



**PETRONAS**  
Fluid Technology  
Soluti▶ns™

TAKING YOU TO THE NEXT LEVEL  
IN METAL PROTECTION  
**GREASES**

# PETRONAS Fluid Technology Solutions™

## YOUR PARTNER FOR PROGRESS

PETRONAS Lubricants International (PLI) is the global lubricant division of PETRONAS, one of the most successful petrochemical companies in the world.

Our mission is to deliver proven product technology and related services benefitting from our 100 years of experience. We believe in maximising your productivity with value-added products and services that are global, yet personal – our presence in 86 countries ensures our technical expertise reaches you wherever you are.

PLI's differentiator is product excellence, developed by world-class Technology Centres and brought to your market with local expertise. Our passion for performance improvement makes us an obvious choice for key OEMs and delivers success in Formula One Motorsport.

At PLI, we understand that maximising uptime is your key challenge. That's why we have developed **Fluid Technology Solutions™**, an intelligent approach to your lubrication requirements that maximises your business performance through tailor-made product offerings and expert services.

Choose the right grease for your application need and take your metal protection to the next level.



CENTRAL  
LUBRICATION



CORROSION  
PROTECTION



EXTREME  
PRESSURE



FOOD GRADE



HEAVY LOADS



HIGH SPEED



HIGH  
TEMPERATURE



MULTIPURPOSE



LOW  
TEMPERATURE



ROCKDRILL  
GREASE



SYNTHETIC /  
SEMI-SYNTHETIC



SPECIAL  
APPLICATION



WATER  
RESISTANT





# PETRONAS Grease

## PETRONAS Grease FG NSF H1 Approved Multipurpose Food Grade Grease



PETRONAS Grease FG is a NSF H1 approved multipurpose food grade grease based on a combination of aluminium complex thickener technology and mineral white oil. It is suitable for a wide range of applications within the food and beverage processing industries and has excellent resistance to steam, water and oxidation.



## PETRONAS Grease Ca 00 Rock Drill Grease



A semi-fluid calcium grease formulated with a high viscosity base oil and solid lubricants, PETRONAS Grease Ca 00 has been developed specifically for the lubrication and protection of pneumatic percussion rock drills used in the mining industry.



## PETRONAS Grease Ca G 2 Multipurpose Calcium Grease Fortified with Lubricating Solids



PETRONAS Grease Ca G 2 is a multipurpose anhydrous calcium thickened grease suitable for components exposed to high levels of moisture and water ingress across a range of applications. The inclusion of lubricating solids enables enhanced protection under boundary lubrication and shock load conditions commonly seen in heavy duty equipment and off-road vehicles.



## PETRONAS Grease CaSX Water Resistant High Temperature Grease



PETRONAS Grease CaSX is suitable for use as a multipurpose, high temperature grease across a wide range of applications and markets where components may be particularly exposed to the elements or operational contaminants. Examples of target industries might include steel, marine, mining and construction.



Aluminium Complex

Hydrated Calcium

Anhydrous Calcium

Calcium Sulphonate Complex

## PETRONAS Grease Clay 2/470

### High Temperature Heavy Duty Industrial Grease



PETRONAS Grease Clay 2/470 is based on an inorganic, clay thickener which, in combination with high viscosity mineral base oils, makes it suitable for a variety of industrial applications including plain and rolling element bearings, gears and slideways where conditions involve frequent high temperature operation.



## PETRONAS Grease Clay MEP

### High Temperature Heavy Duty Industrial Grease



Formulated using a combination of an inorganic clay thickener, high viscosity, mineral base oils and solid lubricant technology, PETRONAS Clay MEP is suitable for a wide range of heavy duty bearing industrial applications exposed to extended periods at higher temperatures such as are experienced on oven conveyors, kiln car bearings and paper mill driers.



## PETRONAS Grease Clay MG

### High Temperature Severe Heavy Duty Industrial Grease



Formulated using an inorganic clay thickener in combination with very high viscosity mineral oils and fortified with a high level of lubricating solids, PETRONAS Grease Clay MG has been developed for the lubrication of components exposed to a combination of oscillating, reciprocating and sliding movement whilst operating at slower operating speeds under high and shock load conditions. Due to the level of solids, this product is not recommended for use in rolling element bearings.



## PETRONAS Grease Clay Syn 2/100

### Synthetic High Speed Bearing Grease



The combination of inorganic clay thickener and a relatively low, synthetic base oil make PETRONAS Grease Clay Syn 2/100 particularly well suited to rolling element bearings operating at higher speeds in combination with continuously high temperatures such as electric motor or oven fan bearings in cement or brick making kilns.



## PETRONAS Grease Clay Syn 2/220

### Synthetic High Temperature Bearing Grease



PETRONAS Grease Clay Syn 2/220 is a synthetic clay-thickened grease offering superior thermal and oxidative stability for a wide range of plain and rolling element bearings found in a variety of industrial markets.



## PETRONAS Grease Clay Semi-Syn Est

### Synthetic Rubber Compatible Grease



PETRONAS Grease Clay Semi-Syn Est is based on a combination of base oils specifically selected to enable compatibility with a wide range of elastomeric and polymeric materials such as those used in o-rings, seals and pipe valves.



# PETRONAS Grease

## PETRONAS Grease Li Range Premium Multipurpose Grease



Li 2, Li 3

Based on a shear stable lithium thickener technology, PETRONAS Grease Li 2 and Li 3 represent an excellent choice as a multipurpose grease for a wide range of rolling element bearings operating at speeds up to 3,600 rpm. The relatively low viscosity base oils make them particularly well suited for conditions involving higher speeds and low loads such as electric motor bearings. The choice of NLGI grade will be determined by a combination of factors such as bearing orientation and vibration levels.



## PETRONAS Grease Li EP Range Premium Multipurpose EP Grease



Li EP 0, Li EP 00, Li EP 1



Li EP 2, Li EP 3

Based on a combination of shear stable lithium thickener technology, high quality mineral base oils and an optimised EP additive system, the Li EP range provides a selection of premium multipurpose greases suitable for a wide variety of industrial applications across multiple markets. The range of consistencies from the semi-fluid NLGI 00 to the stiffer NLGI 3 grades further increases the versatility of this range of products.



## PETRONAS Grease Li AS Anti-Seize Grease



Based on lithium thickener technology and high quality mineral base oils, PETRONAS Grease Li AS contains a blend of specially selected solid lubricants for reduced friction and has been developed specifically for use as an anti-seize lubricant for components such as screw threads, nuts and bolts that enable the connection and assembly of multiple engineered parts.



## PETRONAS Grease Li PT Post Tensioning Grease



Based on a combination of lithium thickener technology, high quality mineral base oils and an optimised additive system, PETRONAS Grease Li PT is specifically promoted as a post tensioning grease within the construction industry.



## PETRONAS Grease Tutela GP Automotive Multipurpose EP Grease



PETRONAS Grease Tutela GP is a premium multipurpose lithium EP grease formulated using high quality base oils and an optimised additive system providing protection against loads, wear, corrosion and oxidation. Suitable for the lubrication of a variety of plain and rolling element bearings including wheel bearings, bushes and water pump bearings.



## PETRONAS Grease Tutela SP

### Multipurpose EP Grease with Solids



PETRONAS Grease Tutela SP is a premium multipurpose lithium EP grease fortified with molybdenum disulphide for enhanced protection in applications subject to rotational, sliding or oscillating motion and where shock loading may occur. Suitable for use on the chassis components and CV joints of passenger cars, commercial vehicles and agricultural equipment requiring a grease containing solid lubricants.



## PETRONAS Grease Tutela SCF

### Synthetic Centralised Lubrication System Grease



Based on a lithium thickener and formulated using low viscosity, synthetic base oils, PETRONAS Grease Tutela SCF has been developed to provide protection and remain pumpable even at very low temperatures. Suitable for use in the centralised lubrication system of heavy duty trucks, requiring an NLGI 00/000 semi-fluid grease.



## PETRONAS Grease LiCa GEP 0

### Extreme Pressure Industrial Greases Fortified with Lubricating Solids



This is a lithium/calcium based multipurpose heavy duty grease ideal for protecting components exposed to high loads and water ingress. Soft consistency enables better product mobility at lower operating temperatures or where centralised lubrication systems are the primary method of application.



## PETRONAS Grease LiCa GEP 2.5

### Extreme Pressure Industrial Greases Fortified with Lubricating Solids



This is a lithium/calcium based multipurpose heavy duty grease ideal for protecting components exposed to high loads and water ingress. The inclusion of solid lubricant technology ensures enhanced protection under boundary and shock load conditions such as those seen across multiple heavy duty markets including rail, agriculture, mining and construction.



## PETRONAS Grease LiCa MG HL

### Heavy Duty Lithium Calcium Grease Fortified with Lubricating Solids



The combination of a lithium/calcium thickener, high viscosity base oil, EP additives and 5% solid lubricant technology ensure a water resistant grease suitable for use in a wide variety of applications including pins, bushes, joints and couplings that enable the drive or movement of off-road mining and construction vehicles and equipment.



## PETRONAS Grease LiCa MG XHL

### Extreme Heavy Duty Lithium Calcium Grease Fortified with Lubricating Solids



The combination of a lithium/calcium thickener, very high viscosity base oil, EP additives and 5% solid lubricant technology ensure a water resistant grease suitable for use in a wide variety of applications including pins, bushes, joints and couplings that enable the drive or movement of off-road mining and construction vehicles and equipment, but where operating conditions may exceed the capabilities of PETRONAS Grease LiCa MG HL.



# PETRONAS Grease

Lithium/Calcium

## PETRONAS Grease LiCa Semi-Syn Heavy Duty Semi Synthetic Water Resistant Grease



The combination of a lithium/calcium thickener system and a high viscosity blend of premium quality base oils and synthetic polymers results in a very adhesive product with excellent water resistance suitable for use in a wide variety of heavy duty applications. Suitable for use in a variety of applications on both agricultural and forestry equipment including prop shafts, U joints, chassis components, fifth wheels, splines and slides.



## PETRONAS Grease LiCa TMG Multipurpose Heavy Duty Grease



The combination of a lithium/calcium thickener system and a high viscosity blend of premium quality base oils and synthetic polymers results in a very adhesive product with excellent water resistance suitable for the lubrication and protection of a wide variety of exposed, heavy duty components including gears, drive shaft mechanisms and chassis components in industries such as rail, agriculture, mining and cement.



## PETRONAS Grease LiX 2/170 Multipurpose High Temperature Grease



Based on a lithium complex thickener, this is a multipurpose EP grease with enhanced thermal stability for those applications where increased speeds or loads may result in higher operating temperatures. Suitable for both industrial and automotive applications including wheel bearings and prop shafts for passenger cars and on-road commercial vehicles such as trucks and buses.



## PETRONAS Grease LiX EP 2/380 Multipurpose Heavy Duty Lithium Complex Grease



PETRONAS Grease LiX EP 2/380 is based on a lithium complex thickener technology combined with high viscosity mineral base oils and optimised EP performance to deliver enhanced load carrying capability in heavy duty applications where solid lubricants are not required.



## PETRONAS Grease LiX MEP Heavy Duty Lithium Complex Grease Fortified with Lubricating Solids



A thermally stable lithium complex thickener, high viscosity mineral base oils and an optimised EP additive package make this product ideal for heavy duty applications exposed to higher operating temperatures. Solid lubricant technology provides enhanced surface protection where sliding and oscillating motion may be prevalent.



## PETRONAS Grease LiX Syn 0/460 Synthetic Industrial Centralised Lubrication System Grease



A soft, lithium complex grease formulated using a combination of high viscosity synthetic base oils and a high performance EP additive package. Suitable for use in centralised lubrication systems or enclosed gear systems requiring excellent mobility, stability and load carrying capability across a wide temperature range.



Lithium Complex



## PETRONAS Grease LiX Syn 1/1500

### Synthetic High Temperature Heavy Duty Grease



PETRONAS Grease LiX Syn 1/1500 is based on lithium complex thickener technology, very high viscosity, synthetic base oils and an additive system with enhanced EP and anti-wear performance. This product is especially well suited for use in a wide variety of industrial and heavy duty applications where operating conditions combine very slow movement with high loads and extended periods at elevated temperatures.



## PETRONAS Grease LiX Syn 2/100

### Synthetic High Speed Bearing Grease



Based on a combination of lithium complex thickener technology, low viscosity synthetic base oils and an optimised additive system, PETRONAS Grease LiX Syn 2/100 is ideally suited as a multipurpose grease for rolling element bearings rotating at higher speeds such as those found in electric motors, oven fans or alternators.



## PETRONAS Grease LiX Syn 2/220

### Synthetic Multipurpose Bearing Grease



PETRONAS Grease LiX Syn 2/220 contains a lithium complex thickener in combination with synthetic base oils and a high performance EP additive package producing a shear stable grease with excellent protection against wear, corrosion and extremes of temperature. Suitable for a wide variety of rolling element bearings across a range of both automotive and industrial market segments.



## PETRONAS Grease LiX Syn 2/460

### Synthetic High Temperature Heavy Duty Grease



PETRONAS Grease LiX Syn 2/460 is based on lithium complex thickener technology, high viscosity, synthetic base oils and an optimised additive system making it suitable for a variety of heavier duty industrial applications where the inclusion of solid lubricants is not a specific requirement.



## PETRONAS Tutela WB Grease

### Heavy Duty Multipurpose High Temperature Grease



Based on a lithium complex thickener and formulated using a combination of high viscosity base oils and a robust additive system, Tutela WB Grease provides enhanced performance and protection in both on and off-road heavy duty applications. Suitable for wheel bearings operating at higher temperatures or as a chassis grease where poor road conditions or off-road operations may lead to increased vibration.



# PETRONAS Grease

Polyethylene

## PETRONAS Grease PE HS High Speed Coupling Grease



PETRONAS Grease PE HS is based on a polyethylene thickening system which in combination with high viscosity mineral base oils ensures excellent resistance to separation due to the centrifugal forces commonly experienced in high speed, flexible couplings. An optimised EP additive system provides balanced protection against the effects of corrosion, oxidation and operational loading.



Polyurea

## PETRONAS Grease PU Extended Service High Speed Bearing Grease



PETRONAS Grease PU is a polyurea based, high temperature grease suitable for use in a wide variety of rolling element bearing applications where operational loads are relatively low. The viscosity of the base oils makes this grease especially well suited to the extended lubrication and protection of high speed rolling element bearings such as those found in electric motor, fan and alternator bearings.



PTFE

## PETRONAS Grease PTFE Synthetic Inert High Temperature Bearing Grease



The combination of a PTFE thickener and PFPE base oils make PETRONAS Grease PTFE extremely resistant to the effects of wear, thermal degradation, and potentially aggressive contaminants including steam, emulsions, and solvents across a wide operating temperature. It is also inert and therefore offers excellent compatibility with a wide range of polymeric materials.

PETRONAS Grease PTFE is particularly well suited to the long term lubrication of rolling element and plain bearings operating at elevated temperatures.



Silica

## PETRONAS Grease SF Semi-Fluid Enclosed Gear Grease



PETRONAS Grease SF is a silica-thickened, semi-fluid grease which in conjunction with a high viscosity base oil is suitable for use in light to medium duty enclosed gear drives and mechanisms.



# Grease Compatibility Charts



With the great variety of greases found on the market, it is important to know whether or not there may be a compatibility issue before a new grease is introduced in the application. Compatibility depends on whether or not the thickener systems and/or base oils are mixable. In rare cases there can be problems between different additives, but it seldom destroys the thickener matrix.

When mixing two different greases, three things can occur:

- Nothing happens. This means that the two products are compatible.
- Softening. The components are incompatible and the soap structures break down. The result is a high degree of leakage which can lead to starvation in the bearing and then, failure.
- Stiffening. This is a rare reaction, but imagine if this was to happen in a centralized lubrication pipe-line.

The most common way of testing compatibility is to run the prolonged penetration 10,000 strokes. The greases are mixed in the ratios 0%, 25%, 50%, 75%, and 100%. The difference in penetration is then measured. This also gives an indication on how to clean the bearing before switching product.

△ Penetration	Compatibility	Cleaning
0-10	Totally Compatible	No Cleaning
10-30	Compatible	Swift Cleaning
30-50	Limited Compatibility	Normal Cleaning
>50	Not Compatible	Total Cleaning

The compatibility overview should be considered as a guideline. Due to the large variation of grease formulations, it is hard to predict compatibility between two different greases.

THICKENER	Aluminium Complex	Barium Complex	Hydrated Calcium	Anhydrous Calcium	Calcium Complex	Calcium Sulphonate Complex	Clay	Lithium	Lithium Complex	Polyurea	Sodium
Aluminium Complex	✓	●	✗	✓	●	✗	✗	✗	✓	●	✗
Barium Complex	●	✓	●	●	✗	●	●	●	●	●	✓
Hydrated Calcium	✗	●	✓	✓	✓	✓	●	●	✓	●	●
Anhydrous Calcium	✓	●	✓	✓	●	●	✓	✓	✓	✗	✗
Calcium Complex	●	✗	✓	●	✓	✓	●	●	●	✓	●
Calcium Sulphonate Complex	✗	●	✓	●	✓	✓	✗	✓	✓	✓	✗
Clay	✗	●	●	✓	●	✗	✓	●	✗	●	●
Lithium	✗	●	●	✓	●	✓	●	✓	✓	●	✗
Lithium Complex	✓	●	✓	✓	●	✓	✗	✓	✓	●	●
Polyurea	●	●	●	✗	✓	✓	●	●	●	✓	●
Sodium	✗	✓	●	✗	●	✗	●	✗	●	●	✓

BASE OIL	Ester	Mineral Oil	Polyalpha-olefin	Polyglycol	PFPE	Polyphenylether	Silicone: Methyl	Silicone: Phenyl
Ester	✓	✓	✓	✓	✗	●	✗	✓
Mineral Oil	✓	✓	✓	✗	✗	●	✗	●
Polyalphaolefin	✓	✓	✓	✗	✗	●	✗	●
Polyglycol	✓	✗	✗	✓	✗	✗	✗	✗
PFPE	✗	✗	✗	✗	✓	✗	✗	✗
Polyphenylether	●	●	●	✗	✗	✓	✗	✓
Silicone: Methyl	✗	✗	✗	✗	✗	✗	✓	●
Silicone: Phenyl	✓	●	●	✗	✗	✓	●	✓

**KEY:**

- ✓ Compatible
- Requires Testing
- ✗ Incompatible



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