

## SECTION – II

## INDUSTRIAL GRADES : GREASES

Product	NLGI	Base Oil Grades	Thickener	Max Usable Temperature °C	Characteristics / Applications
RL GREASE	3	Low Volatile Mineral Oil	Calcium	70	Calcium based red coloured grease with smooth buttery texture. It has good mechanical and thermal stability and high water resistance. Recommended for all types of ball and roller bearings operating under moderate speed and temperature conditions.
YELLOW CUP GREASE	2, 3	Low Volatile Mineral Oil	Calcium	65	Lime based grease with smooth buttery texture. Resistant to water. Available in No. 2 & 3 consistencies. Used as a general-purpose lubricant in all types of plain bearings, line shafting, sliding surfaces and grease cups. YELLOW CUP can also be used in lightly loaded ball bearings of pumps, textile machinery, etc.
GRAPHITE GREASE NO. 1	1	Low Volatile Mineral Oil	Calcium	65	Lime based grease with approx. 10% graphite content. Has good water resistance. Recommended for use in bearings operating under wet conditions, water pumps, wet end of paper machines, worn or semi-finished bearings. May be used for open gears where Bituminous Compounds are not suitable. Not to be used in ball and roller bearings. Exceeds the requirements of IS 508 : 1987 Grade 1, RA 2004.

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Product	NLGI	Base Oil Grades	Thickener	Max Usable Temperature °C	Characteristics / Applications
<b>GRAPHITE GREASE NO. - 5</b>	4	Low Volatile Mineral Oil	Calcium	70	Lime based grease with approx. 50% graphite content. Recommended for lubrication of rough or worn out parts and also as a release agent where very high temperatures are encountered. Exceeds the requirements of IS 508 : 1987 Grade 3 Specification RA 2004.
<b>WATER PUMP GREASE</b>	4	Low Volatile Mineral Oil	Calcium	65	Calcium based grease brown in colour with a smooth texture. High water resistance. Recommended for water pumps and shaftings. May be used in ball bearings only if the speed and loads are not high. Excellent for use as a seal and as a lubricant for sealing materials.
<b>BLUNA / GREASE EP</b>	1, 2	Low Volatile Mineral Oil	Calcium	65	Calcium based water-resistant grease with EP additives. Has excellent pumpability. Recommended for use in roll neck bearings of metal rolling mills with centralized lubrication system. Meets the requirements of IPSS : 1 -09-009-97.
<b>ROLL NECK 5H</b>	30 - 45	Low Volatile Mineral Oil	Calcium	70	Lime based block grease containing graphite, bitumen and other required additives. Recommended for use in roll necks of steel rolling mills specially under slow speed and heavy loads.
<b>ROLLREX 300</b>	1, 2	Low Volatile Mineral Oil	Calcium	70	Calcium based grease with solid lubricant and EP additives suitable for lubrication of the surface of the rolls during hot rolling of steel sections to enhance the life of the rolls as well as to improve surface finish of steel sections.

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## INDUSTRIAL GRADES : GREASES

Product	NLGI	Base Oil Grades	Thickener	Max Usable Temperature °C	Characteristics / Applications
<b>GREASE LG 280</b> <b>LG 320 1</b>	2	Low Volatile Mineral Oil	Calcium	70	Meets IS 507 : 1993 Specification RA 2001. High-grade lime based grease with smooth texture. Has excellent heat stability and water resistance. Recommended for use as general-purpose grease for lubrication of all types of bearings, automotive chassis, etc. where operating temperature and loads are not very high. Specifically formulated for Defence requirement.
<b>GREASE-SG 240</b>	3	Low Volatile Mineral Oil	Sodium	140	Sodium based grease specially formulated to meet Defence requirement. IS : 10647-1983, RA 2004.
<b>DJ-1/</b> <b>LOCO HARD GR-1</b>  <b>DJ-2</b> <b>LOCO HARD GR-2</b>	30-45 (At 100°F 300g load) 46-60 (At 100°F 300g load)	Low Volatile Mineral Oil	Sodium	160	Sodium based hard consistency block greases. Meet IS 720 : 1986 Specification RA 2002 for Loco Hard greases. Used mainly for lubrication of Journal Rod ends of steam locomotives. Also used in various other applications where high temperature lubrication is required on sliding surfaces.
<b>WOOLYARN GREASE</b>	3	Low Volatile Mineral Oil	Sodium	140	Sodium based grease containing wool yarn to impart extra tackiness. Used mainly in jute and textile industries.

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Product	NLGI	Base Oil Grades	Thickener	Max Usable Temperature °C	Characteristics / Applications
<b>MULTI GREASE</b>	2, 3	Low Volatile Mineral Oil	Lithium	140	Specially additivated lithium based grease to give high degree of resistance to oxidation and protection against corrosion. It meets IS 7623 : 1993 RA 2001.
<b>MULTI GREASE (I)</b>	2, 3	Low Volatile Mineral Oil	Lithium	140	Specially addressed lithem base grease to give high degree of registance to oxidation protection against corrosion. It is suitable for all type indistrial application. It meets IPPS-1-09-006-07.
<b>PROTECTIVE PX-6</b>	90-140 (U.W.)	Low Volatile Mineral Oil	Lithium	140	Smooth homogenous paste free from lumps & impurities and conforms to Defence Specification JSS-8030-12 : 2000.
<b>LIPREX EP GREASE</b>	00, 0, 1, 2	Low Volatile Mineral Oil	Lithium	140	Lithium based greases having EP properties. These greases have excellent shear stability, high load carrying capacity, anti-rust properties and high oxidation stability. Recommended for heavy duty plain and roller bearings subjected to shock loads under humid conditions. These greases have excellent pumpability and is therefore recommended for centralised lubrication system. LIPREX EP1/EP2 greases exceed the requirements of IS 7623:1993 (EP Type) RA 2001 and IPSS : 1-09-005-99.
<b>SINTREX EP</b>	2	Low Volatile Mineral Oil	Lithium	140	Lithium based grease having high extreme pressure property and high degree of tackiness with good pumpability. Suitable for sealing cum lubrication of sintering equipment in sintering plant of steel mills.

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Product	NLGI	Base Oil Grades	Thickener	Max Usable Temperature °C	Characteristics / Applications
<b>MOLYGREASE ML</b>	2	Low Volatile Mineral Oil	Lithium	140	Lithium based multi-purpose grease with approx. 3% MoS <sub>2</sub> . Has mild EP properties. Excellent for lubrication of sliding surfaces, ball and roller bearing, closed gears, etc. under severe conditions. Used also as anti-seize grease in threaded connections, plugs, seals, etc.
<b>MULTIGREASE LL3</b>	3	Low volatile mineral oil	Lithium	140	A premium quality lithium based grease having excellent thermal and structural stability. Possesses excellent water resistance property. Recommended for plain / anti-friction roller bearings under high temperature and presence of moisture. Specially formulated for cylindrical roller bearings of axle boxes of diesel / electric locomotives.
<b>MULTIGREASE RB</b>	2/1	Low volatile mineral oil	Lithium-calcium	140	Long life grease for use in journal roller bearings of freight cars. Meets AARM -942 specification.
<b>LICOM</b>	0,1,2,3	Low volatile mineral oil	Lithium-complex	160	Lithium complex grease. Recommended for effective lubrication in anti-friction ball and roller bearings operating under extreme pressures and high temperatures (upto 160°C). Ideal for centralized lubrication system due to its excellent pumpability. Meets IPSS : 1-09-020-99.
<b>MULTIGREASE LL3F</b>	3	Low volatile mineral oil	Lithium	140	A premium quality lithium based grease having excellent thermal and structural stability. Possesses excellent water resistance property. 'Low Noise' grease recommended for fan bearings.

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash pt. °C (Min) COC	VI, min	Characteristics / Applications
<b>CRANKCASE OILS</b> <b>PROTOMAL MG (SPL.)</b>				These multigrade oil meets the characteristic & performance of API SC/CC, MIL-L-2104B & EPL1/EDL1 of IS: 13656 – 2002. It is ideally suited for petrol engine, naturally aspirated & super charged diesel engines. It provides ease -in cold starting.
<b>10W-30</b>	9.5–12.0	190	135	
<b>20W-40</b>	13.5–15.5	200	110	
<b>20W-50</b>	17.5–20.0	200	125	
<b>PROTOMAC E-SPECIAL</b>				Heavy-duty engine oils having high viscosity index, high detergency level and excellent oxidation stability. These oils meet API SC/ CC, US Military MIL-L-2104B performance levels, IS 13656 - 2002 Type EPLI/ EDLI specifications. Recommended for normally aspirated diesel engines  petrol engines operating under severe duty conditions, super charged diesel engines and for power generating sets.
<b>SAE 10</b>	5 (min)	190	100	
<b>SAE 20</b>	6-8	190	95	
and <b>SAE 30</b>	10-12	220	95	
<b>SAE 40</b>	13-15	220	90	
<b>SAE 50</b>	17-20	230	90	
<b>PROTOMAC ULT</b>				Oils have high detergency level and excellent oxidation stability. These oils meet API CD, US Military MIL-L-45199B performance levels and Caterpillar series 3 and IS : 13656 - 2002 Type EDL2 specifications and are recommended for super charged diesel engines of heavy duty vehicles, earth moving equipment etc.
<b>SAE 10 W</b>	5 (min)	190	100	
<b>SAE 20</b>	6-8	190	95	
<b>SAE 30</b>	10-12	220	95	
<b>SAE 40</b>	13-15	220	90	
<b>SAE 50</b>	17-20	230	90	

## SECTION II A/B

## INDUSTRIAL GRADES : LUBRICATING OILS

Product	Viscosity @ 100°C cSt	Flash pt. °C (Min) COC	VI, min	Characteristics / Applications
<b>PROTOMAC</b>				Multigrade oils have a very high shear stability, excellent detergency and oxidation stability.
<b>PMG 10W 30</b>	9.5-11.5	190	135	These are characterised by a very high viscosity index and meets API CD, US Military MIL-L-45199B and Caterpillar series 3 and exceeds IS: 15656 – 2002 Type EDL2 specifications. These oils are suitable for application under extreme weather conditions. Recommended for heavy duty diesel vehicle & earthmoving equipment.
<b>15W 40</b>	13.5-15.5	200	135	
<b>20W 40</b>	13.5-15.5	200	110	
<b>20W 50</b>	17.5-19.5	200	125	
<b>PROTOMAC SE SERIES</b>				High quality oils having very good oxidation stability properties and low carbon residue formation characteristics. These oils are recommended for bearing and cylinders of slow speed and medium speed stationary diesel engines, where operating conditions do not require detergent oil. These are also recommended for cylinders and bearing of air compressors.
<b>68</b>	64-72	190	95	
<b>100</b>	90-105	220	95	
<b>150</b>	135-155	230	90	
<b>220</b>	200-230	230	90	

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash pt. °C (Min) COC	VI, min	Characteristics / Applications
<b>PROTOMAC SP</b>				Extreme pressure type industrial gear oils, containing Sulphur-phosphorus compounds and have better thermal stability and higher oxidation resistance compared to conventional lead naphthenate gear oils. These oils have good demulsibility, low foaming tendency and provide rust and corrosion protection to metal surfaces. These oils meet AGMA standard 250.04, IS: 8406-1993 RA 2001 heavy duty and US steel requirement No. 224. It also meets IPSS: 1-09-003. Recommended for all enclosed gear drives with circulation or splash lubrication system, operating under heavy or shock load conditions up to a temperature of 110°C. However, for worm gears, the bulk oil temperature is usually restricted to 95 °C. These oils can also be used for plain and roller bearings, sliding surfaces, chain drives, sprockets, flexible coupling employing splash, circulation or spray lubrication systems requiring EP type oils. *(NON-ISO VG)
<b>ISO VG 68</b>	64-72	205	90	
<b>100</b>	90-105	205	90	
<b>150</b>	135-155	205	90	
<b>220</b>	200-230	230	90	
<b>257*</b>	250-280	230	90	
<b>320</b>	300-350	230	90	
<b>460</b>	420-480	230	90	
<b>680</b>	615-680	230	85	
<b>1000</b>	900-1100	230	80	
<b>PROTOMAC ZN SERIES</b>				Formulated with selected base stock fortified with suitable additives to impart excellent anti-oxidation, rust-inhibition and anti-wear properties. These oils find application in the gear-boxes where moderate anti-wear and mild EP characteristics are required.
<b>150</b>	135-155	220	90	
<b>220</b>	200-230	230	90	
<b>320</b>	300-350	230	90	
<b>460</b>	420-480	230	90	



**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash pt. °C (Min) COC	VI, min	Characteristics / Applications
<b>CIRCULATING &amp; HYDRAULIC-OILS (ANTI-WEAR TYPE)</b>				
<b>PROTOMAC H SERIES</b>				
<b>ISO VG 22</b>	20-24	160	100	Blended from highly refined stocks and carefully selected anti-oxidant, anti-wear, anti-rust and anti-foam additives. These oils have long service life and are recommended for hydraulic systems and wide variety of circulation systems of industrial and automotive equipment. These oils are also used for compressor crankcase lubrication, but are not recommended for lubrication of turbines and equipment having silver coated components. These oils possess excellent thermal and hydrolytic stability and meet IS: 10522 – 1983 RA 2004 Din 51524 Part 1, vicker's specification for vane pump test 104C.
<b>31</b>	29-33	180	95	
<b>46</b>	43-48	190	95	
<b>68</b>	64-72	210	95	
<b>100</b>	90-105	210	90	
<b>121*</b>	115-125	210	90	
<b>150</b>	135-155	230	90	
<b>176*</b>	170-180	230	90	
<b>220</b>	200-230	230	90	
<b>320</b>	300-350	230	90	
<b>460</b>	420-480	250	90	

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash pt. °C (Min) COC-	VI, min	Characteristics / Applications
<b>HEAVY DUTY HYDRAULIC-OILS (ANTI-WEAR TYPE)</b>				
<b>PROTOMAC H-SPECIAL</b>				
<b>ISO VG 100</b>	95-110	210	130	A premium grade anti-wear type hydraulic oil having very high viscosity index and very low pour point. This oil is fortified which carefully selected viscosity index improvers, anti-oxidants, anti-wear, anti- rust and anti-foam additives. Recommended for very low operating temperature conditions. Specially developed for hydraulic excavators.
<b>ISO VG 68</b>	62-72	210	145	
<b>ISO VG 46</b>	42-50	210	145	
<b>PROTOMAC HLP SERIES</b>				
<b>ISO VG 22</b>	20-24	160	100	A premium hydraulic oils have excellent anti-wear property, thermal / oxidation stability, high FZG rating and extremely low wear in Vickers Vane Pump test. Meets IS : 11656 -1986; RA 2002 US Steel 127; DIN 51524 Pt. 2 and DENSON HF-0 & HF-2 specifications. Recommended for sophisticated high performance hydraulic system. It can be used as screw compressor oil.
<b>32</b>	29-33	180	95	
<b>46</b>	43-48	190	95	
<b>68</b>	64-72	210	95	
<b>100</b>	90-105	210	90	

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash pt. °C (Min) COC-	VI, min	Characteristics / Applications	
<b>FIRE RESISTANCE HYDRAULIC FLUID</b>					
<b>BALMEROL AQUA HYDOL 68</b>	61-75	–	–	A fire resistant hydraulic fluid of water in oil emulsion type conforming to IS : 10532 (Part– II), 1983; reaffirmed – 1998 for physical properties and IS : 7895 : 1975 for fire resistant characteristics. Recommended for use of underground machinery like SDLs and LHDs.	
<b>TRANSMISSION FLUIDS</b>					
<b>PROTOMAC C4 SERIES SAE 10W 30</b>	5.5 (Min) 9.5-12.5	190 215	100 100	<b>PP° C</b> -21 -15	Formulated to meet TES-228 specification for hydraulic transmission fluid type C4 of Detroit Diesel Allison. These are recommended for use in all commercial power shift transmissions, industrial torque converters and automatic transmissions manufactured by Detroit Diesel Allison, which operate under heavy-duty conditions.

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash pt. °C (Min) COC	VI, min	Characteristics / Applications
<b>OIL FILM BEARING OILS</b>				
<b>PROTOMAC F SERIES</b>				
<b>ISO VG 32</b>	29-33	180	95	High viscosity index straight mineral oils having good inherent oxidation and thermal stability, excellent demulsibility and anticorrosion properties. Meet IPSS : 1-09-001 97. Recommended for oil film bearings in steel mills and circulation system.
<b>46</b>	43-48	190	95	
<b>68</b>	64-72	210	95	
<b>100</b>	90-105	210	90	
<b>150</b>	135-155	230	90	
<b>220</b>	200-230	230	90	
<b>320</b>	290-330	230	90	
<b>460</b>	420-480	230	90	

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash pt. °C (Min) COC-	VI, min	Characteristics / Applications
<b>MORGAN BEARING OILS</b>				
<b>PROTOSTEEL SERIES ISO VG</b>				A premium quality bearing oils with superior oxidation and thermal stability & excellent film strength to minimize wear in rollneck bearing of steel mills. It meets IPSS-1-09-001-97 and the specifications of Morgan Construction Company, USA for such type of oils.
<b>257</b>	245-270	230	90	
<b>320</b>	305-335	240	90	
<b>381</b>	362-400	240	90	
<b>460</b>	437-483	250	90	
<b>521</b>	295-545	250	90	
<b>680</b>	646-714	260	90	
<b>HEAT-TRANSFER OIL</b>				
<b>PROTOTHERM MEDIUM</b>	30-32	205	95	Blended from highly refined HVI oils, fortified with selected additives to improve high temperature stability and minimise sludge formation. Recommended for closed liquid phase heat transfer system, where bulk temperature does not exceed 300 ° C.

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash pt. °C (Min) COC-	VI, min	Pour Point °C Max	Characteristics / Applications
<b>TURBINE OILS</b>					
<b>PROTOMAC T SERIES ISO VG</b>					Oils are manufactured from selected turbine grade base stocks and contain anti-oxidant and anti-foam additives to achieve desired performance level. They exhibit good demulsibility characteristics and meet IS : 1012 - 2002 specifications. It is recommended for lubrication of steam, gas & hydraulic turbines. DIN 51524, Part 1.
<b>32</b>	29-33	200	100	-12°C	
<b>46</b>	43-48	200	95	-12°C	
<b>57</b>	52-60	210	95	-12°C	
<b>68</b>	64-72	210	95	-12°C	
<b>76</b>	72-80	220	95	-12°C	
<b>100</b>	90-100	220	95	-12°C	
<b>STEAM CYLINDER OILS</b>					
<b>PROTOMAC C GRADES</b>					Oils are highly refined steam cylinder oils having excellent oiliness and film strength properties. These oils resist water wash out and minimise deposit formation even at elevated temperatures. These oils are suitable for cylinder lubrication of steam engines.
<b>C1</b>	420-480	260	90		
<b>C2</b>	510-530	260	85		
<b>C3</b>	550-600	260	85		
<b>C4</b>	615-700	280	85		
<b>C5</b>	780-820	280	80		
<b>C6</b>	900-1050	280	80		

## SECTION II A/B

## INDUSTRIAL GRADES : LUBRICATING OILS

Product	Viscosity @100°C cSt	Flash Pt. °C (Min) COC-	VI, min	Characteristics / Applications
<b>PROTOMAC C (SPL) GRADES</b>				
<b>C1 (SPL)</b>	420-480	260	90	Recommended for steam engines operating under wet saturated steam conditions. These oils are widely used in calendar bearing and sugar mill oil bearings and are also recommended for lubrication of worm gears.
<b>C4 (SPL)</b>	615-700	260	85	

## COMPRESSOR OILS

Product	Viscosity @100°C cSt	Flash Pt. °C (Min) COC-	VI, min	Characteristics / Applications
<b>PROTOPRESS SERIES ISO VG</b>				
<b>32</b>	29-33	195	95	Formulated using good quality thermally stable oil with anti-oxidant, anti-rust additives to impart desired performance. These oils can be used in highperformance reciprocating and rotary compressors.
<b>46</b>	42-46	200	95	
<b>68</b>	64-72	210	95	
<b>100</b>	90-105	210	95	
<b>150</b>	135-155	210	95	

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash Pt. °C (Min) COC-	VI, min	Characteristics / Applications
<b>REFRIGERATION COMPRESSOR OIL</b>				
<b>PROTOPRESS R SERIES ISO VG</b>				
<b>32</b>	29-33	195	95	Possess easy flow at very low temperature. These oils are recommended for wide range of refrigerant compressor using conventional refrigeration. It can be used for both reciprocating and rotary compressor also. This oil meets IS: 4578 – 1989. Specification.
<b>46</b>	42-46	200	95	
<b>68</b>	64-72	210	95	
<b>MACHINERY OILS</b>				
<b>PROTOMAC SERIES ISO VG</b>				
<b>22</b>		20-24	160	Suitably blended from mineral oil base stocks to provide good oiliness for general lubrication of machineries. PROTOMAC SERIES oils are of superior grade and contain additives to impart rust prevention and film strength characteristics. They exceed IS : 493 - 1981 specifications RA 2004.
<b>32</b>		29-33	160	
<b>46</b>		43-50	160	
<b>68</b>		64-72	160	
<b>100</b>		90-105	210	
<b>150</b>		135-155	210	
<b>220</b>		200-230	220	
<b>320</b>		288-340	220	
<b>460</b>		420-480	230	



**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash Pt. °C (Min) COC-	VI, min	Characteristics / Applications
<b>MACHINE TOOLWAY OILS</b>				
<b>PROTOWAY SERIES</b>				
<b>ISO VG 32</b>	29-33	160	–	Formulated to impart mild EP & tackiness characteristics. These oils are recommended for slide way lubrication of slow moving machine parts, planers, grinders, horizontal boring machines, shapers etc.
<b>68</b>	64-72	170	–	
<b>100</b>	90-105	170	–	
<b>220</b>	210-230	190	–	
<b>SPINDLE OILS</b>				
<b>PROTOMAC SP (EL)</b>	9-14	114	90	ISO VG 10 spindle oil fortified with anti-wear, anti-oxidant, anti-rust and anti-foam additives. Recommended for high speed applications in textile and machine tools spindle bearings, timing gears, positive displacement blowers and certain hydraulic systems.
<b>SUPER SPIN 10</b>	9-11	170	145	Fully synthetic ISO VG 10 lubricating oil specially recommended for ring frame spindles in high speed textile mills. It leaves virtually no carbon residue thereby ensuring prolonged trouble free operations. SUPER SPIN 10 is a semi - synthetic ISO VG 10 grade oil.
<b>ULTRA SPIN 10</b>	9-11	160	140	
<b>PROTO-KNITT</b>	20-24	170	97	Suitable for Knitting machine to protect the highly polished surfaces knitting needles from corrosion. This is readily washed off without leaving any stains on the fabric.

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash Pt. °C (Min) COC-	VI, min	Characteristics / Applications
<b>PNEUMATIC OILS</b>				
<b>PROTONEUM SERIES ISO VG</b>				
<b>100</b>	95-105	190	–	Excellent load carrying, rust preventive properties. These oils are used for lubrication of roll drill, Jack Hammer, Wagon drills etc. It can be used for grinders, drills, machine tools, tapers etc.
<b>181</b>	175-185	200	–	
<b>321</b>	300-330	230	–	
<b>AXLE OILS</b>				
<b>AXLE OIL (MEDIUM)</b>	76-86	190	40	These oils meet IS : 1628-1986 RA 2002 specification for axle oil (medium grade). This oil has excellent oxidation stability and anti-wear properties and long service life. Used by Railways for lubrication of Plan bearings, axle boxes of locomotives and wagons and other rolling stock.
<b>AXLE OIL (HEAVY)</b>	90-103	210	40	
<b>BLUCOAT 00 SPECIAL</b>	90-103	210		Bituminous axle oil meeting the viscosity requirement of IS: 1628 -1986 RA 2002 Heavy Grades.
<b>RUBBER PROCESSING OILS</b>				
<b>RPO 22</b>	20-24	160	78	A light bodied non-staining type of rubber processing oil. This oil conforms to <b>ASTM 103</b> . It can be used in processing of rubbers for automobile tyres and also for other moulded rubber goods industries. It is also recommended as a dust-stop lubrication for the bar machines.

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @100°C cSt	Flash Pt. °C (Min) COC-	VI, min	Characteristics / Applications
RPO 33	30 - 36	190	92	A medium viscosity, high quality rubber processing oil of <b>ASTM</b> 104 type. It is recommended for manufacture of natural and synthetic rubber goods.
RPO 150 / RPO HEAVY	23-37 @100°C	220	44	High viscosity oil <b>ASTM</b> 101 type. These oils are used to process dark coloured rubber products, battery casings etc.

**HONING OILS**

PROTOHON	Viscosity @100°C cSt	Flash Pt. °C (Min) COC-	Characteristics / Applications
14	4-5	100	Blended from low viscosity highly refined mineral oils and fortified with selected polar compounds & stable chlorinated additives. These grades are transparent red colour fluids. These products have good heat transfer properties to cool effectively under high-speed condition at which metals like Al, Mg, Zn & their alloys are machined. These products extend honing stone's life & improve surface finish.
15	5-6	100	

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @40°C CST	Flash PT. °C (MIN) COC	Aniline Point°C	Characteristics / Applications
<b>CUTTING OILS (SOLUBLE)</b>				
<b>PROTOSOL MC</b>	20 (min)	160		Forms stable milky emulsion with water and contains a rust inhibitor to impart anti-corrosion properties and a biocide to prevent bacterial growth in the emulsion. This oil has superior cooling and lubrication properties, which impart excellent surface finish and minimize tool- wear. PROTOSOL MC is normally used in concentration of 3 to 5% and for grinding, more dilute emulsions are recommended. For stable emulsion, oil should always be added to water and not vice-versa, with continuous stirring. PROTOSOL MC meets IS : 1115-1986 RA 2002 and is recommended for cutting on both ferrous and non-ferrous metals.
<b>CUTTING OILS (NEAT)</b>				
<b>PROTUCUT SERIES</b>				
<b>T-12</b>	20-24	160		Blended from high VI base oils, with polar additives. They provide anti-wear and extreme pressure characteristics and enhance tool life.
<b>T-22</b>	28.-35	170		Meets IS : 3065 – 1985 (reaffirmed 1990, RA 2002) Type II Grade III specification and recommended for machining ferrous and non-ferrous metals.
<b>T-23</b>	30-45	160		Meets IS : 3065 – 1985 Type II Grade III specification and can be used as thread grinding and milling lubricant.
<b>T-32</b>	26-40	160		Meets IS : 3065 – 1885 Type III Grade II specifications and can be used in wide range of machining operations of ferrous and non-ferrous metals. It contains active Sulphur.

**SECTION II A/B****INDUSTRIAL GRADES : LUBRICATING OILS**

Product	Viscosity @40°C CST	Flash PT. °C (MIN) COC	Sap Value mg KOH/g	VI (Min)	Characteristics / Applications
<b>QUENCHING OILS</b>					
<b>PROTOQUENCH SERIES</b>					
- <b>SM LIGHT</b>	12-16	160	–	110	Formulated from petroleum base stock having very good thermal and oxidation stability, high boiling points and low volatility characteristics. PROTOQUENCH grades of oil are fortified with carefully selected additives to impart desired quenching rates. Those Meet IS : 2664-1980 specifications RA 2004.
- <b>SM MEDIUM</b>	20-35	190	–	95	
- <b>Sm Heavy</b>	42-60	190	–	90	
- <b>C</b>	28-34	190	–	100	
- <b>MC</b>	28-34	–	11	100	

**RUST PREVENTIVES****RUSTSKIP 15040**

A highly active thixotropic corrosion protection concentrate specially developed for bearing industries. Suitably developed to protect steel, copper and bronze surfaces from corrosion.

Kin. Viscosity @ 50°C = 100 to 110 cst; Sp. Gravity @ 30°C = 0.890 – 0.902.

**RUSTSKIP 1540 BO**

A solvent deposited oily rust preventive oil for bearings. This oil would provide excellent protection against humidity. Works well in saline environment also. Can be used for inter process corrosion prevention as well final packing of bearings where bearings are not washed with water.

Kin. Viscosity @ 40°C = 14 to 16 cst; Sp. Gravity @ 30°C = 0.840 – 0.852.

**RUSTSKIP AP 4040**

Water displacing rust preventive oil to provide excellent protection to cold rolled coils against hot humid and saline environment. On application RUSTSKIP AP 4040 leaves behind a residual soft oily film, which would give lubrication during subsequent forming operations if any. Finds applications in auto ancillary units.

Kin. Viscosity @ 40°C = 35 to 40 cst; Sp. Gravity @ 30°C = 0.860 – 0.870

**RUSTSKIP 1540 PC**

A silicon free water displacing type rust preventive oil which prevents steel surfaces from rust during indoor storage and also accepts subsequent application of air drying type paints on same metal surface without doing any surface treatment operations.

Kin. Viscosity @ 40°C = 8-12 cst; Sp. Gravity @ 30°C = 0.830 – 0.840.

**RUSTSKIP 2540**

Solvent deposited oily rust preventive oil which protects steel and copper surfaces from corrosion. This oil is suited to protect tools, spares and machine components during indoor and outdoor storage.

Kin. Viscosity @ 40°C = 22 to 28 cst; Sp. Gravity @ 30°C = 0.850 – 0.860.

**RUSTSKIP 1040**

A general purpose water displacing solvent deposited oily rust preventive oil to protect steel surfaces from rust in presence of humid and saline atmosphere. Can be used for protection of mild steel coils.

Kin. Viscosity @ 40°C = 10 to 16 cst; Sp. Gravity @ 30°C = 0.840 – 0.850.

**ANTICOR 1640**

A general purpose oil based water displacing type rust preventive oil, which would protect steel surfaces from rust in humid and saline atmosphere. Can be used for protection of mild steel coils.

Kin. Viscosity @ 40°C = 16 to 20 cst, Sp. Gravity @ 30°C = 0.850 – 0.860.