td>
<td>55</td>
</tr>
<tr>
<td>Timken Construction and Off-Highway Grease</td>
<td>Wheel Bearing Leakage, ASTM D1263, 300° F, g</td>
<td>8</td>
<td>5</td>
<td>&lt;1.0</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Rust Prevention, ASTM D6138, 10% Seawater, Rating</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Four Ball Weld, ASTM D2596, kg</td>
<td>250</td>
<td>285</td>
<td>&gt;315</td>
<td>620</td>
</tr>
<tr>
<td></td>
<td>Four Ball Wear, ASTM D2266, 40 kg, 167° F, scar mm</td>
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<td>0.6</td>
<td>0.45</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>Timken OK Load, ASTM D2509, lbs.</td>
<td>40, 45</td>
<td>50, 55</td>
<td>&gt;60</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>Operating Temperature Limit, ° F</td>
<td>300</td>
<td>350</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Timken Ball Bearing Pillow Block Grease</td>
<td>Wheel Bearing Life, ASTM D3336, hrs@350° F</td>
<td>250</td>
<td>500</td>
<td>&gt;750</td>
<td>750</td>
</tr>
<tr>
<td></td>
<td>Water Washout, ASTM D1264, 175° F, % loss</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Rust Prevention, ASTM D6138, 10% Seawater, Rating</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Timken Food Safe Grease</td>
<td>Four Ball Wear, ASTM D2266, 40 kg, 167° F, scar mm</td>
<td>0.8</td>
<td>0.6, 0.7</td>
<td>0.4, 0.5</td>
<td>0.6</td>
</tr>
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<td></td>
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<td>250</td>
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<td>315</td>
</tr>
<tr>
<td></td>
<td>Water Washout, ASTM D1264, 175° F, % loss</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Timken Synthetic Industrial LC-1.5 Grease</td>
<td>Four Ball Wear, ASTM D2266, 40 kg, 167° F, scar mm</td>
<td>0.8</td>
<td>0.6, 0.7</td>
<td>0.4, 0.5</td>
<td>0.6</td>
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<td></td>
<td>Four Ball Weld, ASTM D2596, kg</td>
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<td>285</td>
<td>&gt;315</td>
<td>285</td>
</tr>
<tr>
<td></td>
<td>Timken OK Load, ASTM D2509, lbs.</td>
<td>40, 45</td>
<td>50, 55</td>
<td>&gt;60</td>
<td>55</td>
</tr>
<tr>
<td>Timken Multi-Use Lithium EP1 and EP2 Grease</td>
<td>Four Ball Wear, ASTM D2266, 40 kg, 167° F, scar mm</td>
<td>0.8</td>
<td>0.6</td>
<td>0.45</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>Water Washout, ASTM D1264, 175° F, % loss</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Timken High-Performance Roller Housed Unit Grease</td>
<td>Four Ball Weld, ASTM D2266, 40 kg, 167° F, scar mm</td>
<td>0.8</td>
<td>0.65</td>
<td>0.45</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>Four Ball Weld, ASTM D2596, kg</td>
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<td>285</td>
<td>&gt;300</td>
<td>500</td>
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</table>