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**Palco**<sup>®</sup>  
Advanced Lubricant Chemistry

# PRODUCT CATALOGUE

## INDUSTRIAL LUBRICANTS



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## FROM THE DESK OF MANAGING DIRECTOR

As we reflect on our journey since the beginning of Paros Lubricants in 1985, I take immense pride in our substantial growth in stature, size, and scale. We have always believed that great companies, founded with a strong vision and built upon solid values, are the ones that thrive and live on.

We realize that with growth comes responsibility and accountability. We must manage expectations of all customers and commit to deliver superior performance each time. It is imperative that we continuously raise the bar, innovate, and reinvent ourselves. Our engineers are encouraged and supported to develop advance innovations rather than mere incremental improvements, thereby realizing our vision of being the most admired Indian Lubricant Manufacturing Company— renowned for quality products, reliable performance & exceptional service, all with a perspective of global excellence.

Today, our company operates on a much larger scale, and our business has performed well across all operating vertical, including export, supported by a robust business model. Joint ventures and subsidiaries across continents will further drive our growth and ensure long-term sustainability. However, our core focus remains on operational excellence, enhancing our capabilities, and expanding our success into new global markets.

We hope you find this edition both informative and insightful, offering you a deeper understanding of the work we undertaken to meet the new generation requirements.

Warm regards

Sd/-

**Paras Kumar Bansal**

**Managing Director**

October, 2025

# OUR VALUES

Our mission and vision statement consists of the following 5 core values :

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## 5 PALCO VALUES

Provides best quality

Automotive and industrial

Lubricants as per international standard, at

Competitive prices and

Offer best after sales service.

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We Strongly **Believe**  
In Providing Perfect  
Service To  
Our Customers.



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## METAL CUTTING COOLANTS

### SOLUBLE CUTTING OIL

#### PALKUT - SL

**PALKUT SL** is premium quality water soluble cutting oil, specially developed to form extremely stable milky emulsion even with extreme hard water (400 ppm) leading to excellent tool life and finish, in all metal cutting operations, where cooling is more important than lubrication. It has excellent antirust and anti-froth quality and cause no corrosion of machine, work piece or tool. Do not decompose chemically; leave objectionable odour, cause discoloration and staining. This is operator friendly and economical in use.

**PALKUT - SL** is blended from refined mineral oil, emulsifier and other additives.

#### Procedure:

- ★ Dilution ratio with water varies between 5% to 10% depending on severity of machining.
- ★ While preparing emulsion always add cutting oil to water (not the other way round) to prevent inversion of the emulsion.
- ★ Clean the coolant reservoir and system periodically, recharge the system with 1% solution of coolant to be charged and circulate for at least 1 hr. and then drain completely.
- ★ Check the emulsion strength regularly and top up if necessary.

**PERFORMANCE LEVEL:** Meets IS 1115-2002 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PALKUT SL
1	Kinematic Viscosity, cSt @40°C	26 - 32
2	Flash Point, COC, °C, min.	160
3	Copper Strip Corrosion test at 100% for 3 hours	1a
4	Cast Iron Corrosion Properties (IP 125)	Passes
5	pH 5% emulsion in D/W	8.5-9.5
6	Emulsion test, 5:1 and 20:1 ratio in water of 400 ppm hardness (as CaCO <sub>3</sub> )	Passes (No oil or cream separation observed)

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### SOLUBLE CUTTING OIL

#### PALKUT SL PRO

**PALKUT SL PRO** is a superior grade soluble cutting oil blended from highly refined base oil and special additive to provide superior tool life and other benefits. It has excellent emulsion stability with hard water.

**PALKUT SL PRO** can be used for machining & grinding of ferrous as well as non-ferrous materials.

#### PRODUCT FEATURES

- ★ Milky stable emulsion
- ★ Designed for multi-metal use
- ★ Better corrosion protection.
- ★ Readily emulsifies to form stable emulsion (oil in water type, water hardness 800 ppm) and resists bacterial growth.
- ★ Formulation is free of chlorine, phenol etc. harmful chemicals

**APPLICATIONS:** PALKUT SL PRO is developed with a high mineral oil content for a variety of metal cutting operations where cooling is important. This high-performance soluble oil is designed especially for general machining like turning, planning, drilling, milling of ferrous and non-ferrous metals like Aluminium. Check the emulsion strength regularly and top up if necessary.

Recommended Concentration:

Recommended Concentration: Operation	Cast iron	Mild Steel	Alloy Steel	Aluminium Alloys
Grinding & Turning	4 – 5%	3 – 5%	4 – 6%	4 – 6%
Milling, Reaming, Boring	5 – 6%	5 – 7%	5 – 8%	5 – 8%
Drilling, Tapping, Threading	5 – 6%	5 – 7%	5 – 8%	5 – 8%

#### Coolant Management Guidelines:

- Ensure that before charging an emulsion the machines are clean. While preparing the emulsion always add oil to water, while addition the agitator must be on. Never add water to oil.
- Check the emulsion concentration on regular basis. Maintenance of proper concentration gives satisfactory performance as well as minimize bacteria problem.
- Always ensure to maintain the pH range between 8.5 to 9.5
- The top up should be done in the form of emulsion. Never add only water or oil to the sump.
- Periodical checking of Bacterial count needs to be done. The earlier detection of bacterial count can be tackled easily by using proper additives.

## METAL CUTTING COOLANTS

### SOLUBLE CUTTING OIL

#### PALKUT - SL PRO

**PERFORMANCE LEVEL:** Meets IS 1115-1986 specifications.

**PACKING:** 210L, 50L, 20L

CHARACTERISTICS			
S.NO.	PROPERTIES	TEST METHOD	PALKUT SL PRO
1	Colour, Oil	Visual	Light Brown
2	Appearance, Oil		Clear
3	Colour, Emulsion	Visual	Milky White
4	Copper Corrosion, 100°C, 3 hrs.	ASTM D130	1a
5	Emulsion Test, 5:1 & 20:1 ratio in water of 400ppm hardness (as CaCO <sub>3</sub> )	IS 1448 P:68	No Oil, No cream separation
6	Emulsion Test, 5:1 & 20:1 ratio in water of 200ppm hardness (as CaCO <sub>3</sub> )		Passes (no froth)
7	Cast Iron Corrosion Test in 200 ppm hard water (as CaCO <sub>3</sub> )	IS 1115: Appendix A	Passes
8	Thermal Stability Test	IS 1448 P:100	Passes
9	Refractometer Factor	–	1.0
10	pH, at 5% in distilled water		8.5 - 9.5
11	Emulsion Stability in 800 ppm hard water, 48 hours	Internal	Passes (No Oil or scum separation)

\* The specifications are subject to variations/ development / customization.

# METAL CUTTING COOLANTS

## SEMI SYNTHETIC CUTTING FLUID

### PAL SS 520

#### Semi synthetic cutting fluid for Ferrous Alloys

It is a premium Semi-Synthetic cutting oil which forms translucent emulsion with water and provides high lubricity & excellent cooling properties to metal specimen. It has outstanding detergency & wetting properties & can be used for cast iron as well as ferrous metals apart from CNC machines. The product contains special surfactants which perform cleaning action of the machine during use & prevents accumulation of dirt, grit, grease & oil scum on the machine. This also cleans the part & removes chips & prevents them from sticking onto the metal. The product is blended with a special grade of broad-spectrum biocides which protects firm bacterial / fungicidal growth. Thus, extends the tank life under normal operating conditions.

#### ADVANTAGE

- ★ Excellent cooling properties & lubricity combined to provide extended tool life.
- ★ Excellent surface quality and high manufacturing precision
- ★ Higher productivity and lower maintenance.
- ★ Keeps machine and work environment clean when machining or grinding.

#### APPLICATIONS

Recommended Concentration: Operation	Cast iron	Mild Steel	Alloy Steel	Other Steels
Grinding & Turning	4 – 5%	3 – 5%	4 – 6%	4 – 6%
Milling, Reaming, Boring	5 – 6%	5 – 7%	5 – 8%	5 – 8%
Drilling, Tapping, Threading	5 – 6%	5 – 7%	5 – 8%	5 – 8%

**PACKING:** 210L, 50L, 20L

CHARACTERISTICS		
S. NO.	PROPERTIES	PAL SS 520
1	Appearance	Clear & Transparent
2	Colour	Pale Yellow
3	Conc. Brix Factor	1.48
4	Density @29.5°C	0.985 – 0.999
5	Emulsion appearance	Translucent
6	Cast Iron Chip Test (Break Point)	3%
7	pH (5% Emulsion)	9.24
8	Refractometer Factor	1.12
9	Oil Content, %	20

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### SEMI SYNTHETIC CUTTING FLUID

#### PAL SS 540

#### Semi synthetic cutting fluid for Aluminium

**PAL SS 540** is a high oil content semi- synthetic product specially designed for machining operations on aluminium, yellow metals, steel & other ferrous components. Apart from exclusively modified biocidal protection, the product is also fortified with superior EP/AW additives for extended tool life and excellent finish of the components. The product gives a long sump life resulting in economical usage over a long run.

#### PRODUCT FEATURES

- ★ Excellent lubricity, EP/AW properties. Good surface finish and tool life
- ★ Bio-stable product giving long life. Good corrosion protection with ferrous metals
- ★ No staining on Aluminium and Aluminium alloys

#### APPLICATIONS

- ★ Recommended for machining operations on Aluminium, Copper and Ferrous Alloys
- ★ Suggested concentration 4 to 5% depending up on operation.
- ★ Advisable to use DM water for maximizing the sump life

**PERFORMANCE LEVEL:** Meets IS 1115:1986 (Reaffirmed 2013) specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL SS 540
1	Appearance	Clear & Transparent
2	Colour	Pale Yellow
3	Conc. Brix Factor	1.48
4	Density @29.5C	0.985 – 0.999
5	Emulsion appearance	Translucent
6	Cast Iron Chip Test (Break Point)	3%
7	pH (5% Emulsion)	9.24
8	Refractometer Factor	1.12
9	Oil Content, %	40

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### SYNTHETIC CUTTING FLUID

#### PAL SYNCO-100, 200

These are premium quality water-soluble mineral oil free, fully synthetic type coolant, specially developed for use on ferrous metals only. These fluids do not undergo bacterial degradation and leave objectionable odour. Further these are non foaming, non toxic, non hazardous, thus ensuring total safety of the workmen. These are operator friendly and economical in use due to good mixing ratio and long service life.

**PAL SYNCO - 100** is fortified with corrosion inhibitor, bactericide, fungicide etc. It has several advantages over conventional soluble cutting oil. Recommended for machining and grinding of ferrous metals only.

**PAL SYNCO - 200** contains EP additive to give high surface finish. Recommended for machining and grinding of iron, steel, non-alloyed steel and nickel-chrome steel.

Not recommended for the machining of non-ferrous metals.

Dilution ratio with water varies between 4%-8% depending upon the operation and product handled.

- ★ Concentrated mixture may lead to paint peel off in the machines and some discoloration of the operator's skin.
- ★ Coolant should be used only in clean circulating system.

**PERFORMANCE LEVEL:** IS 11186-1985(Reaffirmed 1990) specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL SYNCO-100	PAL SYNCO-200
1	Appearance	Green	Green
2	Solution Appearance, @2% in distilled water	Clear fluorescent	Clear fluorescent
3	Cast iron corrosion test, 50: 1 ratio emulsion / solution with distilled water	Passes	Passes
4	pH 2% dilution in distilled water	9	9.5

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### SYNTHETIC CUTTING FLUID

#### PAL SYNCO-300, 400

These are premium class of synthetic fluids designed to enhance component quality, increase productivity and reduce process costs. **SYNCO 300 & 400** synthetic cutting fluids deliver extremely high cutting and grinding efficiencies for high-speed processes. They reduce biocide use, extend tool life and ensure a quality surface finish.

The product has unlimited tank life and no bacterial fouling due to absence of mineral oils in the product. The presence of defoamers controls the foaming of the fluid during operation.

**PAL SYNCO - 300** is especially recommended for machining operations where it provides extremely smooth surface finish on Ferrous & Ferrous alloys.

**PAL SYNCO - 400** is especially recommended for machining operations where it provides extremely smooth surface finish on Ferrous as well as Aluminum alloys. (Multi-Metal)

#### Advantages:

- ★ Longer Tool Life . Multi-Metal compatibility
- ★ Rejects Tramp Oils and prevents contamination
- ★ Longer Sump Life – lower chances of bacterial or fungal attack
- ★ Excellent Lubricity Characteristics

**PERFORMANCE LEVEL:** IS 11186-1985(Reaffirmed 1990) specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL SYNCO-300	PAL SYNCO-400
1	Appearance	Green	Green
2	Solution Appearance, @5% in distilled water	Clear fluorescent	Green
3	Cast Iron Corrosion, @400 ppm hard water	Passes	Passes
4	pH 5% dilution in distilled water	9	9
5	Aluminum Strip Corrosion test	NA	Passes

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### NEAT CUTTING OILS

#### PAL BROACHLUBE 17

#### Heavy Duty Broaching Oil

**PAL BROACHLUBE 17** is formulated with chlorine, ester & Sulphur as extreme pressure additives. Providing synergy with suitable anti-wear additive provides excellent performance at elevated temperatures helping in extending broach life & provides excellent surface finish to component.

This is a robust product & successfully used in machine shops where extreme lubrication qualities are required in cutting operation. These broaching oils are even suitable for the machining of hardest material possible.

#### PRODUCT FEATURES

- ★ Excellent cooling property effectively dissipates heat generated during the broaching process, prevents thermal expansion and distortion of work piece.
- ★ Superior lubrication reduces friction between the broaching tool and the workpiece surface, minimizes tool wear and prolongs the life of broaching tool.
- ★ Enhanced cleaning ability aids removal metal chips and debris from cutting area, prevents clogging of broaching area ensuring consistent cutting performance.

#### APPLICATIONS

Suitable for broaching and gear cutting steel, stainless steels and Nickel alloys. This product is used for broaching of medium carbon steel of automotive components. This product can be used for shaving operation also in gear cutting where anti chip welding properties are important. Specialized additives used help to extend the life of costly broaches.

**PERFORMANCE LEVEL:** Meets IS :3065 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL BROACHLUBE 17
1	Appearance	Bright & Clear
2	Kinematic Viscosity, cSt @40°C	16-18
3	Specific Gravity @29.5°C	0.940
4	Pour Point, °C, max.	-6
5	Flash Point, COC, °C min.	180
6	Copper Corrosion	4C

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### NEAT CUTTING OILS

#### PAL GRINDHONE OIL

#### High Performance Honing Oil

**PAL GRINDHONE OIL** is a low viscosity, chlorine-free, neat cutting oil containing ester-based lubricity and performance additives for honing application. It provides excellent surface finish to hardened steels and nickel alloys.

#### PRODUCT FEATURES

- ★ Excellent flushing and lubrication properties extend honing stone life and enable high surface finish and dimensional accuracy
- ★ Low viscosity and excellent wetting characteristics reduce drag out and results in lower product usage

**APPLICATIONS:** It is recommended for honing operations on a wide range of ferrous and non-ferrous materials where a high degree of finish is required. It is suitable for honing of nickel alloys, toughened steel, bearing steel and for super finishing operations where stones are used instead of tapes.

**PERFORMANCE LEVEL:** Meets IS :3065 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL GRINDHONE OIL
1	Appearance	Bright & Clear
2	Kinematic Viscosity, cSt @40°C	5-7
3	Specific Gravity @29.5°C	0.810
4	Flash Point, COC, °C min.	130
5	Copper Corrosion	1b

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### NEAT CUTTING OILS

#### PAL HOBEX 22, 32

#### High Performance Gear Hobbing & General Machining Oil

**PAL HOBEX** series is a special blend of highly refined mineral oil with sulphurized additives and Synthetic Esters to form a synergistic effect to provide excellent lubricity and cooling characteristics.

These high-performance additives react chemically at the tool work & chip interface, to produce metallic derivatives which forms low friction film between the metal surfaces. This film is effective even up to 1000 °C and minimizes built up edge & ensures anti-chip welding properties.

#### PRODUCT FEATURES

- ★ Superior lubricity & EP additives result in less heat generation & improved surface finish excellent tool life.
- ★ Low misting & fuming properties ensure environment & operator friendly operation
- ★ Superior additives result in low oil drag out, less top-up & therefore reduced consumption.
- ★ Light color ensures better visibility at workplace & therefore ease of operation.
- ★ No obnoxious odor therefore pleasant working environment.

#### APPLICATIONS

- ★ Product is exclusively designed for Gear Hobbing and shaving process in metalworking industries.
- ★ It is also suitable for gear cutting, broaching, drilling, reaming and thread milling of ferrous and ferrous alloys
- ★ Product is not recommended to use for copper and copper alloys

**PERFORMANCE LEVEL:** Meets IS :3065 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL HOBEX 22	PAL HOBEX 32
1	Appearance	Bright & Clear	Bright & Clear
2	Kinematic Viscosity, cSt @40°C	20-24	30-35
3	Specific Gravity @29.5°C	0.868	0.877
4	Pour Point, °C, max.	-9	-6
5	Flash Point, COC, °C min.	160	180
6	Copper Corrosion	1b	1b

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### NEAT CUTTING OILS

#### PAL GUNDRILL OIL

#### Gun Drilling Oil For Ferrous & Non-ferrous Alloys

**PAL GUNDRILL OIL** is a chlorinated, sulphur-containing and heavy metal-free high-performance neat cutting oil, specifically designed for all ferrous and non-ferrous alloys.

**PAL GUNDRILL OIL** is specially formulated to meet the higher performance levels required by some machine manufacturers and end-users.

#### PRODUCT FEATURES

PAL GUNDRILL OIL enables reduced friction and good anti-weld properties at the chip-tool interface, resulting in extended cutting tool life and good surface finishes on the machined parts. They enable excellent performance in the most difficult machining operations and permit clear view of the work piece.

**APPLICATIONS:** It is suitable for gun drilling, deep hole drilling, and gear cutting/shaving. Its excellent lubricity excels in honing, grinding, lapping, and broaching/tapping operations. It is suitable for all type of metallurgies including ferrous and non-ferrous alloys.

**PERFORMANCE LEVEL:** Meets IS :3065 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL GUNDRILL OIL
1	Appearance	Bright & Clear
2	Kinematic Viscosity, cSt @40°C	11-13
3	Specific Gravity @29.5°C	0.870
4	Pour Point, °C max.	-9
5	Flash Point, COC, °C min.	160
6	Copper Corrosion	1b

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### NEAT CUTTING OILS

#### PAL EDM OIL

#### High Performance EDM Oil

**PAL EDM OIL** is a mixture of highly refined hydrocarbon distillate. The product is colourless and virtually odourless. It exhibits a relatively high flash point that helps reducing the possibility of fire. The low viscosity of this fluid provides good circulation through the spark gap and more rapid removal of metal fines.

#### PRODUCT FEATURES

- ★ Low viscosity ensures good cooling and flushing action in narrow spark gaps
- ★ Low odour and light colour result in greater operator acceptability
- ★ Lower aromatics result in a safe and pleasant work environment
- ★ Excellent filter ability and high oxidation stability ensure long service life

**APPLICATIONS:** PAL EDM OIL is recommended for use on all ferrous and non-ferrous metals. It can be used in electric discharge machines of all sizes and is equally suitable for roughing as well as finishing operations.

**PERFORMANCE LEVEL:** Meets IS :3065 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL EDM OIL
1	Appearance	Bright & Clear
2	Kinematic Viscosity, cSt @40°C	2-3
3	Specific Gravity @29.5°C	0.760
4	Flash Point, COC, °C min.	110
5	Copper Corrosion	1b

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### NEAT CUTTING OILS

#### PAL PUNCH 60

#### Fin Punching Oil For Aluminium & Copper

**PAL PUNCH 60** oil is crafted for aluminium & copper fin pressing operations, delivering superior lubrication without leaving any residue. This enables subsequent processes to proceed seamlessly, eliminating the necessity for prior washing steps.

#### PRODUCT FEATURES

- ★ Evaporates without causing oil stains even during high-speed punching with aluminium and silicon steel plates.
- ★ Extends life of metal moulds during high-speed stroking.
- ★ Offers outstanding chemical stability over the long term.
- ★ Shows no reaction with aluminium or copper.

#### APPLICATIONS

- ★ Swift press operation involving aluminium and silicon steel plates for air conditioner manufacturing.
- ★ For stamping applications for aluminium & copper Alloys
- ★ For bending copper tubes used in heat exchanger hairpins
- ★ An exceptional fin press oil designed for air conditioners and various punching operations, ensuring high performance.

**PERFORMANCE LEVEL:** Meets IS :3065 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL PUNCH 60
1	Appearance	Bright & Clear
2	Kinematic Viscosity, cSt @40°C	1.5-3
3	Specific Gravity @29.5°C	0.790
4	Flash Point, COC, °C min.	76
5	Copper Corrosion	1b

\* The specifications are subject to variations/ development / customization.

## METAL CUTTING COOLANTS

### NEAT CUTTING OILS

#### PALKUT ST – 1,2,3,4,5,6

These products are high performance neat cutting fluids, designed for a wide range of applications. The products meet the highest demands of operating, cutting conditions, tools & work piece materials. Each of these products differ in their viscosity & other characteristics etc. to cover a wide range of applications. These products offer stable oil film, excellent heat dissipation, EP properties & improved surface finish.

#### **PALKUT ST -1 & 2**

Non-staining type neat cutting oils containing chlorinated EP additives. These products are recommended for machining operation on mild steel, carbon steel, nickel steel and manganese steel such as thread grinding, form grinding, milling, honing & lapping etc.

#### **PALKUT ST - 3**

Non-staining type sulphurised fatty oil based neat cutting oil which covers a wide range of machining operations, aids in obtaining good surface finish & protects tool from excessive wear. Recommended for application in high speed automatic machine tools & multispindle lathes where operations like turning, honing etc. are performed. It is also suitable for application as general purpose machine tool lubricant.

#### **PALKUT ST - 4**

It contains sulphurised & chlorinated additives which provides excellent performance in all machining operations on non-ferrous metals & can also be used for gear hobbing, gear sharing, screw cutting, tapping, milling etc.

#### **PALKUT ST - 5**

It is an active sulphur-chlorinated type cutting oil which is recommended for deep hole drilling & deep hole boring. It is suitable for cutting of ferrous & ferrous alloys only.

#### **PALKUT ST - 6**

It is a neat cutting oil containing sulphurised fat besides active sulphur & chlorinated additives. Recommended for severe metal cutting operations including gear cutting, broaching, thread cutting, hobbing etc. It is not recommended for use on non-ferrous metals.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S								
P A L K U T								
S. NO.	PROPERTIES	ST-1	ST-2	ST-3	ST-4	ST-5	ST-6	
1	Appearance	Clear & Bright Amber Fluid					Dark Brown	
2	Kinematic Viscosity, cSt @40°C	27-35	15-25	15-25	27-35	11-15	27-35	
3	Flash Point, COC, °C, min.	160	150	150	160	135	160	
4	Contains							
	a) Inactive Sulphur	NO	NO	YES	YES	NO	YES	
	b) Active Sulphur	NO	NO	NO	NO	YES	YES	
	c) Chlorine	YES	YES	NO	YES	YES	YES	

\* The specifications are subject to variations/ development / customization.

## METAL FORMING & WIRE DRAWING

### NEAT CUTTING OILS

#### PAL MIST OIL 32

**PAL MIST OIL 32** is a high-performance neat cutting oil, ensuring precision lubrication and cooling during metal cutting operations. Formulated with high-VI base oils, it maintains stable viscosity across temperature variations while offering exceptional thermal and oxidation resistance. The mist application minimizes fluid waste, penetrates deep into cutting zones, and forms a protective film to reduce friction, prevent tool wear, and improve surface finish. Ideal for high-speed machining, it balances efficiency, cost-effectiveness, and environmental responsibility—delivering the reliable performance

**BENEFITS: PAL MIST OIL 32** delivers exceptional high-load performance, resisting wear even under extreme pressure to ensure smooth, trouble-free operations. Its advanced formulation extends component life and reduces maintenance costs, maximizing productivity.

With superior corrosion protection, it safeguards metal surfaces against rust and degradation, ensuring long-term reliability. Additionally, its outstanding water resistance maintains lubrication integrity—even in challenging conditions—preventing component damage and maintaining peak efficiency.

#### APPLICATIONS

- ★ Lubrication of calendar bearings and sugar mill roller bearings.
- ★ Suitable for steam engines operating under saturated steam conditions.
- ★ Also recommended for lubrication of worm gears.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL MIST OIL 32
1	Appearance	Bright & Clear
2	Density @29.5°C, gm/cc	To Report
3	Kinematic Viscosity, cSt @40°C	30-35
4	Viscosity Index, min.	95 min.
5	Saponification Value, mg KOH/ g	6 min.
6	Flash Point, COC,°C min.	178
7	Copper Corrosion	1b

\* The specifications are subject to variations/ development / customization.

## METAL FORMING & WIRE DRAWING

### WIRE DRAWING OILS

#### PAL DRAW -ST-2, EP

These products are non-staining, high performance mineral oil based lubricant, having good cooling abilities. They are specially developed for high speed and deep drawing application of metals. They provide optimum film strength, lubricity and good metal wetting characteristics.

The products meet the highest demands of resistance to heat and stress generated during the process of wire drawing operation, thereby helps in smooth drawing, provides high degree of finish and extends the drawing equipment's life.

**PAL DRAW ST - 2** is blended by using high performance base oils and fortified with a combination of Anti wear and Extreme Pressure additives to sustain higher loads during the drawing operations. Besides having the good cooling characteristics, the oil also provides a stable oil film between the metal surfaces and prevents the metals from breakages, rupture etc.

**PAL DRAW - EP** is chlorinated extreme pressure (EP) type, blended with fatty oils and free sulphur making it ideally suited for most severe drawing conditions. It offers high degree of finish of the tube bar both internally and externally. It is widely used for deep drawing and cold rolling of Stainless Steel tubes.

Not recommended for cuprous metals. Staining may occur on high nickel alloys.

**PACKING:** 210L, 50L

C H A R A C T E R I S T I C S			
PAL DRAW			
S. NO.	PROPERTIES	ST-2	EP
1	Appearance	Dark Colour liquid	
2	Kinematic Viscosity, cSt @40°C	280-300	280-300
3	Kinematic Viscosity, cSt @100°C	21-24	31-32
4	Flash Point, COC, °C, min.	260	150
5	Copper Strip Corrosion, @100°C, max.	1(3hr.)	4(1hr)
6	Saponification Value	25-30	-
7	Neutralization No. mg KOH/gm	0.20	-
8	Four Ball weld load, kg	>200	-
9	Timken OK Load, 1bs min,	40	-
10	Four ball WSD @ 40kg mm max.	0.60	-

\* The specifications are subject to variations/ development / customization.

## METAL FORMING & WIRE DRAWING

### WIRE DRAWING OILS

#### PAL VRF

The product is blended from highly refined base oils & fortified with additives having excellent lubricity & load carrying properties. The product is to be used as a diluent with PAL-DRAW ST or PAL-DRAW EP. It has been observed that during the wire drawing operating, high stress & heat is generated & further the mixing of metal specimens / debris with the oils results in polymerization of the oil with increase in viscosity. This hampers the wire drawing operation. Mixing of PAL VRF with residual oil results in optimum viscosity of the fluid with improved wetting characteristics and extended service life.

Recommended that after 6 months of wire drawing operations, the resultant mixture should be diluted with 10 to 15% of PAL VRF OR depending upon the severity of the operation.

**PACKING:** 210L, 50L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL VRF
1	Appearance	Dark Colour liquid
2	Kinematic Viscosity, cSt @40°C	90-110
3	Kinematic Viscosity, cSt @100°C	09-11
4	Flash Point, COC, °C, min.	210
5	Copper strip corrosion @100°C, max.	1 (3hr.)
6	Saponification Value	20-25
7	Neutralization No. mgKOH/gm	0.4

\* The specifications are subject to variations/ development / customization.

## METAL FORMING & WIRE DRAWING

### COLD FORGING OILS

**PAL CFG - 154, 155, 156**

**Heavy Duty, Multi Metal, General Machining Oil**

**PAL CFG** Series products are mineral oil based neat cutting oils with inactive sulphur and synergistic addition of anti-wear additives. High performance of the products is suitable for heavy duty applications like gear hobbing, thread cutting and less severe machining operations on high tensile steel and some alloys.

#### PRODUCT FEATURES

- ★ Provides a lubricating film of high shear strength
- ★ Multi-Metal compatibility – non-staining for all types of metallurgies
- ★ Advanced additive technology gives high extreme pressure (EP) lubricity properties and helps to lower production costs through extended tool life
- ★ Improved surface finish and increased cutting speeds may lead to improvement of process efficiency
- ★ Our chlorine and heavy-metal free formulation improves the environmental profile and can reduce disposal costs

#### APPLICATIONS

- ★ PAL CFG 154 gives excellent results on multi-spindle automatics, on capstan and turret lathes and on routine machining duties where medium tensile steels up to 45 tons tensile are cut or when alternating with non-ferrous metals.
- ★ PAL CFG 155 is designed for general machining of ferrous and non-ferrous alloys
- ★ PAL CFG 156 grade is sulphurised fatty oil-based grade to use in high-speed nut forming machines

**PERFORMANCE LEVEL:** Meets IS :3065 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S				
S. NO.	PROPERTIES	PAL CFG 154	PAL CFG 155	PAL CFG 156
1	Appearance	Bright & Clear	Bright & Clear	Amber Clear
2	Kinematic Viscosity, cSt @40°C	30-35	40-45	60-65
3	Specific Gravity @29.5°C	0.870	0.874	0.910
4	Pour Point, °C, max.	-9	-6	-3
5	Flash Point, COC, °C min.	180	160	180
6	Copper Corrosion	1b	1b	1b

\* The specifications are subject to variations/ development / customization.

## METAL FORMING & WIRE DRAWING

### COLD FORGING OILS

#### **PAL METAFORM 620**

#### **Multipurpose Forming Oil For Nuts & Fasteners**

**PAL METAFORM 620** is a forming fluid designed for medium to heavy duty applications. The additive package provides extended tool life and the residual film after the operation is easily degreasable.

**PAL METAFORM 620** is a thermally stable product, and is developed for forging large or small fasteners, nuts made from all types of stainless steels or steels.

#### **PRODUCT FEATURES**

- ★ No formation of black residues on components
- ★ Less heat generation which prolongs the life of the oil as well as leads to perfect surface finish of the components
- ★ Good rust preventive characteristics
- ★ High EP content in the product extends Tool life

#### **APPLICATIONS**

Due to high oxidation and thermal stability, the oil can be maintained in a tank and applied by flooding or by direct application on the heated incoming rods, for forming Nuts and Bolts

**PERFORMANCE LEVEL:** Meets IS :3065 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL METAFORM 620
1	Appearance	Clear Amber
2	Kinematic Viscosity, cSt @40°C	90-110
3	Specific Gravity @29.5°C	0.970
4	4-Ball Weld Load,kg	650 kg
5	Flash Point, COC,°C min.	180
6	Copper Corrosion	4C

\* The specifications are subject to variations/ development / customization.

## METAL FORMING & WIRE DRAWING

### COLD FORGING OILS

#### PAL FORGE 68,100

These oils are formulated from highly refined mineral oils and contain a combination of chemical active & polar additives. These oils have excellent extreme pressure (E.P) properties & during thermal degradation they forms a strong protective oil film which is capable of undertaking heavier loads, reduce friction & provides the best protection for the work pieces & dies. They also provide excellent antiwear & cooling performance during operation & extend the life of dies.

**Recommended** as a lubricant designated exclusively for stainless steel cold forging work including bolt nuts, bushes, screws etc.

The product is not recommended for metal processing of copper & aluminium.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL FORGE 68	PAL FORGE 100
1	Appearance	Dark Brown	Dark Brown
2	Kinematic Viscosity, cSt @40°C	64-72	90-110
3	Pour Point,°C, max.	-6	-6
4	Flash Point, COC,°C, min.	180	180
5	Copper Corrosion 100°C for 3hrs.	4C	4C

\* The specifications are subject to variations/ development / customization.

## RUST PREVENTIVES

### OIL BASED RUST PREVENTIVES

#### PAL RUSTNIL-L, H

These are oil-based corrosion & rust preventive. The protective film of these grades have lubricating properties besides preventing moist air coming into contact with metal surfaces. They can be applied by dipping, spraying, roller coating, flow coating, flushing or circulation. Since the protective film has lubricating properties, it is not necessary to be removed. However these are easily removable by wiping. These oils are formulated with high quality base stocks and carefully selected additive system to ensure formation of soft oily film over the metal surfaces and protection against rusting.

#### APPLICATIONS

**PAL RUSTNIL-L** offers thin lubricating film. It is recommended for protection of steel sheets, shafting, conveyors, precision and drawn tubes, exposed gear etc.

**PAL RUSTNIL-H** has higher viscosity and hence it is suitable for protection of cycle rims/frames, handle bars etc., besides internal protection of gearboxes, hydraulic mechanism chain and external protection of instruments.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL RUSTNIL-L	PAL RUSTNIL-H
1	Appearance	Amber Clear Fluid	Amber Clear Fluid
2	Kinematic Viscosity, cSt@40°C,	10-12	25-35
3	Flash Point, COC, °C, min.	150	180
4	Pour Point, °C, max.	-9	-6
5	Protection: Indoor Outdoor	3 months 1 month	5 months 1 month

\* The specifications are subject to variations/ development / customization.

## RUST PREVENTIVES

### DEWATERING TYPE RUST PREVENTIVES

#### PAL RUSTOP - 247

**PAL RUSTOP - 247** is water displacing type rust & corrosion preventive. It forms a soft film; solvent deposited & can be applied directly to the water wet surface where it forms a protective film after displacement of water. It is based on blends of film forming materials, corrosion inhibitors & a special type of wetting agent which strongly adheres to the parts. It can be easily applied by dipping, spraying or by brush. The protective film can be removed by wiping off with rags or waste soaked in kerosene / mineral turpentine oil.

**APPLICATIONS:** PAL RUSTOP – 247 is especially recommended as protective for all types of bearings, machine tools & components.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL RUSTOP-247
1	Appearance	Amber Clear Fluid
2	Flash Point, COC, °C, min.	42
3	Copper strip corrosion D130, 3hr at 100°C	1
4	Water Displacement Test	Pass
5	Coverage, Sq <sup>2</sup> m / Litre	75

\* The specifications are subject to variations/ development / customization.

## RUST PREVENTIVES

### LONG TERM PROTECTION RUST PREVENTIVES

#### **PAL RUSTOP- 910, 920, 930,940,950**

These are water displacing type rust & corrosion preventives. These form soft film, solvent deposited & can be applied directly to the wet metal surfaces where they form a protective film after the displacement of water.

**PAL RUSTOP 910, 920, 930, 940,950** are based on blends of film forming materials, corrosion inhibitors to enhance the performance in salt spray & humidity cabinet tests. These are also incorporated with special type of wetting agents which will adhere to the parts.

The protective films of these grades can be removed by wiping off with rags or waste soaked in kerosene / mineral turpentine oils or by alkaline degreasents.

#### **APPLICATIONS**

**PAL RUSTOP 910** is especially recommended for protection during storage of machine tools & components.

**PAL RUSTOP 920** has a wide application for protection of components with high degree of finish, in machine shops & heavy machinery & plant manufacturing e.g. machinery tools, fasteners, metal strips etc. Because of its excellence performance in salt spray & humidity cabinet, it can be applied on components to be freighted by sea.

**PAL RUSTOP 930** is recommended for the protection of components like machine tools, fasteners etc.

**PAL RUSTOP 940** is recommended for the protection of components which are wrapped in paper especially fasteners etc.

**PAL RUSTOP 950** is recommended for the longer term 12-month rust protection on auto components and components in transit and especially for export grades.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S						
S. NO.	PROPERTIES	PAL RUSTOP				
		910	920	930	940	950
1	Appearance	Amber Clear Fluid				
2	Flash Point, COC, °C, min.	45	45	45	45	45
3	Protection: Indoor	6 months	9 months	6 months	1 month	12 months
	Outdoor	1 month	3 months	2 month		9 months
4	Film Thickness Microns	3-4	6-7	4-5	2-3	6-8
5	Salt Spray Test	24 Hrs.	72 Hrs.	48 Hrs.	15 Hrs.	85 Hrs.
6	Dewatering Test	Passes				
7	De-Emulsification Test	Passes				

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### HYDRAULIC OILS AW TYPE

#### PHYDOL AW - 32, 46, 68, 100, 150, 220, 320, 460

These are premium quality high performance oils, designed to satisfy the performance requirements for a wide range of hydraulic components in systems subjected to high-pressure, high-temperature operating conditions. They have good film strength property, inherent oxidation and thermal stability, besides excellent ability to separate from water and have very good air release properties. They offer high resistance to the formation of lacquers and other oxidation products and resistance to rusting and corrosion in high humidity operations or where low levels of moisture are unavoidable.

These oils are formulated with high quality base stocks and carefully selected additive system that result in finished products to provide many desirable features, to work with systems operating under moderate to severe conditions where a high level of anti-wear protection is required.

**Recommended** for hydraulic system, systems employing gear, bearings, vane, radial and axial piston pumps, chain drivers, compressors, vacuum pumps, mining machinery machine tools, circulation oiling system etc. where anti-wear type hydraulic oils are recommended.

**PERFORMANCE LEVEL:** IS 10522-1983 (Reaffirmed 1993), US Steel No.127, Vickers V-104C vane pump test and IPSS 1-09-022 specifications.

**PACKING:** 210L, 50L, 26L, 20L, 5L

**PACKING: PHYDOL AW 68:** 210L, 50L, 26L, 20L, 5L, 1L

C H A R A C T E R I S T I C S									
S. NO.	PROPERTIES	32	46	68	100	150	220	320	460
1	Kinematic Viscosity, cSt @40°C	29-35	42-50	64-72	90-110	140-160	200-240	300-340	440-480
2	Viscosity Index, min.	90	90	90	90	90	90	90	90
3	Flash Point, COC, °C, min.	180	180	200	210	220	230	230	230
4	Pour Point, °C, max.	-9	-9	-9	-6	-6	-6	-3	-3
5	Rust Properties (ASTM D665, 24/hrs.)	-----Pass-----							
6	Zinc % wt (ICP Emission)	0.035 – 0.043							
7	Phosphorus, % wt. (ICP Emission)	0.028 – 0.033							

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### HYDRAULIC OILS HLP TYPE

#### PHYDOL HLP - 32, 46, 68, 100

These are high performance heavy-duty oils, primarily intended for applications where oil is used for extended period in circulation & hydraulic systems in wide range of industrial equipment and subjected to wide variations in ambient and operating temperatures. They possess good demulsibility that permits water and other contaminants to separate readily from the oil in the system reservoir. They are incompressible and remain in a fluid enough state to allow effective power transmission besides having outstanding antiwear, antirust, good air release, anti-foam, and oxidation resistance properties.

**Recommended** for use in hydraulic systems employing gear, vane, radial and axial piston pumps where anti-wear hydraulic fluids are required and clearances are relatively large. Due to their low pour point, they are recommended for sophisticated high performance electro-hydraulic or numerically controlled systems. They are also recommended for use in hydraulic couplings, injection moulding machineries, certain screw compressors and vacuum pumps handling air and inert gases provided the discharge temperatures do not exceed 150°C. They are suitable as multipurpose lubricants in systems and perform well at the elevated temperatures but not suitable for shock loading and extreme pressure.

**PERFORMANCE LEVEL:** DIN 51524 PART 1,2,3, Eaton Vickers M-2950-S, I-286-S, Fives Cincinnati P-68, P-69 & P-70, Parker Denison HF-0, HF-1, HF-2, ISO 11158 HL, HM, HV, etc.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S					
S. NO.	PROPERTIES	PHYDOL HLP			
		32	46	68	100
1	Kinematic Viscosity, cSt @40°C	29-35	42-50	64-72	90-110
2	Viscosity Index, min.	100	100	100	100
3	Flash Point, COC, °C, min.	180	180	200	200
4	Pour Point, °C, max.	-18	-15	-12	-9
5	Copper Strip Corrosion, @100°C for 3 Hrs. (max.)	1	1	1	1
6	FZG Pass Load Stage, min.	10	10	10	10
7	Rust Properties (ASTM D665, 24/hrs.)	-----Pass-----			
8	Zinc % wt (ICP Emission)	0.048 – 0.055			
9	Phosphorus, % wt. (ICP Emission)	0.038 – 0.043			

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### SLIDEWAY OILS

#### PAL WAY OILS 32, 46, 68, 220

These oils are formulated from high performance base stocks & additives which provides tackiness, anti-corrosive & anti – foaming properties resulting in higher loading of machine tools, minimum stick-slip & improved surface finish to the job.

These oils have excellent antiwear / EP performances, good demulsibility & excellent filter ability in the presence of water. Due to their good adhesive properties, these oils results in reduced oil consumption.

**Recommended** for slide way lubrication of planers, grinders, horizontal boring machines, jig borers, shapers etc.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S					
S. NO.	PROPERTIES	32	46	68	220
1	Kinematic Viscosity, cSt @40°C	29-35	42-50	64-72	200-240
2	Viscosity Index, min.	95	95	95	90
3	Flash Point, COC, °C, min.	180	200	220	220
4	Copper corrosion Test, 3 hrs @ 100°C.	1	1	1	1
5	Steel corrosion	Pass	Pass	Pass	Pass

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### SPINDLE OILS

#### PAL SPIN -10, 12, 22

These are high quality, low viscosity lubricant manufactured from solvent refined, high viscosity index base oils, having good film strength property, chemical and oxidation stability, besides excellent ability to separate from water. They provide economical bearing lubrication of high-speed textile spindle, machine tool spindles and protection from excessive wear.

These oils are blended from highly refined base stocks and carefully selected antioxidants, anticorrosion, antirust, antiwear and antifoam additives.

These oils are recommended for lubrication of textile and machine tools spindle bearings, hydraulic system of precision machine tools, timing gears, centrifugal separators, and positive displacement blowers.

**PERFORMANCE LEVEL:** IS 493 PART-II (Reaffirmed 1993) specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S				
S. NO.	PROPERTIES	PAL SPIN		
		10	12	22
1	Kinematic Viscosity, cSt @40°C	9-11	11-13	21-23
2	Viscosity Index, min.	95	95	95
3	Flash Point, COC, °C, min.	160	160	180
4	Pour Point, °C, max.	-12	-12	-9
5	Copper corrosion @ 100°C for 3 hours.	1	1	1

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### GENERAL MACHINING OILS

#### PAL LUBE – 32, 46, 68, 100, 150, 220, 320, 460

These are high quality, solvent refined, high viscosity index paraffinic mineral oils, having good film strength property, inherent oxidation and thermal stability with excellent ability to separate from water. They offer high resistance to the formation of lacquers and other oxidation products and resistance to rusting and corrosion. They provide economical lubrication and protect roll-neck bearings of steel mills from excessive wear under light and medium loads.

Recommended for lubrication of plain or roller bearings; in particular for circulating and bath systems, vertical and horizontal enclosed crank-case engines, sliding vane rotary machines, high pressure reciprocating machines, where the operating conditions are not severe and straight mineral oils can perform satisfactorily.

**PERFORMANCE LEVEL :** IS 6552-1987, IPSS 1-09-001-81 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S									
S. NO.	PROPERTIES	PAL LUBE							
		32	46	68	100	150	220	320	460
1	Kinematic Viscosity, cSt @40°C	29-35	42-50	64-72	90-110	140-160	200-240	300-340	440-480
2	Viscosity Index, min.	90	90	90	90	90	90	90	90
3	Flash Point, COC, °C, min.	190	190	190	210	220	230	230	250
4	Pour Point, °C, max.	-9	-9	-9	-6	-6	-6	-6	-6

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### INDUSTRIAL GEAR OILS

#### PAL INGOL EP – 32, 68, 100, 150, 220, 320, 460, 680

These are industrial extreme pressure gear lubricants, specially developed for the lubrication of heavily loaded enclosed gear sets including spur, helical and bevel designs and provide protection in applications where shock loading occurs. **PAL INGOL EP** has high load carrying ability, protection against wear; helps to reduce sludge formation and increases oil service life. Further these oils provide strong protection against corrosion of steel and copper containing alloys and resists foaming besides having good water separation properties for easy water elimination.

These oils are formulated with high quality base stocks and carefully selected sulphur/phosphorus extreme pressure additive to provide high level of anti-wear & E.P. properties.

Recommended for use in a wide range of heavy duty enclosed and semi-enclosed gear systems having spur/straight bevel/spiral bevel/worm/herring-bone/helical types of gears, industrial, plain and roller bearings, sliding surfaces, chain drives, sprockets, flexible coupling etc. especially operating at low speeds and high loads for continuous service up to 110°C.

These are not suitable for foods and drug industries and those required to be operated under extremely severe and hostile environment viz. gear drives operating at speed over 3600 rev/min and/or pitch-line velocities exceeding 1500m/min and Lubricant's sump temperatures generally exceeding 110°C.

**PERFORMANCE LEVEL:** IS 8406-1993 (EP Type Gear Lubricants), DIN 51517 Part-3, IPSS 1-09-003 and AGMA 9005-F16 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S									
S. NO.	PROPERTIES	PAL INGOL EP							
		32	68	100	150	220	320	460	680
1	Kinematic Viscosity, cSt @40°C	29-35	64-72	90-110	140-160	200-240	300-340	440-480	650-710
2	Viscosity Index, min.	95	95	95	90	90	90	90	90
3	Flash Point, COC, °C, min.	200	210	220	220	230	230	240	240
4	Pour Point, °C, max.	-6	-6	-6	-6	-6	-6	-3	-3

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### THERMIC FLUIDS

#### PALTHERM – 500, 600

These are high performance products designed for heat transfer in Textile, Pharmaceutical, Chemical and Processing Industries, equipped with indirect or secondary heating systems. They possess excellent resistance to thermal cracking and chemical oxidation and are non-corrosive and non-toxic. They possess high specific heats and thermal conductivities that provide good heat transfer efficiency and their viscosities are such that they can be pumped readily at both start-up and operating temperatures.

**PALTHERM** Heat Transfer Fluids are formulated from very stable high viscosity index base oils, coupled with a low pour point and fortified with high temperature oxidation inhibitors.

**PALTHERM** Heat Transfer Fluids are recommended for use in closed, forced circulation with indirect or secondary heating systems, equipped with expansion tanks. The temperature of the oil film surrounding the heating element should be about 15°C to 30°C above the bulk oil temperature. Higher than this may lead to deposit of sludge and coke which would interfere with the heat transfer rates and also shorten the service life of the oil.

**PALTHERM - 500** and **PALTHERM - 600** grades are suitable for heat transfer system operating up to 290°C & 320°C respectively.

These oils are not recommended for use in open systems where hot oil is exposed directly to the air. If they spray or escape from leakage points, hot oils may spontaneously ignite.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PALTHERM	
		500	600
1	Kinematic Viscosity, cSt @40°C	28-32	28-32
2	Viscosity Index, min.	90	100
3	Flash Point, COC, °C, min.	200	210
4	Pour Point, °C, min.	-9	-12
5	Copper Strip Corrosion, 3 hrs. @100°C, (ASTM), max.	1	1
6	Neutralisation Number, mg KOH/gm., max.	0.15	0.15

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### THERMIC FLUIDS SYNTHETIC

#### PALTHERM SYNTH

**PAL THERM SYNTH** is a premium, fully synthetic heat transfer fluid engineered for exceptional long-term performance and reliability. It features a high flash point and low volatility for enhanced safety and operational stability. Compatible with standard mineral oils, it ensures consistent heat transfer and extended service life.

**PAL THERM SYNTH** is developed for indirect heating in a closed system with forced circulation. It is also suitable for applications where repeated heating and cooling cycles are involved.

#### APPLICATIONS

**PAL THERM SYNTH** is an excellent heat transfer fluid and finds a wide range of applications in Textile, Pharmaceutical, Chemical and Processing units. It is also suitable for applications where repeated heating and cooling cycles are involved.

**PAL THERM SYNTH** is suitable for heat transfer system operating bulk temperature up to 320°C & film/skin temperature is upto 340°C in a closed system.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PALTHERM SYNTH
1	Appearance	Bright & Clear
2	Density @29.5°C, gm/cc	0.865
3	Kinematic Viscosity, cSt @40°C	20-22
4	Acid Value, mg KOH/g	Nil
5	Specific Heat kcal/kg °C	0.60-0.68
6	Boiling Point, °C	>370
7	Co-efficient of Thermal Expansion, 200 °C	0.00090
8	Flash Point, COC, °C	205
9	Max. Bulk Temperature, °C	320
10	Water Content, ppm	<50 ppm
11	Thermal Conductivity** W/m, °k	0.1400 – 0.0960

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### COMPRESSOR OILS

#### PALCOMP - 32, 46, 68, 100, 150, 220

These are developed to meet satisfactory lubrication under moderate oxidation & thermal performance. Blended from high performance solvent refined & hydro cracked base stocks with suitable selected antioxidants, antiwear, antirust & antifoam additives.

#### PRODUCT FEATURES

- ★ High level of oxidation & thermal stability .
- ★ Low Carbon forming characteristics
- ★ Good EP/Antiwear properties

Recommended for moderate performance reciprocating rotary air / screw compressors up to a discharge air temperature of 220°C. These oils are suitable for use in air vacuum pump designed to deliver at a pressure greater than the atmosphere pressure.

**PERFORMANCE LEVEL:** DIN 51506 VD-L, IS 13256:1992 (Reaffirmed 2014) DAA and DAB Type.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S							
S. NO.	PROPERTIES	PALCOMP					
		32	46	68	100	150	220
1	Appearance	Clear, Bright Colour					
2	Kinematic Viscosity, cSt @40°C	29-35	42-50	64-72	90-110	140-160	200-240
3	Viscosity Index, min.	100	100	100	100	100	100
4	Flash Point, COC, °C, min.	190	200	210	220	220	230
5	Pour Point, °C, max.	-12	-12	-9	-6	-6	-3

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### TURBINE OILS

#### PAL TURBINE - 32, 37, 46, 57, 68, 78, 100

These oils are high quality, corrosion and oxidation inhibited turbine oils, for use in power plant steam and gas turbine lubrication. In addition they have excellent rust preventing, demulsibility, foam suppressing and air release properties. These oils prevent sludge deposits, reduce wear and tear, rust/corrosion of components, and provide trouble free operations.

These premium grade oils are formulated with high viscosity index base stocks and carefully selected anti-rust, anticorrosion, antioxidant & antifoam additives. They exhibit good air & water release properties.

**PAL TURBINE** oils are recommended for the lubrication of ring oiler of bearings of steam/water/gas turbines and pressure circulating systems. These oils can also be used for the lubrication of bearings of rotary/turbo compressors, where oils of turbine quality are required.

**PERFORMANCE LEVEL:** IS 1012-2002 and DIN 51515, Part-1 specifications.

**PACKING:** 210L, 50L

C H A R A C T E R I S T I C S							
S. NO.	PROPERTIES	32	37	46	57	68	100
1	Kinematic Viscosity, cSt @40°C	29-35	33-39	42-50	53-60	64-72	90-110
2	Viscosity Index, min.	90	90	90	90	90	90
3	Flash Point, COC, °C, min.	180	180	180	180	180	180
4	Pour Point, °C, max.	-9	-9	-6	-6	-6	-6

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### REFRIGERATION OILS

#### PAL FRIZ - 12, 22, 32, 46, 68, 100

These oils are formulated from selected lube base stocks to provide low pour point, low floc point, good solubility in liquefied refrigerants & good chemical stability. They possess high fluidity at very low temperatures, resist deposit formation & have reduced tendency to foam. These oils ensure higher condenser efficiency and reduced compressor valve maintenance due to less deposits. These oils also imparts antiwear & rust protection properties.

Recommended for a wide range of refrigeration compressor, both reciprocating as well as rotary using conventional refrigerants except sulphur dioxide. These grades are also recommended for the lubrication of hermetically sealed refrigeration compressors.

**PERFORMANCE LEVEL:** IS 4578-1989 specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S							
S. NO.	PROPERTIES	PAL FRIZ					
		12	22	32	46	68	100
1	Appearance	Clear, Brown Liquid					
2	Kinematic Viscosity, cSt @40°C	12-14	20-24	29-35	42-50	64-72	90-110
3	Flash Point, COC, °C, min.	180	180	190	190	200	200
4	Pour Point, °C, max.	-39	-36	-33	-30	-27	-27
5	TAN, mg KOH/g of oil, Max.	0.05	0.05	0.05	0.05	0.05	0.05

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### CYLINDER OILS

#### PAL CYL – 460, 680, 800

These are high quality, heavy base stocks having excellent lubricating properties & thermal stability.

#### PRODUCT FEATURES

- ★ Excellent oiliness & film strength.
- ★ Resistant to washing effect.
- ★ Excellent load carrying capacity.
- ★ Good inherent oxidation and thermal stability.

#### APPLICATIONS

- ★ Steam cylinder lubrication.
- ★ Calendar bearings & sugar mill roller bearings.
- ★ Lubricating of worm gears.

**PACKING:** 210L, 50L

C H A R A C T E R I S T I C S				
S. NO.	PROPERTIES	PAL CYL		
		460	680	800
1	Kinematic Viscosity, cSt @40°C	410-480	600-720	620-750
2	Viscosity Index min.	90	90	90
3	Pour Point, C° max.	6	12	12
4	Flash Point, COC, °C, min.	240	240	240

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### ENGINE FLUSHING OILS

#### PAL FLUSH

**PAL FLUSH** is formulated for flushing of engine, transmission and other lubrication systems after the old oil has been drained out. It is a blend of highly refined light mineral oil and detergent/dispersant additives to enhance removal of sludge and lacquers.

Recommended for use where a system's history is unknown or service fill lubricant may have been used beyond its oil drain interval/ contamination problem.

Direction for use

- ★ Warm up the oil by running the system till the oil reaches normal operating temperature.
- ★ Open the drain plug and drain out the used oil.
- ★ Fill the system with PAL FLUSH OIL between minimum and maximum level.
- ★ Run the system without load for 5 to 10 minutes or till the oil reaches normal operating temperature and circulates throughout the system.
- ★ Drain out the flushing charge and ensure that the system is free of sludge and lacquers or any other contamination. If the examination is not satisfactory, repeat the procedure.
- ★ Refill the system with recommended lubricant.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL FLUSH
1	Kinematic Viscosity, cSt @40°C	21-23
2	Kinematic Viscosity, cSt @100°C	3-4
3	Specific gravity, Max.	0.901
4	Flash Point, COC, °C, Min.	170
5	Pour Point, °C, Max.	-3

\* The specifications are subject to variations/ development / customization.

# INDUSTRIAL LUBRICANTS

## VACUUM OIL

### PAL VACUUM OIL

**PAL VACUUM OIL** is specially developed as vacuum oil having low vapour pressure  $1 \times 10^{-6}$  mmHg at 200°C. This oil is having high thermal stability which helps in maintaining a constant vacuum for the operation over a period of time.

### PERFORMANCE BENEFITS

- ★ High level of thermal stability.
- ★ Low Vapour Pressure
- ★ Maintain constant vacuum.
- ★ Extended life.

**Recommended** for high vacuum producing diffusion in pumps.

**PACKING:** 210L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL VACUUM OIL
1	Appearance	Clear, free flowing liquid
2	Kinematic Viscosity, cSt @ 40°C	90-110
3	Viscosity Index, Min.	100
4	Flash Point, COC, °C, Min.	220
5	Pour Point, °C, Max.	-12
6	TAN mgKoh/gm Max.	0.02
7	Vapour Pressure @ 200°C, mm of hg Max.	$1 \times 10^{-6}$

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL LUBRICANTS

### LIGHT LIQUID PARAFFIN

**PAL LIGHT LIQUID PARAFFIN** is colorless, odorless, light mixtures of alkenes in the C15 to C40 depending on the crude oil source used for manufacture which gives a distribution of paraffinic oils in the product. Its Group II base oil & highly saturate compare then Group I base oil. Hydro-Processed paraffinic oils have a slightly higher flash than solvent extracted oils, are clear in color, slightly lower volatility, and a saturate level of 98-99% in packaging and food machinery lubrication where minimal food contact is expected.

#### PRODUCT FEATURES

- ✦ Paraffinic Oils have the lowest solvency, but highest color stability and lowest volatility.
- ✦ Good oxidation stability and ageing resistance.
- ✦ Rapid air release and low foaming.
- ✦ Good compatibility with sealing materials.

**APPLICATIONS** : PAL LIGHT LIQUID PARAFFIN is a Technical Grade White Oil developed for applications in polymers, plastic industries and animal feeds besides certain non-critical applications in packaging and food machinery lubrication where minimal food contact is expected.

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	TEST METHODS	SPECIFICATIONS
1	Appearance	Visual	A colourless, transparent oil liquid free from fluorescence in day light. Practically insoluble in water, slightly soluble in ethanol (96%), miscible with hydrocarbons.
2	Colour	Visual	Water White
3	Viscosity, Kinematic 40°C, cSt	ASTM D 445	11 - 14
4	Viscosity, Kinematic 100°C, cSt	ASTM D 445	2.8
5	Viscosity Index	ASTM D 2270	Min100
6	Pour Point, °C	ASTM D 97	Min-18
7	Flash Point, COC, °C	ASTM D 92	Max160 Min

\*The specifications are subject to variations/development/customization.

## INDUSTRIAL LUBRICANTS

### PAL RFC 68 AM

Ammonia Refrigeration Compressor Fluid

PAL RFC 68 AM is designed to withstand such complex and critical operating conditions in screw and reciprocating compressor systems. Along with exceptional low temperature characteristics, it ensures optimal lubrication in high-pressure, high-temperature compressor environments while preventing carbon buildup and valve sticking.

**PRODUCT FEATURES :** Low Solubility with Ammonia – Minimizes oil carryover into the refrigeration system, ensuring efficient heat transfer and preventing blockages in evaporators and condensers. High Thermal & Oxidation Stability – Withstands extreme temperatures in compressor systems, reducing thermal degradation and extending oil life. Excellent Lubricity & Anti-Wear Protection – Contains advanced additives to reduce friction and protect compressor components (bearings, pistons, valves) from wear. Good Demulsibility – Quickly separates from water to prevent emulsion formation, reducing corrosion and maintaining system efficiency. Low Pour Point – Ensures smooth flow and lubrication even in low-temperature refrigeration applications. Non-Foaming – Anti-foam additives prevent air entrapment, ensuring consistent lubrication and compressor performance. Material Compatibility – Safe for use with elastomers, metals, and compressor seals commonly found in ammonia systems.

**APPLICATIONS :** PAL RFC 68 AM is formulated to lubricate ammonia-based screw and reciprocating compressor refrigeration systems, which are used in large commercial operations such as cold stores, food processing plants, marine systems and ice arenas. It is also used in manufacturing industries that require low temperature control, such as pharmaceuticals and microelectronics. It can be used in ammonia refrigeration systems where evaporator temperatures are greater than -39°C (-38°F).

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	TEST METHODS	PAL RFC 68 AM
1	Appearance	Visual	Bright & Clear
2	K. Viscosity @ 40°C (cSt)	ASTM D445	65 - 70
3	K. Viscosity @ 100°C (cSt)	ASTM D445	7.0 – 8.0
4	Viscosity Index, min	ASTM D2270	110
5	Specific Gravity @ 29.5°C	ASTM D1298	0.860
6	Pour Point, °C, max.	ASTM D97	-42
7	Flash Point, COC, °C, min.	ASTM D92	220
8	Foam Characteristics, mL	ASTM D892	
	Sequence I		0/0
	Sequence II		10/0
	Sequence III		0/0

\*The specifications are subject to variations/development/customization.

## HEAT TREATMENT QUENCHING OILS-COLD

### PALQUENCH - S, C

These are high quality, solvent refined, high viscosity index quenching oils, blended from highly refined base oils and selected additives for effective quenching and uniform hardening of metal components without metallurgical distortion. They have good oxidation and thermal stability, prevent formation of sludge, rust and corrosion and also offer long service life.

**PALQUENCH-S** is a cold Quenching oil with lower to medium cooling rate suitable for general purpose quenching operation of steel components such as nuts and bolts, ball bearings etc. manufactured by automobile and light engineering industry at bath temperature 55°C to 65°C.

**PALQUENCH-C** is a cold quenching oil with medium to higher cooling rate recommended for quenching operation where compounded oil is preferred, viz. for quenching of variety of steel components in major industries, high speed steel tools, ball bearings, nuts, springs etc.

**PERFORMANCE LEVEL:** IS 2664-1980, Straight Mineral Type, Compound Type & IS 4543-1977 (Reaffirmed 1987) specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PALQUENCH-S	PALQUENCH-C
1	Kinematic Viscosity, cSt @40°C	28-32	20-22
2	Kinematic Viscosity, cSt @100°C	5-6	4-5
3	Flash Point, COC, °C, min.	190	170
4	Quenching Time by Magnetic Quenchometer. (ASTM D 3520)	24	18
5	Viscosity Index, min.	90	90

\* The specifications are subject to variations/ development / customization.

## HEAT TREATMENT QUENCHING OILS-HOT

### PALQUENCH - H, HC

These are high quality, solvent refined, high viscosity index quenching oils, blended from highly refined base oils and selected additives for effective quenching and uniform hardening of metal components without metallurgical distortion. They have good oxidation and thermal stability, prevent formation of sludge, rust and corrosion and also offer long service life.

**PALQUENCH-H** is a medium viscosity hot quenching oil recommended for the mass production of high precision, high quality products viz. automotive gears and transmission components, bearing rings etc. at an optimum bath temperature up to 120°C.

**PALQUENCH-HC** is a high viscosity hot quenching oil for excellent control over distortions recommended for quenching operation where compounded oil is preferred at an optimum bath temperature up to 120°C.

**PERFORMANCE LEVEL:** IS 2664-1980, Straight Mineral Type, Compound Type & IS 4543-1977 (Reaffirmed 1987) specifications.

**PACKING:** 210L, 50L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PALQUENCH-H	PALQUENCH-HC
1	Kinematic Viscosity, cSt @40°C	60-64	95-105
2	Kinematic Viscosity, cSt @100°C	7-9	10-12
3	Flash Point, COC, °C, min.	230	240
4	Quenching Time by Magnetic Quenchometer. (ASTM D 3520)	35	28
5	Viscosity Index, min.	90	95

\* The specifications are subject to variations/ development / customization.

## TEXTILE LUBRICANTS

### KNITTING OILS -WASHABLE

#### PALKNIT OILS 22, 32

These are non-corrosive, easily washable, non-abrasive knitting oils which are self emulsifiable in water and provide high level of scour ability from knitted yarns or fabrics. Good wetting and good lubricity with excellent washable properties leaving the fabric free from stains.

Formulated by using high quality of mineral oils & fortified with selected additives so as to provide good anti-wear, antirust, antistatic & anti-oxidant properties.

Recommended as non-staining type needle lubricants for large diameter circular knitting machines as well as for various other types of knitting machines & are suitable for automatic oiling units commonly fixed to circular knitting machines or by manual oiling methods. These are recommended for knitting of cotton or cotton-polyester, synthetics & dyed / undyed yarns etc.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PALKNIT-22	PALKNIT-32
1	Appearance	Clear Liquid Free From Suspended Matter.	
2	Colour	Colour Less Liquid	
3	pH of 10% Emulsion	7-8	7-8
4	Ionic Nature	Non-Ionic	Non-Ionic
5	Kinematic Viscosity cSt @40°C	20-24	29-35
6	Specific Gravity @15°C	0.86-0.87	0.86-0.87
7	Flash Point, COC, °C min.	180	180
8	Wash ability	Excellent	Excellent

\* The specifications are subject to variations/ development / customization.

## TRANSFORMER OIL

### TRANSFORMER OIL

#### PAL POWER FLUID - 20

**PAL POWER FLUID - 20** is a fluid medium specially developed to meet the requirements of all types of transformers from medium to extra high voltage range ensuring optimum performance and safety of the transformers. It cools the transformers and insulates the coils from electric short circuit. It is non-conductive and has excellent fluidity, even at low temperature (-6C). It has high flash point resulting in low evaporation losses and has good dielectric properties resulting in minimum power loss.

It is formulated from highly refined mineral oil, having good high temperature stability & excellent electrical insulating properties. Special refining steps re used to ensure that oil-solube current-crrying ionic materials re removed.

**PAL POWER FLUID - 20** is recommended for use in Transformers, oil immersed circuit breakers and switchgears. This oil is also widely used in special transformers designed to operate at elevated temperatures and in low maintenance / maintenance- free transformers designed to operate for longer periods.

This product is not recommended for use where safety specifications require the use of non- flammable insulating oil. Also not recommended for use where synthetic dielectric fluids and uninhibited oils are required.

**PERFORMANCE LEVEL:** IS 335-1993 (Reaffirmed 2005) specifications.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL POWER FLUID -20
1	Kinematic Viscosity, cSt @40°C	20
2	Density @29.5°C, g/cm <sup>3</sup> , Max.	0.89
3	Flash Point (PMCC), °C, Min	150
4	Pour Point, °C, Max	-6
5	Total acidity, mg KOH/gm	0.03
6	Electric Strength (breakdown voltage), KV, Min	30

\* The specifications are subject to variations/ development / customization.

## SUGAR MILL OILS

### ROLL BEARING OILS

#### PAL SMR- 2, 3

These lubricants are specially developed to meet the requirements of heavily loaded mill roll bearings in sugar mills. These oils are formulated with high viscosity lubricating oil base stocks and fortified with selected non-toxic mild EP and special compounding agents. They possess excellent resistance to leakage and protect the bearings against corrosion and wear.

**Recommended** for lubrication of sugar mill roll bearings. Also recommended for open gear lubrication by slush pan method and centralized lubrication system of slow speed spur and helical gears in industries.

**PACKING:** 210L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL SMR-2	PAL SMR-3
1	Kinematic Viscosity, cSt @100°C	38-45	78-88
2	Flash Point, COC, °C, min.	210	210

\* The specifications are subject to variations/ development / customization.

## SUGAR MILL OILS

### OPEN GEAR COMPOUNDS

#### PAL OGC- 120, 140

These are heavy viscous black bituminous product, fortified with special EP and thickening agents. They have excellent film strength to withstand the high pressure normally encountered in heavily loaded open gears. They also possess good antiwear and antirust properties. They are homogeneous and heat reversible, i.e., they return to the same homogeneous state after heating. Thus they have the ability to stay in place and provide protection to open gears and wire ropes.

**PAL OGC- 120, 140** meet IS 9554-1980 specifications and are recommended for lubrication of open gears, cable and wire ropes.

**Not recommended** for lightly loaded open gears and not to be used in food processing industries.

**PACKING:** 180KG

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL OGC-120	PAL OGC-140
1	Kinematic Viscosity, cSt @100°C	200-250	400-550
2	Flash Point, COC, °C, min.	230	230
3	Copper strip corrosion test, 3 hrs, @ 100°C, max.	1	1
4	Acidity, inorganic	Nil	Nil
5	Water content, %by mass, max.	1.0	1.0
6	Homogeneity test	Passes	Passes
7	Colour	Black	Black

\* The specifications are subject to variations/ development / customization.

## SUGAR MILL OILS

### OPEN GEAR COMPOUNDS HEAVY DUTY

#### PAL OGCHD- 1000, 1500

Specifically formulated bituminous compound for open gear, cables and wire ropes. These compounds are designed to cater mixed as well as hydrodynamic lubrication of open gears. It has excellent EP properties to address the shock loading during gear teeth meshing. They impart strong metal adhesion due to added tackiness. It does not get squeezed out during teeth meshing and nor get thrown off due to centrifugal action. Additionally, it has rust preventive properties those are observed due to pitting. It can be applied with swab, paddle or with sump method

#### PRODUCT FEATURES

- ★ Lubrication film stability
- ★ Strong Adhesion
- ★ Excellent rust protection
- ★ Good EP Properties
- ★ Does not leave residue

#### APPLICATIONS

- ★ Klins
- ★ Rod Mills
- ★ Sugar Mills
- ★ Racks and Pinions, Drag Lines, Shovels

**PACKING:** 180KG, 18KG

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL OGCHD-1000	PAL OGCHD-1500
1	Appearance	Smooth & Tacky	Smooth & Tacky
2	Colour	Black	Black
3	Kinematic Viscosity, cSt @40°C	900-1000	1400-1600
4	Weld Load, Kgs	400	400
5	Copper strip corrosion test, 3 hrs, @ 100°C, max.	1B	1B
6	Flash Point, °C, min.	210	230

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### EXTREME PRESSURE GREASES

#### PAL EP-000,00,0,1,2,3 GREASES

These greases are lithium-based products containing highly-refined mineral oils and fortified with extreme pressure (EP) additives as well as corrosion and oxidation inhibitors. These greases have been formulated with additives that provide good film strength under medium-to-high loads.

They are designed for plant-wide lubrication, the range extending from NLGI-2 for general purpose bearing lubrication to NLGI-0 (semi-fluid grease) suitable for centralized lubrication systems and grease filled gearboxes. These greases provide good protection against rust and corrosion as well as resistance to water wash-out which makes them particularly suitable for equipment where moist or wet conditions are common. These greases also possess high mechanical stability, good adhesion and anti-wear properties, thus enhancing component life and increase re-lubrication intervals.

Recommended for lubrication of all plain and anti-friction bearings, heavy duty ball and roller bearings of industrial equipment used in steel plants, heavy engineering units, machine tool units, textile mills, paper mills, fertilizer plants, sugar mills etc. particularly where contacting surfaces are exposed to very heavy pressure and shock loads and for continuous service up to 130°C.

These greases are compatible only with lithium base grease. Sealed bearings should be thoroughly cleaned before using grease described in this product bulletin.

**PERFORMANCE LEVEL:** IS 7623-1993 & NLGI-0,1,2 & 3 specifications.

**PACKING:** 180KG, 18KG

#### C H A R A C T E R I S T I C S

S. NO.	PROPERTIES	PAL EP-000	PAL EP-00	PAL EP-0	PAL EP-1	PAL EP-2	PAL EP-3
1	Appearance	Brown					
2	Soap Type	Lithium					
3	Base Oil Type	Mineral					
4	Base Oil Viscosity, @40°C	150	155				
5	Viscosity Index of base oil, min.	95	90				
6	Cone Penetration, @25°C ± 0.5°C	445-475	400-430	355-385	310-340	265-295	220-250
7	Drop Point, °C min.	160	180	180	180	180	180

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### EXTREME PRESURE GREASES (WITH HIGH VISCOSITY BASE OIL)

#### PAL EP PRO SERIES GREASES

A specially complexed thickener chemistry with improved water spray-off and washout resistant property. It has excellent adhesiveness which establish stable lubrication film. It is designed to cater the hostile operating environment in steel, cement and mining industries. It is being recommended for heavy duty low velocity roller and plain bearings, ball joints and gear components in steel rolling mills also it can be used in cement plant for jaw crusher main bearing, rocker arm bearing, vertical shaft impactor. It offers low damping in slow moving bearing and gears.

#### PRODUCT FEATURES

- ★ Extend Service life of bearings. Water Spray off resistant
- ★ Good Pumpability. Excellent rust protection
- ★ Excellent EP as well as Anti-wear properties
- ★ Operating Temperature range -20 to 160°C

#### APPLICATIONS

- ★ Steel roller mill, Cement Industry
- ★ Paper Industry, Chemical Industry, Off shore marine applications

**PERFORMANCE LEVEL:** IS 7623-1993 & NLGI-0, 1&2 specifications.

**PACKING:** 180KG, 18KG

C H A R A C T E R I S T I C S				
S. NO.	PROPERTIES	PAL EP-2 PRO	PAL EP-1 PRO	PAL EP-0 PRO
1	Appearance	Amber	Amber	Amber
2	NLGI Grade	2	1	0
3	Worked Penetration (60 X)	265-295	265-295	310-340
4	Drop Point, °C, min.	250	245	230
5	Water Wash out, % wt. loss	3.8 (max)	5 (max)	-
6	Weld Load, Kg	315	315	315
7	Copper Corrosion	1b	1b	1b
8	Base Oil Viscosity @ 40°C, cSt	460	460	460
9	Thickener	Special Complex	Special Complex	Special Complex
10	Operating temperature range	-20 to 160°C	-20 to 150°C	-20 to 145°C

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### LITHIUM COMPLEX GREASES

#### PAL LITHCOM - 2, 2M GREASES

These greases are made from lithium complex soaps which have excellent mechanical stability & water tolerance. These can work smoothly under high temperature & pressure for a very long time & have also very good resistance to oil separation during operation.

#### PRODUCT FEATURES

- ★ Very high drop point.
- ★ Excellent thermal and structural stability.
- ★ Work excellently in very adverse conditions like high temperatures pressures.

#### APPLICATIONS

- ★ Plain and anti-friction bearings that works under normal and very severe condition.
- ★ Heavy duty ball and roller bearings for commercial vehicles.
- ★ Can widely be used in steel plants, mining and engineering industries.
- ★ Can run for a very long time even under adverse conditions.

**PERFORMANCE LEVEL:** IS 14847-2000 specifications.

**PACKING:** 180KG, 18KG

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL LITHCOM -2	PAL LITHCOM -2M
1	Appearance	Golden	Black
2	Consistency of worked grease, @25 ± 0.5°C, (60 double strokes) Change in consistency after 1,00,000 strokes	265-295	265-295
		Should not differ by more than 30 units from 60 strokes	
3	Drop Point,°C, min.	260	260
4	MoS2	--	3%
5	Soap Type	Lithium Complex	
6	Structure	Smooth & Buttery	

\* The specifications are subject to variations/ development / customization.

# INDUSTRIAL GREASES

## LITHIUM COMPLEX GREASES

### PAL LITHCOM EP -200 SERIES

Specially Complexed Lithium Greases ensures exceptional performance and durability of high-speed bearings which in-turn reduces the equipment downtime significantly contributing in reducing total cost of ownership.

These greases are aimed to reduce frictional torque generated due to high speed and efficiently works under hostile high temperature environment. It prolongs the life of bearing even in presence water, cutting fluid and fumes. It has higher mechanical stability, even under high temperature it can able to maintain efficient lubrication film due to high adhesion. It can be used in electric motor, precision bearings and in steel, paper, chemical industries. Also, it has been designed to used in automotive wheel bearing and disc brakes.

#### PRODUCT FEATURES

- ★ High thermal and lubrication film stability
- ★ Good Pumpability
- ★ Offers excellent shear stability
- ★ Excellent rust protection
- ★ High water repellence
- ★ Reduces frictional torque

#### APPLICATIONS

- ★ Electric Motor Bearing
- ★ OD fans, Hot roller mills
- ★ Automotive wheel bearings
- ★ Precision bearings

**PACKING:** 180KG, 18KG

CHARACTERISTICS								
S. NO.	PROPERTIES	TEST METHOD	PAL LITHCOM SERIES					
			200	220	221	222	222 (M)	223
1	NLGI Grades		00	0	1	2	2	3
2	Thickener Type		← Lithium Complex →					
3	Base Oil Viscosity @40°C, cst	ASTM D 445	220	220	220	220	220	220
4	Penetration (60X Strokes) @ 25°C	ASTM D 217	415	360	315	275	275	235
5	Drop Point, °C	ASTM D 2265	-	<250	<265	≥270	≥270	<270
6	Copper Strip Corrosion @ 100°C	ASTM D 4048	1B	1B	1B	1B	1B	1B
7	Mechanical Stability Penetration 100k Strokes	ASTM D-217	-	-	-	+15	+15	+17
8	Roll Stability @ 50°C, 16Hrs, %	ASTM D 1831	-	-	8	7	7	6
9	Weld Load, Kg	ASTM D 2596	315	315	315	315	315	315
10	Wear Scar Dia, mm	ASTM D 2266	-	-	0.47	0.45	0.42	0.47
11	Water washout @ 79°C, %	ASTM D 1264	-	-	3.8	2.8	3.0	2.4
12	EMCOR, Distilled Water	ASTM D 6138	-	0,0	0,0	0,0	0,0	0,0

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### SYNTHETIC LITHIUM COMPLEX GREASE

#### PAL CHUCK JAW PASTE

A special Lithium complex grease with PAO for sliding surfaces. It is an assembly grease with the feature of forming effective adhesive lubrication film on metal surfaces. It is fortified with the combination of solid lubricants imparting synergistic effect in minimizing torsional oscillation for precise cutting and drilling. It is light-coloured grease that offers good resistance to fretting wear and corrosion. It does not get affected due to continuous flow of aqueous cutting fluids. It is designed to sustain high stress and helps in minimizing wear due to mechanical impedance in ultra precision machining.

#### PRODUCT FEATURES

- ★ Optimal Adhesion. Excellent load carrying capacity
- ★ Prevent Fretting wear and corrosion. Works well in highly alkaline aqueous cutting fluids
- ★ Prevent Stick - slip, An effective press fitting and assembly aid.

#### APPLICATIONS

- ★ Chucks in metal processing unit
- ★ Sliding surfaces , Packaging, Filing, labelling Machine

**PACKING:** 180KG, 18KG

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL CHUCK JAW PASTE
1	Appearance	Beige
2	NLGI Grade	2
3	Worked Penetration (60 X)	280
4	Drop Point, °C, min.	250
5	Water Wash out, % wt. loss @ 80°C	2.8 (max.)
6	Weld Load, Kg	315
7	Copper Corrosion 24 hrs. @ 100°C	1b
8	Base Oil Viscosity@40°C, cSt	110
9	Coefficient of Friction (Press fit test - $\mu$ )	0.07
10	Thickener Type	Lithium Complex

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### SYNTHETIC LITHIUM COMPLEX GREASE

#### PAL SYNTHOLIX GREASE 2&3

**PAL SYNTHOLIX GREASE 2&3** are synthetic Lithium complex grease with PAOs for medium to heavy duty industrial application. It is based on tailored highly shear stable lithium complex soap imparting excellent structural stability that reduces re-lubrication intervals significantly. Blend of synthetic oil contributed to improving low as well as high temperature properties of grease. Specially selected EP and AW additives reduces noise, vibration and shocks. It reduces operating temperature in heavily loaded contact zone of ball bearings offering lower coefficient of friction. It has excellent anti rust and oxidation stability contributed to increased life of grease as well as the machine.

#### PRODUCT FEATURES

- ✦ Highly shear stable, Reduces NVH . Offers good oxidation stability in harsh operating environment.
- ✦ Durable lubrication film reduced re-lubrication interval.
- ✦ Offers low running torque at low temperatures.
- ✦ Significant reduction in COF at even high temperature.
- ✦ Operating temperature range -50°C to 180°C

**APPLICATIONS :** In tapered and cylindrical bearing where performance criterion can not be met by mineral oil greases. Also, can be used in automotive application in steering joints, hub and chassis

**PACKING:** 180KG, 18KG, 1KG

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL SYNTHOLIX 2	PAL SYNTHOLIX 3
1	Appearance	Beige	Beige
2	NLGI Grade	3	2
3	Worked Penetration (60X) @25°C	280	240
4	Prolong Penetration 10000 X strokes (unit change) @25°C	+15	+13
5	Drop Point, °C, min.	260	250
6	Water Wash out, % wt. loss @ 80°C	2.8 (max)	3.5 (max)
7	Weld Load, Kg	315	315
8	Copper Corrosion for 24 hrs.@100°C	1b	1b
9	Base Oil Viscosity@40°C, cSt	220	220
10	Coefficient of Friction @ 75°C	0.08	0.08
11	Thickener Type	Lithium Complex	Lithium Complex

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### MOLY GREASE

#### PAL LIMOX GREASE

This grease is multipurpose lithium base grease, compounded with extreme pressure (EP) additives as well as finely dispersed molybdenum disulphide ( $\text{MoS}_2$ ), which is very effective solid lubricant with extremely good anti-scuffing characteristics. This grease is also fortified with corrosion and oxidation inhibitors and additives that provide good film strength under medium-to-high loads.

**PAL LIMOX** grease provide good protection to contacting surfaces against rust, corrosion and wear as well as resistance to water wash-out. This grease also has an application in sliding motions where the prevention of scuffing is desirable and may be used in dry or moist conditions. This grease also possess good mechanical stability, load carrying properties, resistance to shock loads and overcomes boundary lubrication conditions, thus enhancing component life and increasing re-lubrication intervals.

Recommended for lubrication of heavily loaded slow/medium speed bearings of all types and is particularly useful in preventing bearing damage caused by excessive vibration or shock loads. When exposed to extreme operating conditions, particularly where contacting surfaces are exposed to very heavy pressure and shock loads and for continuous service up to  $130^\circ\text{C}$  this grease helps prevent the depletion of normal grease lubrication by a residual coating on the metal surface with molybdenum disulphide to give 'dry' or 'solid' lubrication.

It is not recommended for use in small, high speed ball and roller bearings.

These greases are compatible only with lithium base grease. Sealed bearings should be thoroughly cleaned before using grease described in this product bulletin.

**PACKING:** 180KG, 18KG

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL LIMOX
1	Appearance	Black
2	Soap Type	Lithium
3	$\text{MoS}_2$	3%
4	Base Oil Type	Mineral
5	Base Oil Viscosity, @ $40^\circ\text{C}$	120
6	Viscosity Index of base oil, min.	90
7	Cone Penetration, @ $25^\circ\text{C} \pm 0.5^\circ\text{C}$	265-295
8	Drop Point, $^\circ\text{C}$ min.	180

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### HIGH TEMPERATURE GREASES

#### PAL HTG - 1, 2 GREASE

These greases are formulated from a special blend of high viscosity solvent refined base oil, thickened with bentonite clay. They have smooth structure, ability to retain their consistency under increasing temperatures; offer excellent resistance to chemicals such as mild acids and alkalies besides having good water repellency characteristics.

These greases meet IS 12790-1999 grade 3, U.S.Steel No.372 requirements and IPSS:1-09-008 specifications. These greases are suitable for the lubrication of machine elements, plain bearings and anti-friction bearings operating at high temperatures between 120°C to 250°C.

**Recommended** for use in industrial ball and roller bearings, kiln car wheel bearings, furnace door bearings, heat exchange motor bearings, oven conveyor bearings and other applications where extremely high temperatures are encountered. These greases gives optimum performance when used in applications up to 135°C with normal re-greasing, and up to 250°C with frequent re-greasing, making it suitable for use in a wide range of high temperature applications.

These greases are not compatible with soap type greases. Bearings must be thoroughly cleaned before changing over to Bentonite type greases.

**PACKING:** 180KG, 18KG, 1KG

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL HTG-1	PAL HTG-2
1	Appearance	Dark Brown	Dark Brown
2	Soap Type	Bentonite Clay	
3	Base Oil Type	Mineral	
4	Base Oil Viscosity, @40°C	460	
5	Viscosity Index of base oil, min.	90	
6	Cone Penetration, @25°C ± 0.5°C	310-340	265-295
7	Drop Point, °C min.	280	280

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### PAL THERMOGUARD 500

#### PAL THERMOGUARD 500

**PAL THERMOGUARD 500** is an exceptionally high Temperature Grease. Our specially formulated grease is designed to excel in high temperature environments, providing superior lubrication and protection for your equipment, with a maximum operating temperature of 500 degrees. It is an ideal solution to use in industrial machinery, automotive applications, and other high temperature environments. Its advanced formulation ensures excellent thermal stability, oxidation resistance, and shear stability, making it the perfect choice for demanding high temperature applications.

#### PRODUCT FEATURES

- ★ Exceptional thermal and Mechanical Stability. Work even hostile chemical environment.
- ★ Does not carbonized even at high temperature. Offers excellent fretting corrosion protection.
- ★ High shock load absorption property

#### APPLICATIONS

- ★ Klin car, Furnace door hinges, Oven racks, Tire moulds
- ★ Disc, washers, spark plug, battery terminal
- ★ Chisel paste in pneumatic jack hammers.

**PACKING:** 180KG, 18KG, 1KG

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL THERMOGUARD 500
1	Appearance	Copper Brown
2	NLGI Grade	1/2
3	Worked Penetration (60 X)	280-310
4	Drop Point, °C, min.	Non Melt
5	Water Wash out, % wt. loss	2.8 (max.)
6	Base Oil Viscosity @ 40°C, cSt	460
7	Thickener	Inorganic
8	Corrosion Prevention property	Pass
9	Operating temperature range	-10 to 500°C

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### EXTRA HIGH TEMPERATURE GREASES

#### PAL EHT- 30, 60,100 GREASE

These greases are multipurpose non-soap base grease made from a heat resistant bentonite thickener, compounded with EP additives and finely dispersed molybdenum disulphide (MoS<sub>2</sub>), which is very effective solid lubricant with extremely good anti-scuffing characteristics. They are engineered to resist rust, oxidation and corrosion while reducing wear besides excellent ability to withstand high temperature and severe shock load conditions. In addition, these greases have excellent resistance to water washout and do not get affected by mild acids and alkalies.

**Recommended** for lubrication in all areas of industrial, automotive, farm machinery and other off-road applications These greases meet IS 12790-1999 grade 3, U.S.Steel No.372 requirement and IPSS:1-09-008 specifications. These greases are widely used for the lubrication of machine elements, plain bearings and anti-friction bearings operating at high temperatures between 120°C to 250°C. These greases gives optimum performance when used in applications up to 135°C with normal re-greasing, and up to 250°C with frequent re-greasing, making it suitable for use in a wide range of high temperature applications.

These greases are not compatible with other greases. Former grease must be completely removed and cleaned from bearings before using greases described in this product bulletin.

**PACKING:** 180KG, 18KG, 1KG

C H A R A C T E R I S T I C S					
S. NO.	PROPERTIES	PAL EHT-30		PAL EHT-60	PAL EHT-100
1	Appearance	Black			
2	Soap Type	Bentonite			
3	MoS <sub>2</sub>	3%	6%	10%	
4	Base Oil Type	Mineral			
5	Base Oil Viscosity, @40°C	460			
6	Viscosity Index of base oil, min.	90			
7	Cone Penetration, @25°C ± 0.5°C	265-295			
8	Drop Point, °C min.	280			

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### SILICONE GREASE

#### PAL SNG-1000 GREASE

This is premium quality lithium soap based multi functional synthetic grease having EP properties and wide operating temperature range of -40°C to 170°C; making it an ideal choice for aircraft and other applications where low temperatures are encountered. It demonstrates excellent resistance to extreme weather conditions and chemicals such as mild acids, alkalis and alcohols etc. It has good thermal, chemical, and structural stability including water repellency characteristics.

Recommended for lubrication of all types of bearings, operating under very high speed and high temperature conditions. It has very low starting torque and as such it is an ideal choice for home appliances like portable air cooler, washing machines etc. It is also suitable for electric motor of "H" insulation, water turbines, steam joints and conveyor system. It is an outstanding lubricant for plastic, rubber and glass materials, which normally deteriorates under prolonged contact with petroleum lubricants and greases. Due to excellent steam and moisture resistance properties it gives better service than other conventional lubricants in dyeing and textile finishing units.

It is not compatible with other greases and as such, this should be used only after complete removal of old grease of the bearings.

**PACKING:** 180KG, 18KG, 1KG

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL SNG-1000
1	Appearance	Smooth, Homogeneous & Milky
2	Soap Type	Lithium
3	Water Resistance	Excellent
4	Consistency (NLGI)	#2
5	Viscosity Index of base oil, min.	90
6	Cone Penetration, @25°C ± 0.5°C	265-295
7	Drop Point, °C min.	210
8	Copper Strip Corrosion	Negative

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### OPEN GEAR AND WIRE ROPE GREASE

#### PAL OGSL 800 & 2500

Semi- Fluid adhesive grease developed for open gears and wire ropes application. It is designed in consideration of large open gears operating under low pitch velocity and under heavy loads. Its highly tenacious grease ensures it adhere to gear teeth and wire ropes and doesn't fling-off. It offers excellent rust protection in humid, damp and even in wet conditions. Superfine solid lubricant is dispersed in the grease along with adequate EP additives

#### PRODUCT FEATURES

- ★ Unmatched adherence property. Can be applied with hand, spray or sump method.
- ★ Excellent load handling capacity. Excellent rust protection
- ★ High water repellence. Effectively penetrates the wire rope strands

#### APPLICATIONS

- ★ Open Gears in mining, cement, steel like spur, helical, herringbone
- ★ Wire ropes, Draglines, Cranes, Post tensioning wires , Conveyors, Chain and sprocket

**PACKING:** 180KG, 18KG, 1KG

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	PAL OGSL-800	PAL OGSL-2500
1	Appearance	Dark Grey	Dark Grey
2	NLGI Grade	0/00	00
3	Worked Penetration (60 X)	370 to 410	390 to 420
4	Drop Point, °C, min.	240	220
5	Water Wash out, % wt. loss	3.8 (max)	-
6	Weld Load, Kg	800	800
7	Rust Prevention property	Pass	Pass
8	Copper Corrosion Property	1b	1b
9	Base Oil Viscosity @ 40°C, cSt	800-1000	2200-2600
10	Thickener	Aluminum Complex	Aluminum Complex
11	Solid Lubricant content (% wt.)	12-15%	12-15%

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### PAL SEAL PRO 460

#### PAL SEAL PRO 460

Aluminum complex thickened greases with high quality mineral base oil offers excellent thermal stability. It has strong metal affinity which establish strong boundary to mixed lubrication film. It effectively seals off gases and materials also lubricate leaf seals and spring plates. It has load carrying capacity ensures smooth operation. It also has excellent structural stability. Seal Pro offers benefit of lower consumption with increased uptime. This grease is recommended to be used in slip seal application of sponge iron kiln having capacity up to 300 TPD.

#### PRODUCT FEATURES

- + High thermal and lubrication film stability. Good Pumpability
- + Offers low vibration on application. Excellent oxidation stability
- + Effectively seals off gases. Lower consumption rate

#### APPLICATIONS

- + Slip seal application in sponge iron plant . Provide lubrication to riding ring
- + Lubricate leaf seals, spring plate.
- +

**PACKING:** 180KG, 18KG, 1KG

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL SEAL PRO 460
1	Appearance	Black
2	NLGI Grade	1
3	Worked Penetration (60 X)	310 to 340
4	Drop Point, °C, min.	250
5	Weld Load, Kg	315
6	Heat Stability 30 Hrs. 100°C, Oil separation by % Wt.	0.3
7	Copper Corrosion	1b
8	Base Oil Viscosity @ 40°C, cSt	460
9	Thickener	Aluminum Complex
10	Operating temperature range	-20 to 180°C

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### PAL POLREX-2

#### PAL POLREX-2

Mineral base Polyurea Grease, based on Di-urea thickener chemistry. It is specifically designed for high-speed electrical motor bearing. It has excellent resistance to water washing off, robust shear stability and rust prevention characteristic. It retains lubrication film for longer period of time than that of lithium complex. These greases are preferred for fill for life it is due to its superior thermal stability and its ability to regain the structural uniformity even after continuous shearing.

#### PRODUCT FEATURES

- ★ Improved Lubrication film strength. Excellent water washout and spray off resistance.
- ★ Low Noise. Outstanding thermal and mechanical stability.
- ★ Optimized oil bleed characteristic. Good pumpability.

**RECOMMENDED FOR :** Electric motor bearing, OD fan medium or high-speed bearing, Ball (roller) bearing operated under high temperature & Water Pumps

**PACKING:** 180KG, 18KG, 1KG

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL POLREX-2
1	Appearance	Blue
2	NLGI Grade	2
3	Worked Penetration (60 X)	280
4	Drop Point, °C, min.	265
5	Mechanical Stability 100k Strokes @ 25°C	+30
6	Roll Stability 50 hrs. 80°C, %	9%
7	Base Oil Viscosity @ 40°C, cSt	110
8	Oxidation Stability, Bar	0.3
9	Rust Preventive Characteristics	Passes
10	Thickener	Polyurea

\* The specifications are subject to variations/ development / customization.

## INDUSTRIAL GREASES

### GENERAL PURPOSE GREASE- CALCIUM BASE

#### PAL CUP GREASE

This grease is calcium soap based general purpose grease containing highly refined mineral oils and suitable tackifier having drop point of more than 100C. It is smooth, homogeneous, and free from objectionable odour, visible impurities and abrasive or deleterious particles.

Recommended for the lubrication of plain bearings operating under slow to medium-speed, medium-load and temperature up to 70C. Due to good water repellency characteristics, it is also recommended for the lubrication of the bearings and packing of water pumps immersing equipment's. Also recommended for application to exposed components where high temperature is not encountered.

**PACKING:** 180KG, 18KG

C H A R A C T E R I S T I C S		
S. NO.	PROPERTIES	PAL CUP GREASE
1	Appearance	Greenish Black
2	Soap Type	Calcium
3	Base Oil Type	Mineral
4	Cone Penetration, @25°C ± 0.5°C	280-330
5	Drop Point, °C min.	100

\* The specifications are subject to variations/ development / customization.

## **INDUSTRIAL CLEANER & DEGREASER**

### **HD INDUSTRIAL CLEANER & DEGREASER CONC**

**HD INDUSTRIAL CLEANER & DEGREASER CONC** is a powerful cleaning solution specifically formulated to remove tough grease, oil, grime, and other stubborn contaminants from machinery, equipment, and surfaces in industrial settings. It is designed keeping safety in mind. It has safety features, such as low VOC, non-flammability and Eco-Friendly to meet environmental and workplace safety standards.

**APPLICATION AREA :** Cleaning heavy machinery, conveyor belts, and production equipment to prevent buildup that can affect performance or cause malfunctions. Degreasing engine parts, transmissions, and other automotive components during repair or maintenance. Cleaning garage floors, workshop tools, and vehicle exteriors contaminated with oil and grease. Degreasing construction equipment, such as bulldozers, cranes, and excavators. Preparing metal surfaces for painting, coating, or welding by removing oils, rust, and contaminants. Cleaning metal parts, stamping dies, and molds to ensure precision and quality in fabrication processes. Cleaning power generation equipment, such as turbines, transformers, and generators. Degreasing pipelines, valves, and storage tanks in oil and gas facilities.

**FEATURES:** High Strength Formulation : Designed to dissolve and remove heavy grease, oil, tar, carbon deposits, and other stubborn contaminants. Versatility : Effective on a wide range of materials, including metal, concrete, plastic, rubber, and fiberglass. Suitable for use in various industries, such as automotive, manufacturing, food processing, and construction. Concentrated Formula : Often available in concentrated forms that can be diluted with water, providing cost-effective and customizable cleaning solutions. Biodegradable and Eco-Friendly Options : Some degreasers are designed to be environmentally friendly, breaking down safely without harming ecosystems. Non-Flammable and Safe to Use : Formulated to minimize fire hazards, making them safer for use in industrial settings. Water-Based Formulation : Water-based degreasers are safer for the environment and user health.

**DIRECTIONS FOR USE:** HEAVY grease and grime loads: dilute 1 or 2 parts of Degreaser with 5 parts of water.

NORMAL conditions: dilute 1 part Degreaser with 10 parts of water.

HARD SURFACES: dilute 1 part Degreaser with 15 - 30 parts of water.

**PACKING:** 210L, 50L, 20L, 5L, 1L

## INDUSTRIAL CLEANER & DEGREASER

### PAL AQUACLEAN 100R

#### WATER SOLUBLE HIGH PERFORMANCE SYNTHETIC CLEANER

**PAL AQUACLEAN 100R** is a mildly alkaline, low-foaming, multipurpose liquid spray wash cleaner designed for high-performance cleaning across a wide range of temperatures and pressures. It delivers excellent results in both spray and immersion-spray applications, effectively removing oils and light soils from industrial components. Compatible with most ferrous metals, it is suitable for use in various cleaning systems, including conveyORIZED washers and batch cleaning setups. Its versatile formulation ensures reliable cleaning efficiency while minimizing foam, making it ideal for high-pressure spray operations.

#### FEATURES:

- ★ Effective Oil Displacement: Excellently removes mineral oils and light surface deposits.
- ★ Short-Term Corrosion Protection: Guards ferrous metals against rust post-cleaning.
- ★ Bio-Stable Formula: Extends sump life, reducing waste and maintenance.
- ★ Low Alkalinity (pH < 10): Mild yet effective, minimizing foam in high-pressure systems.
- ★ High-Pressure Ready: Suitable for applications up to 200 bar (spray/immersion-spray).
- ★ Ferrous Metal Compatible: Safe for use on steel, cast iron, and other ferrous alloys.
- ★ Versatile Application: Ideal for conveyORIZED washers, batch cleaning and ultrasonic cleaning systems.
- ★ Residue-Free Cleaning: Ensures surfaces are prepared for plating, painting, or assembly.

**APPLICATIONS :** PAL AQUA CLEAN 100R is suitable for removal of swarf & other particulate soils, metal working fluids & oily rust preventive from metals during production processes, most suitable where short term corrosion protection is required. Recommended for wide range of industrial spray & intensive flood wash machines. Cleaning of automobile parts after machining parts like cylinder heads, camshafts, crankshafts... etc. Suitable for pre-heat treatment cleaning. Generally, to be operated in a concentration range of 3 to 5% depending up on level of dirt. Recommended temperature is about 50 ° C for sump.

**PACKING:** 210L, 50L, 20L

C H A R A C T E R I S T I C S			
S. NO.	PROPERTIES	TEST METHODS	PAL AQUACLEAN 100R
1	Appearance	Visual	Pale Yellow Clear Liquid
2	Diluted Appearance	Visual	Translucent
3	pH (2% in 100 ppm Hard Water)	Internal	9.0 – 10.0
4	Corrosion Protection	Internal	Passes

\*The specifications are subject to variations/development/customization.



## RANGE OF PALCO AUTOMOTIVE LUBRICANTS

### CAR ENGINE OILS

ENERGY 20W50/20W40

PHG 20W50

GARNET-5W30

LEOPARD-5W30/5W40

JASPER-0W16/0W20

### OTHER ENGINE OILS

PHB-20W40 (BOUNCER)

UNITRACK 20W

ADF

### GEAR OILS

EP-90/140

EP-80 W

MULTIF EP-75W85

HYPOID 90/140

HYPOID 80W90

HYPOID 75W90

HYPOID 85W140

TRANSOL-A

TRANSFLUID C4-30

### COOLANTS

MINT KOOL

ICY KOOL

ULTRA COOL

EXTRA COOL

### PUMP SET OIL

PPS-2

### HEAVY DUTY ENGINE OILS

PPG4 - 15W40 / 20W40

HITECH 15W40

HITECH PLUS 15W40

HITECH SYNTH 10W40

### SHOCK ABSORBER OIL

PAL FRONT FORK OIL

### GRADES

SL/CF

SF/CD

SN, ILSAC GF-5

SN/CF

SN, ILSAC GF-6A

SC/CC

GL-4

GL-4

GL-4

GL-5

GL-5

GL-5

GL-5

TASA

TES228

JISK 2234

JISK 2234

JISK 2234

JISK 2234

SC/CC

CF-4/SJ

CI-4/SL

CI-4 PLUS

CH, CI-4/SL

### TWO WHEELER OILS

2T POWER / 2T POWER GOLD

2T SUPREME

4T BOSS 20W40 / 20W50

4T DART 10W30 / 20W40

TRIDENT 20W40

SOLITAIRE 20W40

PANTHER 10W30

GAJRAJ 15W50

GAJRAJ PLUS 15W50

TRAI0-10W30

TRAI0 PLUS-5W30

### DIESEL ENGINE OILS

PHD-10W

PHD-40(CAPTAIN)

PHD 15W40/ 20W40(COMMANDER)

TRACTOR SAMRAT 20W40/20W50

PMG-20W40 SHAKTIMAN

PMG-20W40 SHAKTIMAN

PMG-20W40 SHAKTIMAN

### GREASES

AP-3 / AP-3 (RED)

GP-3 / GP3 ( GREEN)

MEGALIFE (LLAP)

RUBY GEL

PMG-3

W.B

MP-3

CHASSIS

### BRAKE FLUID / OIL SAVER

HAWK for Giriling Sys.

ENGINE OIL SAVER

### GRADES

TC/FB

TC/FC

MA2/SJ

MA2/SG

MA2/SL

MA2/SN

MA2/SL

MA2/SL

MA2/SN

MA2/SN

MB/SL

MB/SN

CD

CD

CF/SF

CF/SF

CF/SF

CF/SF

NLGI-3

NLGI-3

NLGI-3

NLGI-3

NLGI-3

NLGI-2

NLGI-3

NLGI-1

NLGI-1

DOT-3 / DOT-4



# PARAS LUBRICANTS LIMITED

ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified

Since 1985

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**Regd. & H.O.:** 311-312, Manglam Paradise, Plot No.8, Manglam Place, Sec.-3, Rohini, New Delhi - 110085, INDIA.  
Ph. +91-11-47889999 E-mail: [info@palco.co.in](mailto:info@palco.co.in), [info@palcochemicals.com](mailto:info@palcochemicals.com)

**Mumbai Office:** 402, Skyline Epitome, Near Jolly Gymkhana, Kirol Road, Vidhya Vihar, Ghatkopar (W),  
Mumbai-400086, INDIA. Ph. +91-22-67340555