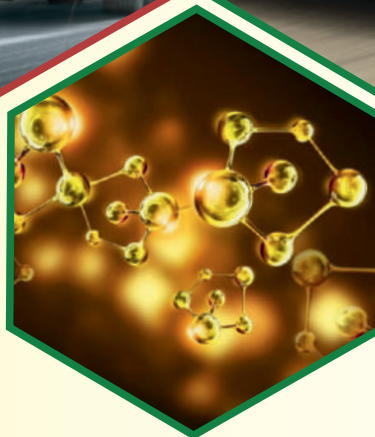




♦ Industrial Lubricants ♦ Automotive Lubricants
♦ Speciality Lubricants ♦ Greases

100%
certified





Customer is our first priority. Customer delight through customer service is our moto. This approach has helped us to emerge one of the leading Lubricant manufacturers in India.

POC is India's leading brand name in lubricating oils and greases meeting various National and International standards.

All our products are manufactured from very carefully selected Base oils and precisely designed Additives. Our web provides a brief outline on the specification and applications of various Automotive, Industrial and special Lubricating oils as well as Greases.

We hope this would serve as a ready reckoner for selecting the correct product for their applications. Viscosity conversion tables and other useful data is provided at the end of the page.



POC WIRE DRAWING FLUID WD 80

HEAVY-DUTY MULTI-PURPOSE COPPER and ALUMINUM WIRE DRAWING FLUID

Applications

The product has been specially developed for Aluminum / Copper wire drawing applications. These products ensures nil wire breakage and scouring. These oils are recommended for high speed drawing and can be used in the gear box of drawing equipment.

Detail Description

A very important segment of the metal working industry is metal forming, in this process the metal instead of being cut or machined, is forced to flow to acquire the desired dimensions by the use of the suitable mechanical equipment. Metal forming process includes operations wire drawing. During these operations considerable amount of heat and stress is developed. Our WIRE DRAWING grades are tailor made to satisfy the various requirements included in metal drawing operations, the wire drawing oils are fortified with high performance wetting agents. These oils are especially suited for drawing of Aluminum / Copper. POC WD 80 is a synthetic ester based, water extendible, copper wire drawing lubricant, formulated for drawing of rod, intermediate and fine copper wire. POC WD 80 is the best compromise, as a unique fluid to meet the requirements of lubricity needed in the drawing of 8-mm rod and the detergency needed for drawing the fine sizes.

For Aluminium wire drawing POC WD 80 is used neat, with no emulsion in water, and it is useful to draw intermediate and fine sizes. POC WD 80 gives excellent finish quality on the surface of the wire and it is the best choice in drawing lines producing enamelled wire. Moreover, it is possible to draw copper or aluminium wire in the same enamelling line using the same product, neat to draw aluminium and emulsified to draw copper. POC WD 80 forms very stable emulsions with water of medium hardness showing excellent bio stability. We recommend to use water whose hardness is lower than 400 ppm as CaCO₃, although the longest service life will be obtained when water of low mineralization like reverse osmosis or deionized water is used. POC WD 80 shows a low tendency to foam, may be used in other metalworking operations such as rolling, sheet deep drawing, cold forming, etc. The great heat transfer ability combined with the high film strength of POC WD 80 allows high drawing speeds, excellent finish and long die life, no matter the material of the die (diamond polycrystalline, hard metal or diamond).

The emulsions of POC WD 80 are stable even at very high temperatures over 55 °C, nevertheless we recommend that the emulsion temperature, while working, be lower than 45°C

Performance benefits:

- Superior wettability
- Anti Rust
- Excellent Cooling Agent for Die & Component
- Anti Corrosion
- Anti Abrasive
- EP Agent for Long Life Of Component & Machine / Withhold Steam Pressures

PROPERTIES

TYPICAL VALUES

WD – 80

Color	DARK BROWN
Flash Point, Coc °C, Min	200
Kinematic Viscosity @ 100 °C, Cst	14-16
Kinematic Viscosity @ 40 °C, Cst	80-90
Pour Point	-15

Usage Note

Wire type	Concentration % volume
Aluminium intermediate and fine	used neat
Copper	
Rod	12-18 %
Intermediates	4-10 %
Fine	3 - 5 %

NOTES REGARDING THE USE IN BOTH ALUMINIUM AND COPPER WIREDRAWING

When POC WD 80 is to be used to draw copper and aluminium in the same line, like in enameling lines we recommend to have different tanks. One tank contains the emulsion for copper wire drawing, the other tank, with no filtering system, contains the pure POC WD 80. To change from aluminium wire drawing to copper no special procedure is needed, just clean the drawing machine and supply the machine with the emulsion. To change from copper to aluminium it is imperative to clean and dry the drawing machine before supplying the pure POC WD 80. In drawing Aluminium no filtration system is recommended. When the solids content in the oil is high, say 10 %, transfer the oil to another tank and let the fines and sludge settle down it may take several weeks. Use the upper oil again and dispose of the sludge in the bottom.

WIRE DRAWING OILS

PROPERTIES	TYPICAL VALUES	
	FWD – 35 (ALUMINIUM)	WD – 60 (COPPER)
Color	DARK BROWN	DARK BROWN
Flash Point, Coc °C, Min	180	200
Kinematic Viscosity @ 100 °C, Cst	8-10	12-14
Kinematic Viscosity @ 40 °C, Cst	30-35	60-65
Pour Point	-15	-15

Description/Application

The product has been specially developed for Aluminum /Copper wire drawing applications. These products ensures nil wire breakage and scouring. These oils are recommended for high speed drawing and can be used in the gear box of drawing equipment. A very important segment of the metal working industry is metal forming, in this process the metal instead of being cut or machined, is forced to flow to acquire the desired dimensions by the use of the suitable mechanical equipment. Metal forming process includes operations wire drawing. During these operations considerable amount of heat and stress developed. Our WIRE DRAWING grades are tailor made to satisfy the various requirements included in metal drawing operations, The wire drawing oils are fortified with high performance wetting agents. This oils are specially suited for drawing of Copper / Aluminum.

SILI 369 TRANSFORMER LIQUID

Features & Benefits

- Meets the requirements of both IEC 836 and ASTM D 4652-92
- Essentially non-toxic
- Environmentally safe
- Non-halogenated
- Compatible with a wide range of solid electrical insulating materials
- Contains no additives
- Classified as non-hazardous
- High thermal stability and oxidation resistance
- Higher fire point and lower heat release rate than other types of class K insulating liquids
- Good electrical properties and operating capabilities over a wide temperature range
- Non-sludging

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Unit	Result
Table 1: Tested to ASTM 4652-92		
Appearance		Crystal clear liquid
Density at 25°C (77°F)	kg/dm ³	0.96
Viscosity at 25°C (77°F)	mm ² /s	50
Water content	ppm	30
Specific heat	kJ/kg.K	1.51
Thermal conductivity	W/(m.K)	0.151
Refractive index at 25°C (77°F)		1.404
BreakPOCn voltage ¹	kV	50
Permittivity at 25°C (77°F) – 50 Hz		2.7

Typical Properties (Cont.)

Property	Unit	Result
Dissipation factor at 25°C (77°F) – 50 Hz		0.0001
Volume resistivity at 25°C (77°F)	ohm.cm	1.0 x 10 ¹⁴
Flash point open cup	°C	> 300
	°F	> 572
Fire point – open cup	°C	370
	°F	698

Description

SILI 369Transformer Liquid is a polydimethyl silicone liquid that meets the requirements of:?

- International Electrotechnical Commission (IEC) 836 “specifications for silicone liquid for electrical purposes” (Silicone Type T-1).?
- ASTM D 4652-92 “silicone fluids for electrical insulation”.
- IEC 1100 – “Classification of insulating liquids according to fire point and net calorific value” (Class K3).

SILI 369Transformer Liquid has a fire point exceeding the requirements of these documents and is within the IEC 1100 class with lowest net calorific value (heat of combustion). With excellent electrical insulation properties over a wide temperature range, combined with high thermal stability, SILI 369Transformer Liquid is suitable for transformers and other electrical equipment designed to operate at high temperatures or at very low temperatures.

Handling Precautions

SILI 369Transformer Liquid is handled in the same manner, and with the same type of equipment, as other insulating liquids. Wherever possible, equipment used for handling SILI 369Transformer Liquid should be reserved for that purpose only. Thorough cleaning of equipment is essential if changing from one insulating liquid to another. Care must be exercised when selecting pumping equipment, and other items in which sliding movement is involved. Although perfectly satisfactory equipment is available for use with polydimethylsiloxanes, this liquid does not adequately lubricate certain pump designs. The use of improperly designed pumps may result in premature failure and metal particle contamination of the liquid.

Table 1: Test Requirements of Silicone Type T-1 in IEC 836.

Property	Test Method ¹	Permissible Values	Typical values for SILI 369 Transformer Liquid
Physical			
Color	8	Max 35	
Appearance	8	Clear, free from suspended matter and sediment	
Density at 20°C (68°F) (kg/dm ³)	9	0.995 to 0.970	
Kinematic viscosity at 40°C (104°F) (mm ² /s)	10	40 ± 4	
Flash point (°C/°F) (closed cup)	11	Min 240/464	260/500
Fire point (°C/°F) (open cup)	12	Min 330/626	370/698
Refractive index at 20°C (68°F)	13	1.404 ± 0.002	
Pour point (°C/°F)	15	Max -50/-58	
Chemical			
Water content (mg/kg)	16	Max 50	30
Neutralization value (mg KOH/g)	17	Max 0.02	0.008
Electrical			
Breakdown voltage (kV)	19	Min 40 ²	50
Dielectric dissipation factor (tg) at 90°C (194°F) and 50 Hz	20	Max 0.001 ²	0.0005
Permittivity at 90°C (194°F)	20	2.55 ± 0.05 ³	
D.c. resistivity at 90°C (194°F) (G ohm.m)	20	Min 100	1000

1. Test methods are described in IEC 836.
2. For untreated liquid, as received.
3. Only needed as a specification value when used for capacitors.

NOTE:

SILI 369Transformer Liquid complies with all of the requirements of IEC 836 Silicone Type T-1. The above typical values EXCEED the minimum requirements of IEC 836.

Recycling or Disposal

Reprocessing procedures for silicone transformer fluid are described in the International Electrotechnical Commission Guide IEC 944 (also available as BS 7713).Fuel blending is another form of recycling where the “spent” fluid is mixed with compatiblesolvents or other fuels and used as a feedstock in industrial furnaces such as cement kilns.The silicone fluid will be thermally converted to energy and to a silica residue with may be incorporated into the end product. Incineration is a viable alternative for direct disposal. Landfilling is not recommended.

Usable Life and Storage

This product should be stored in airtight containers to protect it from moisture and contamination. When stored at or below 60°C (140°F) in the original unopened containers, this product has a usable life of 36 months from the date of production

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health and Environmental Information

To support customers in their product safety needs, POC has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.



AUTOMOTIVE LUBRICATING OILS

PRODUCT	Kin. Viscosity cSt at 100°C	VI Min.	Flash Point COC, °C Min	TBN mg Koh/gm
Engine Oils				
POC Diesel 10W	5 (min.)	100	190	10-12
POC Diesel 20W	6-8	95	200	10-12
POC Diesel 30W	10-12	95	220	10-12
POC Diesel 40W	13-15	90	225	10-12
POC Diesel 50W	18-20	90	230	10-12

Description/Application

POC Engine Oils are long drain engine oils, having good built-in alkaline reserves to combat corrosive wear that may result from the use of high sulphur fuel. These oils meet API CD/SC, US Military MIL-L-2104C. Caterpillar Series 3 performance level and exceed IS:13656-1993. E-DL3 and Mack T 7 specifications. These oils maintain outstanding engine Cleanliness and provide increased wear resistance and long life of the engine and are recommended for naturally aspirated and highly supercharged/ turbocharged diesel vehicles operating under severe duty conditions. These oils possess high oxidation stability and thermal stability to resist decomposition in service and having excellent ability to control viscosity due to soot related oil thickening.

PRODUCT	Kin. Viscosity cSt at 100°C	VI Min.	Flash Point COC, °C Min	TBN mg Koh/gm
Super Multigrades				
POC Super MG 20W-40	13.5 15.5	117	200	4-6

Description/Application

POC Super Multigrade oils meet API SC/CC, US MIL-L2104B performance levels and IS 13656-1993 E-PL1/E-DL1 specification. These oils possess high detergency level and excellent oxidation stability. These are general purpose engine oils for use in all seasons in gasoline engines, naturally aspirated engines operating under severe duty and supercharged diesel engines and for power generating sets operating on HSD or LDO. These oils are catalytic converter compatible. POC Super Multigrades are suitable for all seasons and provide ease in cold starting and can be used in all climate conditions.

PRODUCT	Kin. Viscosity cSt at 100°C	VI Min.	Flash Point COC, °C Min	TBN mg Koh/gm
Extra Multigrades				
POC Extra MG 15W-40	14.0 -15.0	110	200	10-12
POC Extra MG 20W-40	13.5 15.5	110	200	10-12
POC Extra MG 20W-50	16.3 -17.3	125	200	14-16

Description/Application

POC Extra Multigrade oils are long drain "Super High Performance Diesel Engine Oil" (SHPDO). These are recommended for all types of diesel powered vehicles ranging from Light Commercial Vehicles to Heavy duty Turbocharged diesel engines, off-highway equipment and High Speed Diesel Generating sets. POC Extra Multigrades oils meet IS:13656-1993; E-DL 4 and CCMC/ACEA-D5 level. They give excellent wear protection and prevent bore polish, reduce combustion chamber deposits and oil thickening tendency to increase oil drain intervals and thereby increase engine life. Due to its superior quality it gives very high oil drain intervals, lower oil topping up rate and increased fuel economy.



AUTOMOTIVE LUBRICATING OILS & GREASES

PRODUCT	Kin. Viscosity cSt at 100°C	VI Min.	Flash Point COC, °C Min
Gear Oils			
POC Gear Super 80W	8-10	90	200
POC Gear Super 85W	11-12	90	200
POC Gear Super 90W	16-18	90	200
POC Gear Super 140W	28-34	90	200
POC Gear Super 85W-90	13-15	90	200
POC Gear Super 80W-140	28-32	90	200

Description/Application

POC Gear Super oils are multipurpose hypoid gear oils of heavy-duty type, specially formulated to meet API service classification GL-5 and US Military MIL-L-2105B and UK Defence CS 30008 specifications. These oils are recommended for hypoid gear differentials, mechanical transmissions and drive axles operating under severe duty, where bulk oil temperature can reach up to 150°C. POC Gear Super 80W, due to its very low pour point can be used in vehicles operating at sub-zero temperatures. POC Gear Super 80W-90 and 85W-140 are special multigrade heavy-duty hypoid gear oils. These oils meet API service classification GL-5 and US Military MIL-L-2105D specifications and are ideal for vehicles operating in areas where ambient temperatures vary widely. These oils are expected to give fuel economy.

PRODUCT	Color	Worked Penetration at 25°C after 60 strokes	Drop Point °C Min
Automotive Grease POC Grease WB	Greenish Brown	250-280	170

Description/Application

POC Grease WB is sodium base grease which gives excellent performance even when subjected to extremely heavy shear. This grease maintains its structural stability over long service and withstands excessive churning effectively. POC Grease WB is recommended for wheel bearings and various other automotive grease applications, which are not exposed to moisture. It meets IS:10647:1983 (Reaffirmed 1993)

PRODUCT	Color	Worked Penetration at 25°C after 60 strokes	Drop Point °C Min
Automotive Grease POC Grease MP POC Grease MP3	Brown Brown	265 295 220 250	180 180

Description/Application

POC Greases MP/MP3 are premium quality lithium base greases having high drop point and good thermal and structural stability. These greases have high degree of resistance to oxidation and provide protection against rusting and corrosion. POC Greases MP/MP3 are excellent multipurpose greases suitable for all automotive grease applications, These greases meet S.12203 1987 (Reaffirmed 1993)



AUTOMOTIVE COOLANTS

PRODUCT	FREEZING POINT	
Radiator Coolants	30% Vol Solution	50% Vol. Solution
	POC Kool -14° C	-34° C

Description/Application

POC Kool is long life radiator coolant meeting the performance standards of IS:5759-1994; BS 5117-1985 and JIS-K-2234-1987. Rothmans Kool is recommended for use in passenger cars, light and heavy commercial vehicles. It does not boil and vapourise in summer and freeze in winter. It provides desired performance when used at 30:70 dilution in distilled water in most of the vehicles.

PRODUCT	FREEZNG POINT	
Radiator Coolants	30% Vol Solution	50% Vol. Solution
	POC Kool Plus	-14° C
		-34° C

Description/Application

POC Kool Plus is eco-friendly radiator coolant for use in all modern automotive petrol and diesel vehicles. It meets IS:5759-1994 and JIS-K-2234-1994 specifications. It is free from harmful effects of amines, borates, nitrites and silicates. It prevents corrosion of radiator and other parts, increases cooling efficiency. The coolant stops break-down of vehicles due to engine over heating and boiling of radiator water. For desired performance 30 parts of the fluid is to be diluted with 70 parts of distilled water in most of the vehicles.

PRODUCT	FREEZNG POINT	
Radiator Coolants	30% Vol Solution	50% Vol. Solution
	POC Kool Blue	-14° C
		-34° C

Description/Application

POC Kool Blue is eco-friendly long life radiator coolant which meets IS:5759-1994 and JIS-K-2234-1994 specification. It is free from amines borates, nitrites and silicates thereby eliminating the harmful effects of these elements. The coolant is an all weather coolant that does not oil and vaporish in summer or freeze in winter. It increases radiator life and stops break down of vehicles due to engine over heating and being of radiator water. For desired performance 30 parts of the fluid is to be diluted with 70 parts of distilled water in most of the vehicles.



METAL WORKING OILS

Rothmans Cut-S

Appearance	K.VIS. cST @40°C	Flash Point COC °C Min	Pour Point °C Max	Thermal Stability Test	Performance test on 5% Emulsion	Cast Iron Corrosion Test	pH of 5% Sol. in Distilled water	Emulsion test in 400 ppm water	Copper Strip Corrosion Test
Vishal	D-445	D-92	-	IS01448, P:99	-	IP-273	pH meter	IS-1448	D-130
Transparent light brown fluid	34	150	0	-	-	0/0-1 (Pass)	9.2	(Pass)	1a (Pass)

Description

POC Cut-S is soluble type, high quality cutting oil, which yields rich milky emulsion with water. It is manufactured from specially selected base oil having excellent solubility and our own emulsifier "POC L-22". The emulsion formed is homogenous and stable in nature, and does not split during use or routine machine shut down periods. POC Cut-S contains special rust inhibitors, which impart anti-rust and anti-corrosive properties to the emulsion. Carefully selected biocide (Traizine) is added to prevent bacterial growth in emulsion.

Application

POC Cut-S is recommended for various metal working operation on ferrous and non-ferrous metals such as cutting, cold rolling of steel, and hot rolling of aluminum, special rolling of stainless steel etc. It is normally used 5% concentration for most of machining operations. For stable emulsion oil should always be added to water and not vice versa, with continuous stirring.

Performance Standard

POC Cut-S meets BIS 1115:1986 (Reaffirmed 1996) specification.

Performance Benefits

- ◆ POC Cut-S has superior cooling and lubricating properties which contribute towards clean work excellent surface finish and minimum tool wear.
- ◆ POC Cut-S provides long lasting stable emulsion due to critically selected biocide.
- ◆ POC Cut-S protects work-piece, machine components and tool materials from rust and corrosion.
- ◆ Enables to obtain superior finish and accurate tolerances to the parts machined.



METAL WORKING OILS

PRODUCT	Kinematic Viscosity cSt at 40°C	Flash Point COC, °C, Min	Cast Iron Corrosion 20:1 Emulsion 40 ppm as CaCo,
Soluble Cutting Oils POC Cut Super	35 - 55	120	0/0 - 0

Description/Application

POC Cut Super is a superior quality soluble type metal working fluid, which forms stable type metal working translucent milky white emulsion and provides longer emulsion life. POC Cut Super gives excellent surface finish and extended tool life. It is recommended for a variety of cutting operations on ferrous and non-ferrous metals. It possesses better low temperature properties and enhanced corrosion protection to ferrous metals. The emulsion is stable even at 30:1 dilution.

PRODUCT	Kinematic Viscosity cSt at 40°C	Flash Point COC, °c, Min	Cast Iron Corroslon 20:1 Emulsion 40 ppm as CaCo,
Soluble Cutting Oils POC Cut Clear	60 100	120	0/0 - 0

Description/Application

POC Cut -R gives a transparent type of emulsion with water and offers the advantage of visibility during machining. POC Cut R provides excellent cooling and lubrication at chip/tool interface ensuring long tool life and improved surface finish. For grinding, more dilute emulsions are recommended. To obtain a stable and long lasting emulsion (emulsion stability is excellent up to 80:1 dilution) oil should be added to water and not vice versa, with continuous stirring meets stirring. POC Cut Clear meets IS:9611-1980 specification (Reaffirmed 1998)

PRODUCT	Kinematic Viscosity cSt at 40°C	Flash Point COC, °c, Min	Cast Iron Corroslon 20:1 Emulsion 40 ppm as CaCo,
Synthetic Soluble Cutting Fluids POC Synth 2 POC Synth 5	- -	- -	O/O 0 (50:1)

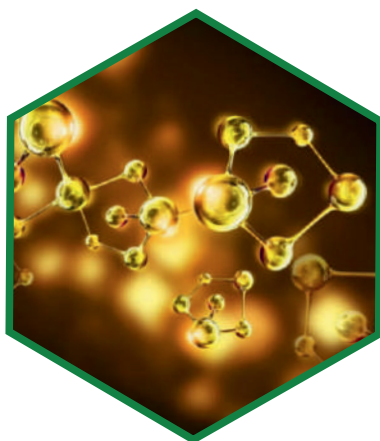
Description/Application

POCynth fluids are water-soluble synthetic fluids specially recommended for grinding operations of ferrous metals and alloys. These fluids are not recommended for machining of non-ferrous metals. Pcoynth fluids meet IS:11186-1985 specifications (Reaffirmed 1995)

PRODUCT	Kinematic Viscosity cSt at 40°C	Flash Point COC, °c, Min	Cast Iron Corroslon 20:1 Emulsion 40 ppm as CaCo,
Neat Cutting Oils POC Cut 51	19-25	160	pour point °C max.0

Description/Application

POC Cut 51, a non-staining type neat cutting oil is recommended for machining ferrous as well as non-ferrous metals and for repetitive machining operations of less severe nature on automatics. POC Cut 51 maintains light colour during service providing good visibility of machining operation and meets IS:3065-1985 (Reaffirmed 1995) Type I Grade 2 POC specification. POC Cut 51 is also recommended for free cutting on mild steel, which involve high spindle speeds and short cycle time, particularly on screw automats, capstan or turret lathes.





METAL WORKING OILS

PRODUCT	Kinematic Viscosity cSt at 40°C	Flash Point COC, °c, Min	Pour Point °C Max.
Neat Cuting Oils POC Cut 253	9-12	135	0

Description/Application

POC Cut 253 contains special fatty material and active sulphur to provide extra cutting assistance under continuous long work-cycles. It has minimum mist forming tendency when used in high pressure coolant fed systems. The use of POC Cut 253 optimizes filter life due to its low sliding tendency at operating temperatures. It is recommended for deep hole boring, deep hole drilling including gun drilling and trepanning operations where pressurized coolant systems is employed for easy swarf removal and effective cooling at the cutting point. It also provides satisfactory performance in deep hole boring of stainless steel. POC Cut 253 is not recommended for use on non-ferrous

PRODUCT	Kinematic Viscosity cSt at 40°C	Flash Point COC, °c, Min	Pour Point °C Max.
Neat Cuting Oils POC Cut 345	39-45	180	0

Description/Application

POC Cut 345 contain sulfurized and chlorinated additives which enable the use of these oils for extreme pressure at low or moderate temperature cutting operations where feed rates are high but speeds are low. POC Cut 345 provide excellent performance in all machining operations on non-ferrous metals and can also be used for gear hobbing, gear shaving, screw cutting, tapping. milling, reaming etc. and they do not discolour the components

PRODUCT	Kinematic Viscosity cSt at 40°C	Flash Point COC, °c, Min	Pour Point °C Max.
POC Cut 353	11-15	135	0

Description/Application

POC Cut 353 is active sulphur-chlorinated type cutting oil which is used tor machining of intricate shapes with high precision. It is a low viscosity product designed specially for arduous operations such as deep hole drilling and deep hole boring where pressurised delivery of the cuting luid is required to clear in swarf effectively. It is suitable for cutting of ferrous and ferrous alloys only. It is also suitable for certain honing operations.

PRODUCT	Kinematic Viscosity cSt at 40°C	Flash Point COC, °C, Min.	Pour Point °C Max.
POC Cut 945	27-35	160	0

Description/Application

POC Cut 945 is active type neat cutting oil and contains sulphurised fatty materials and free sulphur to give better surface finish and longer cutting tool life over a wide range of operating temperatures. These oils are recommended for machining operations of high tensile stainless steel as well as nickel-chromium alloys on automatics, gear cutting, hobbing, drilling/reaming and thread cutting machines. POC Cut 945 is not recommended for use on non-ferrous metals.



INDUSTRIAL LUBRICATING OILS

PRODUCT	Kinematic Viscosity cSt at 40°C	Pour Point °C Max.	Flash Point COC. °C. Min.
Refrigeration Compressor Oils			
POC Friz 12	12-14	(-) 45	140
POC Friz 22	20-24	(-) 45	144
POC Friz 32	28-36	(-) 30	154
POC Friz 46	42-50	(-) 27	160
POC Friz 68	64-72	(-) 24	170
POC Friz 100	90-110	(-) 24	200

Description/Application

POC Friz oils possess high clarity at very low temperature, resist deposit formation and have reduced tendency to foam. These oils ensure high condenser efficiency and reduced compressor valve maintenance due to less deposits. These oils meet IS:4578-1989 specification. POC Friz 68 also meets Carrier Corporation, U.S.A. specification PP 46-1. POC Friz oils are recommended for a wide range of refrigeration compressors using all conventional refrigerant except sulphur dioxide and are suitable for both reciprocating as well as rotary compressors.

PRODUCT	Colour	Worked Penetration at 25 °C ater 60 strokes	Drop Point °C Min
High Temperature Greases POC HT POC HTXX	Brown Greyish Black	265 295 265 295	280 280

Description/Application

POC HT and HTXX are non-soap base smooth structure greases having excellent ability to withstand high temperature and severe shock load conditions. Poc HTXX has high load bearing ability. These greases meet U.S. Steel 372 requirement. IPSS:1-09-008 and 1S:12790-1989 specification and are recommended for the lubrication of machine elements, plain bearings and anti-friction bearings operating at high temperature.



PRODUCT	Viscosity cSt @40°	Flash Point COC °C	Aniline Point °C	Pour Point °C	Molecular Analysis	ASTM D 2007	Asphaltene Wt%	Polar compounds Wt%	Aromatics Wt%	Saturates Wt%
Rubber Process Oils POC ALASTO 165	85-107	225	107-118	-	-	-	-	-	-	-

Description/Application

Alasto 165 This is a highly Paraffinic medium viscosity type of oil specially developed for use as plasticiser possesses in the manufacture of EPDM rubber. The oil possesses good resistance to evaporation loss.

PRODUCT	Viscosity cSt @40°	Flash Point COC °C	Aniline Point °C	Pour Point °C	Molecular Analysis	ASTM D 2007	Asphaltene Wt%	Polar compounds Wt%	Aromatics Wt%	Saturates Wt%
Rubber Process Oils POC ALASTO 245	33	190	96	0	-	-	NIL	0.6	20.3	79.1

Description/Application

Alasto 245 - It is light colored Paranoiac type of oil and has good colour stability. It also has high lash point and good high temperature propeties but it has low solvency. It finds greatest use in butyl and ethylene, propylene rubbers. It is recommended to be used for the processing of light coloured rubber goods such as white walled types, shoe soles, toys spotting goods. etc.

PRODUCT	Viscosity cSt @40°	Flash Point COC °C	Aniline Point °C	Pour Point °C	Molecular Analysis	ASTM D 2007	Asphaltene Wt%	Polar compounds Wt%	Aromatics Wt%	Saturates Wt%
Rubber Process Oils POC ALASTO 541	21	160	75	0	-	-	NIL	1.3	47.5	51.2

Description/Application

Alasto 541 -This is a Naphthenic type of oil and has fairly good colour stability with adequate high temperature properties. Its solvency is better than ALASTO 245. and is suitable as general purpose rubber oil.

It is recommended for use in the manufacture of tyres, mats, footwear, moulded and extruded goods.

PRODUCT	Viscosity cSt @40°	Flash Point COC °C	Aniline Point °C	Pour Point °C	Molecular Analysis	ASTM D 2007	Asphaltene Wt%	Polar compounds Wt%	Aromatics Wt%	Saturates Wt%
Rubber Process Oils POC ALASTO 590	100-182 @54.5°C	221	74-96	0	-	-	0.3	6.0	-	35-65

Description/Application

Alasto 590 - This is a Naphthenic type of oil, specifically developed to meet the requirement of major tyre manufacturers. The product is used to make the fabric coating compound, used in coating nylon tyre cords of passenger vehicle tyres.

PRODUCT	Viscosity cSt @40°	Flash Point COC °C	Aniline Point °C	Pour Point °C	Molecular Analysis	ASTM D 2007	Asphaltene Wt%	Polar compounds Wt%	Aromatics Wt%	Saturates Wt%
Rubber Process Oils POC ALASTO 710	23@ 100°C	220	48	30	-	-	NIL	17	73	10

Description/Application

Alasto 710 -This is an Aromatic type of oil and due to the presence of double bonds, it is the least stable compared to ALASTO 245 and ALASTO 541. It is dark in colour and has good solvency, making it compatible with most rubber polymers. It finds extensive use in the manufacture of automobile tyres, beltings, battery cases etc. Where color is not an important factor.



INDUSTRIAL LUBRICATING OILS

PRODUCT	Kinematic Viscosity cSt at 40°C	VI Min.	Flash Point COC. °C, Min. Poc
Quenching Oils POC Quench 11	27-33	90	195

Description/Application

POC Quench 11 is a general purpose quenching oil blended from high viscosity index base stocks having good oxidation stability. good luidity and low volatility. This oil is used for normal quenching operations on a wide variety of steel pats such as nuts and bolts, ball bearings cetain types of brake drums etc. and meets IS:2664-1980 (Reaffirmed 1998) straight mineral type, grade medium specification.

PRODUCT	Kinematic Viscosity cSt at 40°C		Flash/Point Min. COC. °C, Min. Poc
Quenching Oils POC Quench 107	19-25		195

Description/Application

POC Quench 107 is blended from selected high viscosity index base stocks having excellent oxidation and thermal stability, high lucidity and low volatility. POC Quench 107 possesses quenching characteristic which are neither too slow nor too fast and is recommended for general purpose fast quenching applications requiring hardening of many components such as bolts, set screws, crankshafts, axles, camshats, steering arms, brake drums etc. The product does not contain any faty material and is recommended for accelerated quenching of components like high speed tools, ball bearings, nuts, bolts etc. The oil can be used for quenching of components after nitriting.

PRODUCT	Kinematic Viscosity cSt at 40°C	Film Thickness Microns (Typical)	Flash Point ABEL, °C, Min. Poc
Rust Preventives POC RP 102	-	1.2	30

Description/Application

POC RP 102 is a dewatering fluid containing surface active agents, corrosion inhibitor and film-forming materials dissolved in a suitable solvent. On application, the solvent evaporates leaving a thin sot wax or grease like ilm, This oil can be applied at room temperature by dip or spray method. The film formed over metal surface can be easily removed by dipping in a suitable solvent. The oil is recommended tor protection of the work-piece against rusting during shot storage between machining operations and protection of metal surfaces against corrosion caused by fingerprints. POC RP 102 is also recommended as a lubricant in mild metal pressing operations.



INDUSTRIAL LUBRICATING OILS

PRODUCT	Kinematic Viscosity cSt at 40°C	VI Min.	Flash Point COC °C, Min.
Circulating & Hydraulic Oils (Anti-wear Type)			
POC System 22	20-24	95	160
POC System 32	28-36	95	190
POC System 46	42-50	95	200
POC System 57	55-60	95	210
POC System 68	64-72	95	210
POC System 100	95-105	90	210
POC System 150	145-155	90	230

Description/Application

POC Systems Hydraulic Oils have long service life and are recommended for hydraulic systems due to excellent lubrication characteristics and wide variety of circulation system of industrial and automotive equipment. These oils are also used for compressor crankcase lubrication, but are not recommended for lubrication of turbines and equipments having silver-coated components. These oils pass Vicker V-104C vane pump test and meet IS:10522-1983 (Reaffirmed 1993) and IPSS 1-09-022 specifications.

PRODUCT	Kinematic Viscosity cSt at 40°C	VI Min.	Flash Point COC °C, Min.
Circulating Oils (Anti-wear Type)			
POC System 220	210-230	90	230
POC System 320	310-350	90	230
POC System 460	440-500	90	260

Description/Application

These oils are recommended for circulation systems wherever lubrication characteristics are essential, particularly paper mills, plastic film calenders. coal pulverisers etc., requiring anti-wear oils. These grades are also recommended for use in compressors, machine tools, hydraulic and circulation systems enclosed gearboxes, which do not require EP type lubricants.

PRODUCT	Kinematic Viscosity cSt at 40°C	VI Min.	Flash Point COC °C, Min.
Special Purpose High VI Hydraulic Oils (Anti-wear Type)			
POC Hydrex 32	28-36	130	140
POC Hydrex 46	42-50	130	200
POC Hydrex 68	64-72	130	200
POC Hydrex 100	100-110	130	210

Description/Application

POC Hydrex oils are very high viscosity index oils which possess excellent lubrication characteristics. These oils are recommended for very low operating temperature conditions. POC Hydrex 68 has been specially developed for small L&T Komatsu hydraulic excavators.

PRODUCT	Kinematic Viscosity cSt at 40°C	VI Min.	Flash Point COC °C, Min.
Spindle Oils			
POC Spin 2	2.0-2.4	–	70
POC Spin 5	4.5-5.0	–	70
POC Spin 10	9-11	–	144
POC Spin 12	11-14	90	144
POC Spin 22	20-22	90	160

Description/Application

POC Spin oils are recommended for bearing lubrication of high speed textile spindles and machine tool spindles. Other applications include timing gears, positive displacement blowers and tracer mechanism and hydraulic systems of precision machine tools. POC Spin 10 meets IS: 493 Part 2 (Reaffirmed 1993)

PRODUCT	Kinematic Viscosity cSt at 40°C	VI Min.	Flash Point COC °C, Min.
Special Purpose Machinery Oils			
POC Line 32	28-36	-	152
POC Line 46	42-50	-	164
POC Line 68	64-72	-	176
POC Line 100	95-105	-	176
POC Line 150	145-155	-	204
POC Line 220	210-230	-	220
POC Line 320	300-350	-	230

Description/Application

POC Line oils provide good oiliness for general lubrication of machinery even under boundary lubrication conditions. These products maintain a thin film of oil under light and medium loads and provides protection against corrosion and rust, even during idle recommended for all periods. POC Line oils are types of industrial machinery using once-through lubrication systems. These are also recommended for use in the systems of machine lubrication tools, textile machinery and other machine parts which are lubricated by a thin film of oil. Heavier be used in the grades of POC Line oils can lubrication of small open gears under where oil is applied light duty conditions intermittently by means of an oil can.

PRODUCT	Kinematic Viscosity cSt at 40°C	VI Min.	Flash Point COC °C, Min.
Heat Transfer Oils			
POC Therm Light	10-15	90	174
POC Therm Medium	28-35	90	208

Description/Application

POC Therm oils are specially developed mineral oils for use in heat transfer industrial specially developed mineral oils for use in heat applications. These oils possess excellent oxidation thermal and stability, low volatility and low vapour pressure to trouble free service life in heat transfer systems. POC Therm Medium are Light and recommended for well designed heat transfer 260°C and 300°C systems upto respectively.

PRODUCT	Kinematic Viscosity cSt at 40°C	VI Min.	Flash Point COC °C, Min.
Heat Transfer Oils POC Therm super	27-33	95	190

Description/Application

POC Therm Super is a superior additive treated heat transfer fluid containing selected anti-oxidants. This oil possesses improved thermal and oxidation stability, low volatility and low vapour pressure to give long and trouble free service life in well designed heat transfer systems. POC Therm Super is recommended for bulk oil temperatures up to 315°C.

PRODUCT	Kinematic Viscosity cSt at 40°C	VI Min.	Flash Point COC °C, Min.
Heat Transfer Oils POC Therm Special	28-35	95	214

Description/Application

POC Therm Special is a premium heat transfer fluid manufactured from carefully selected base stocks and contain selected anti-oxidants, This oil with its ow sulphur content and low CCR value would provide superior performance. POC Therm Special is recommended for well designed' heat transfer system operating up to 315°c.





INDUSTRIAL SPECIALITY OIL

PRODUCT	Kinematic Viscosity cSt at 40°C	Film Thickness Microns (Typical)	Flash Point Coc, °c, Min.
Rust Preventives POC RP 125	20 - 25	5	160

Description/Application
<p>POC RP 125 is a non-solvent type light bodied product, inhibited with special additives to ensure protection against rusting. The oil forms an oily film over work piece when applied by dipping/spraying. The oil ilm can be removed easily with petroleum solvent, by aikaline cleaning or by vapour degreasing agent. POC RP 125 is used for indoor rust protection during in between operations and shot-term storage before wrapping. The oil can also be used for shot-term outdoor storage and for protection of black sheets during storage and transportation in steel plants. POC RP 125 is also recommended for internal protection of engines and machinery where removal of oil ilm is diffcult. The oil ilm formed is compatible with general lubricating oils.</p>

PRODUCT	Kinematic Viscosity cSt at 40°C	Film Thickness Microns (Typical)	Flash Point Coc, °c, Min. Poc
Rust Preventives POC RP 130	18 - 23	4	150

Description/Application
<p>POC RP 130 is an excellent rust preventive oil for cold rolled sheets. The oil is formulated with a specially selected additive system to achieve enhanced rust preventing propeties. The oil provides protection during shot term outdoor storage as well as transpotation. The oil is recommended for use in spray systems in steel plants.</p>

PRODUCT	Kinematic Viscosity cSt at 40°C	Film Thickness Microns (Typical)	Flash Point Coc, °c, Min. Poc
Rust Preventives POC RP 150	12 - 18	10	70 (PMCC)

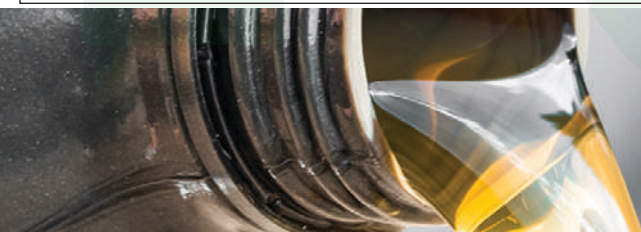
Description/Application

POC RP 150 is a superior light bodied rust preventive, formulated with special additives. The oil forms a soft oily film over the metal surface when applied by spraying/brushing/dipping and is recommended for protection of work-pieces against rusting during in between operations and short-term indoor and outdoor storage. POC RP 150 is ideally suited for the rust protection of steel sheets during storage and transportation. The oil film can be removed easily by wiping or with the help of a petroleum solvent.

PRODUCT	Kinematic Viscosity cSt at 40°C	Film Thickness Microns (Typical)	Flash Point COc, °c, Min.
Rust Preventives POC RP 330	27 - 35 at 100°C	30	240

Description/Application

POC RP 330 is a non-solvent type highly viscous rust preventive formulated to provide long term protection. Applied by brush or by spraying (after heating to about 50°C temperature), the oil provides a non-drying type greasy film on metal surface. The film can be removed easily with a suitable solvent. POC RP 330 is recommended where a thick protective greasy film is desired and where its removal is not essential for further processing of the component. This oil is used by engineering industries for protection of ferrous components against rusting during indoor and outdoor storage.



INDUSTRIAL SPECIALITY OILS

PRODUCT	Colour ASTM	Kinematic Viscosity cSt at 40°C	Flash Point COc, °c, Min.
Agricultural Spray Oils POC Orchard Spray Oil	Red	20(T)	150

Description/Application

POC Orchard Spray oil is blended from high quality base stocks specially for protection of apple trees from San Jose scale. The oil is sprayed in the form of oil-in-water emulsion on apple orchards during the months of December/ January when the ambient temperature is around 3 to 4 deg C. The emulsion dissolves the waxy protective shield of the insect and the oil film envelops it thereby killing the insect by cutting of its air supply. POC Orchard Spray oil can also be used for protection of eucalyptus, cinchona, etc. The oil does not have any toxic influence.

PRODUCT	Colour ASTM	Kinematic Viscosity cSt at 40°C	Flash Point COc, °C, Min.
Agricultural Spray Oils POC Rubber Spray Oil	Greenish Brown	2-5	85

Description/Application

POC Rubber Spray Oil is a low viscosity product specially developed for use in rubber plantations. The oil has an excellent wetting power for copper oxychloride which is used for spraying on rubber plantations to combat the severe attack of fungus 'PHYTOPHTHORA' which leads to abnormal leaf fall affecting the vitality of the trees and resulting in loss of latex yield. The mixture of POC Rubber Spray Oil and copper oxychloride is conveniently applied either by mini micron sprayers or aerial spraying. The spreading characteristics of the oil enable copper oxychloride particle to readily and uniformly distribute on the leaf surfaces and leaf stalks, and at the same time not permitting copper to be easily washed out.

PRODUCT	Colour ASTM	Kinematic Viscosity cSt at 40°C	Flash Point Coc, °C, Min. Poc
Agricultural Spray Oils POC Mango Spray Oil	Brownish	16 - 24	100

Description/Application

POC Mango Spray Oil controls deadly sooty mould diseases by killing the various fungal organisms thriving on mango tree leaves. Generally a 3-4% oil in water emulsion is sprayed to control sooty mould. readily emulsifies with water and forms milky emulsion and remains uniform over a wide range of temperature even at sub-zero temperature.



VISCOSITY CONVERSION TABLE

ISO VISCOSITY GRADES TO SUS
AT 37.8°C AND 98.9°C?

ISO Grade	Viscosity Range cST at 40°C	Approximate Viscosity SUS at 37.8°C	Approximate Viscosity Range SUS at 98.9°C		
			95 VI	65 VI	35 VI
2	1.98-2.42	32.8-34.4	-	-	-
3	2.88-3.52	36.0-38.2	-	-	-
5	4.14-5.06	40.4-43.5	-	-	-
7	6.12-7.48	47.2-52.0	-	-	-
10	9.00-11.00	57.6-65.4	34.6-35.7	34.2-35.3	38.5-40.0
15	13.5-16.5	75.8-89.1	37.0-38.3	36.4-37.8	41.4-42.9
22	19.8-24.2	214-262	39.7-41.4	39.1-40.6	85-115
32	28.8-35.2	105-126	42.9-45.0	42.0-43.8	44.2-46.2
46	41.4-50.6	149-182	47.1-49.9	45.4-47.8	48.6-51.1
98	61.2-74.8	317-389	53.0-56.9	50.3-53.4	54.0-57.2
100	90.0-110	469-575	61.4-66.9	56.8-61.0	62.1-67.2
150	135-165	708-869	74.0-81.9	66.6-72.7	72.6-79.5
220	198-242	1046-1283	90.3-101	79.3-87.6	86.3-95.3
320	288-352	46430	112-126	95.7-106	127-142
460	414-506	1531-1878	139-158	116-130	156-175
680	612-748	445-475	178-202	145-162	130-160
1000	900-1000	2216-2717	227-257	181-204	104-115
1500	1350-1650	3298-4046	293-331	229-25	204-219
		4885-5994			
		7385-9063			

SALE VISCOSITY GRADES FOR ENGINE OILS SAE J 300 APRIL “ 97

Sale Viscosity Grade	Viscosity (cP) at Temp. (°C) Max.	Borderline pumping Temp. (°C) Max.	Viscosity cd (cSt) at 100°C	
			Max.	Min.
0W	3250 at (-)30	(-) 35	3.8	-
5W	3500 at (-)25	(-) 30	3.8	-
10W	3500 at (-)20	(-) 25	4.1	-
15W	3500 at (-)15	(-) 20	5.5	-
20W	4500 at (-)10	(-) 10	5.6	-
25W	6000 at (-)05	(-) 10	9.3	-
20	-		5.6	<9.3
30	-		9.3	<12.5
40	-		12.5	<16.5
50	-		15.3	<21.5
60	-		21.9	<26.1

Note - 1cP =1mPa *s : 1cSt= 1 mm2/s

ASTM D 2602

ASTM D 3829 or CEC L -32 T -82 for SAE 0W, and 25 W ASTM D 4684 for SAE 5w, 10 W and 15W (see also stable Pour Point Test)

ASTM D 445

Some engine manufacture also recommend limits on viscosity measured at 150° C & 100, S1

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be Vdisposed in a safe and legal manner. It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your POC Technical Representative for more information.

Product Stewardship

POC has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with POC products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

VISCOSITY CONVERSION TABLE

CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec
2.0*	1.14	33	31	15.0	2.32	77	68	28.0	3.82	132	117	41.0	5.47	191	168	54.0	7.11	250	221	67.0	8.82	310	274
2.5*	1.18	34	332	15.5	2.38	79	70	28.5	3.88	135	118	41.5	5.53	193	170	54.5	7.17	253	223	67.5	8.88	313	276
3.0*	1.22	36	33	16.0	2.43	81	71	29.0	3.95	137	120	42.0	5.59	195	172	55.0	7.24	255	225	68.0	8.95	315	278
3.5*	1.27	38	35	16.5	2.49	83	73	29.5	4.01	139	122	42.5	5.66	197	174	55.5	7.30	257	227	68.5	9.02	317	280
4.0*	1.31	39	36	17.0	2.54	85	75	30.0	4.07	141	124	43.0	5.72	200	176	56.0	7.34	260	229	69.0	9.08	319	282
4.5*	1.35	41	37	17.5	2.59	87	77	30.5	4.13	143	126	43.5	5.78	202	178	56.5	7.44	262	231	69.5	9.15	322	284
5.0*	1.40	42	38	18.0	2.64	89	78	31.0	4.20	146	128	44.0	5.85	204	180	57.0	7.50	264	233	70.0	9.21	324	286
5.5*	1.44	44	40	18.5	2.70	91	80	31.5	4.26	148	130	44.5	5.91	207	182	57.5	7.57	266	235	70.5	9.28	326	288
6.0*	1.48	46	41	19.0	2.76	93	82	32.0	4.32	150	132	45.0	5.98	209	185	58.0	7.63	269	237	71.0	9.34	329	290
6.5*	152	47	42	19.5	2.81	96	84	32.5	4.38	152	134	45.5	6.04	211	187	58.5	7.70	271	239	71.5	9.41	331	292
7.0*	1.56	49	44	20.0	2.87	98	86	33.0	4.45	155	136	46.0	6.11	213	189	59.0	7.76	273	241	72.0	9.48	333	294
7.5*	1.61	50	45	20.5	2.93	100	88	33.5	4.51	157	138	46.5	6.17	216	191	59.5	7.83	276	243	72.5	9.54	336	296
8.0*	1.65	52	46	21.0	2.98	102	90	34.0	4.57	159	140	47.0	6.24	218	193	60.0	7.90	278	245	73.0	9.61	338	298
8.5*	1.70	54	48	21.5	3.04	104	91	34.5	4.63	161	142	47.5	6.30	220	195	60.5	7.96	280	247	73.5	9.67	340	300
9.0*	1.75	56	49	22.0	3.10	106	93	35.0	4.70	164	144	48.0	6.37	223	197	61.0	8.03	283	249	74.0	9.74	343	302
9.5*	1.79	57	51	22.5	3.16	108	95	35.5	4.76	166	146	48.5	6.43	225	199	61.5	8.09	285	251	74.5	9.80	345	304
10.0*	1.84	59	52	23.0	3.22	111	97	36.0	4.83	168	148	49.0	6.50	227	201	62.0	8.16	287	254	75.0	9.87	347	306
10.5*	1.88	61	53	23.5	3.28	113	99	36.5	4.89	170	150	49.5	6.56	230	203	62.5	8.23	289	256	For higher viscosity multiply centistokes value by			
11.0*	1.93	62	55	24.0	3.34	115	101	37.0	4.96	173	152	50.0	6.63	232	205	63.0	8.29	292	258				
11.5*	1.97	64	57	24.5	3.40	117	103	37.5	4.02	175	154	50.5	6.70	234	207	63.5	8.36	294	260				
12.0*	2.02	66	58	25.0	3.46	119	105	38.0	4.08	177	156	51.0	6.76	236	209	64.0	8.42	296	262				
12.5*	2.07	68	60	25.5	3.52	121	107	38.5	4.14	179	158	51.5	6.83	239	211	64.5	8.49	299	264	0.132 4.632 4.08			
13.0*	2.12	70	61	26.0	3.58	124	109	39.0	4.21	182	160	52.0	6.89	241	213	65.0	8.55	301	266				
13.5*	2.17	72	63	26.5	3.64	126	111	39.5	5.27	184	162	52.5	6.94	243	215	65.5	8.62	303	268				
14.0*	2.22	74	65	27.0	3.70	128	113	40.0	5.34	186	164	53.0	7.00	246	217	66.0	8.69	306	270				
14.5*	2.27	75	66	27.5	3.76	130	115	40.5	5.40	188	166	53.5	7.05	248	219	66.5	8.75	308	272				

* The first part of table marked with an asterisk should not be used for conversion of °E, R.W. No. 1 & SUS to CST.

Note 1 :The above table does not take into account variation of conversion factors relating centistokes to Saybolt and Redwood units with temperature, the figures given being based on the conversion at 60°C. The values for these two scales and the Engler readings have been rounded off to the number of significant figures shown.

Note 2: Conversion of centistokes to centipoises is effected by multiplying the former by the density of the oil at the same temperature as that the viscosity relates.

AXLE AND MANUAL TRANSMISSION LUBRICANT VISCOSITY CLASSIFICATION-SAE J 306 OCTOBER '91

SAE Viscosity Grade	Max. Temp. °C for Viscosity of 150000 cp	Viscosity at 100°C °Stb	
		Max.	Min.
70W	(-) 55	401	-
75W	(-) 45	4.1	-
80W	(-) 26	7.0	-
85W	(-) 12	11.0	-
90	-	13.5	< 24.0
140	-	24.0	< 41.0
250	-	41.0	-

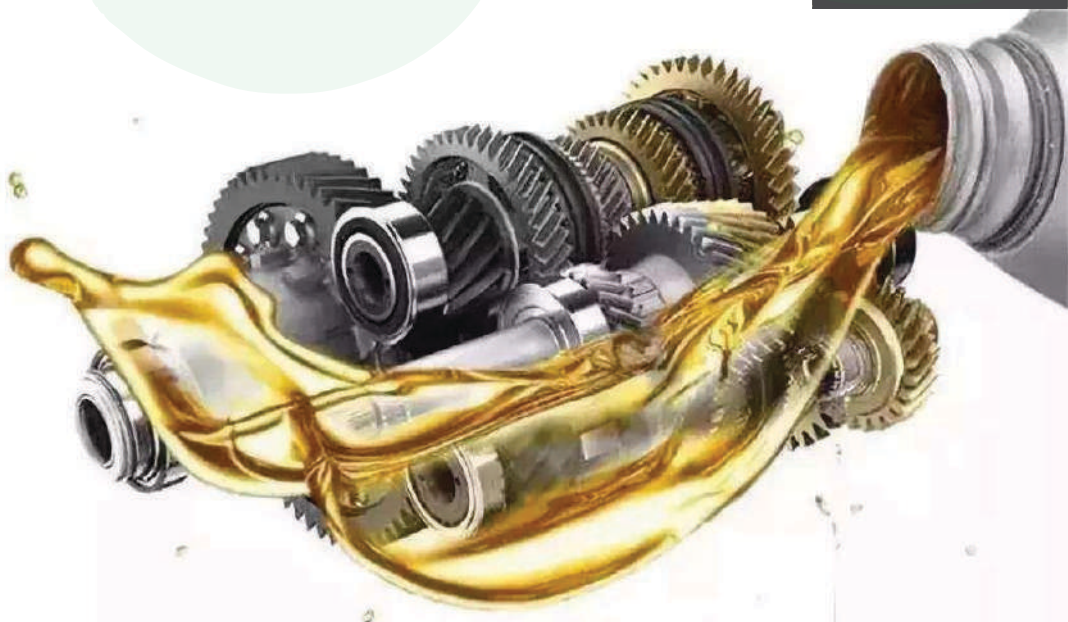


*Centipoise (cP) is the customary absolute viscosity unit and is numerically equal to the corresponding SI unit of millipascal-second (mPa.s) Centistokes (cSt) is the customary kinematic viscosity unit and is numerically equal to the corresponding SI unit of square millimetre per second (mm²/s) The precision of ASTM method D 2983 has not been established for determination made at temperatures producer-consumer relationship. It is expected 40 consequently, this fact should be realised in any of the 20R3 DT will shortly undertake work in the range down to -55 °C for D2983.

NLGI CLASSIFICATION FOR GREASES

NLGI No.	ASTM Penetration at 25°C	NLGI No.	ASTM Penetration at 25°C
000	445-475	3	220-250
00	400-430	4	175-205
0	355-385	5	130-160
1	310-340	6	85-115
2	265-295	-	-

*After working 60 strokes (ASTM D217)



pac

VISCOSITY CONVERSION TABLE

CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec	CST	Engir°	SUS	R.W.No.1 Sec
2.0*	1.14	33	31	15.0	2.32	77	68	28.0	3.82	132	117	41.0	5.47	191	168	54.0	7.11	250	221	67.0	8.82	310	274
2.5*	1.18	34	332	15.5	2.38	79	70	28.5	3.88	135	118	41.5	5.53	193	170	54.5	7.17	253	223	67.5	8.88	313	276
3.0*	1.22	36	33	16.0	2.43	81	71	29.0	3.95	137	120	42.0	5.59	195	172	55.0	7.24	255	225	68.0	8.95	315	278
3.5*	1.27	38	35	16.5	2.49	83	73	29.5	4.01	139	122	42.5	5.66	197	174	55.5	7.30	257	227	68.5	9.02	317	280
4.0*	1.31	39	36	17.0	2.54	85	75	30.0	4.07	141	124	43.0	5.72	200	176	56.0	7.34	260	229	69.0	9.08	319	282
4.5*	1.35	41	37	17.5	2.59	87	77	30.5	4.13	143	126	43.5	5.78	202	178	56.5	7.44	262	231	69.5	9.15	322	284
5.0*	1.40	42	38	18.0	2.64	89	78	31.0	4.20	146	128	44.0	5.85	204	180	57.0	7.50	264	233	70.0	9.21	324	286
5.5*	1.44	44	40	18.5	2.70	91	80	31.5	4.26	148	130	44.5	5.91	207	182	57.5	7.57	266	235	70.5	9.28	326	288
6.0*	1.48	46	41	19.0	2.76	93	82	32.0	4.32	150	132	45.0	5.98	209	185	58.0	7.63	269	237	71.0	9.34	329	290
6.5*	1.52	47	42	19.5	2.81	96	84	32.5	4.38	152	134	45.5	6.04	211	187	58.5	7.70	271	239	71.5	9.41	331	292
7.0*	1.56	49	44	20.0	2.87	98	86	33.0	4.45	155	136	46.0	6.11	213	189	59.0	7.76	273	241	72.0	9.48	333	294
7.5*	1.61	50	45	20.5	2.93	100	88	33.5	4.51	157	138	46.5	6.17	216	191	59.5	7.83	276	243	72.5	9.54	336	296
8.0*	1.65	52	46	21.0	2.98	102	90	34.0	4.57	159	140	47.0	6.24	218	193	60.0	7.90	278	245	73.0	9.61	338	298
8.5*	1.70	54	48	21.5	3.04	104	91	34.5	4.63	161	142	47.5	6.30	220	195	60.5	7.96	280	247	73.5	9.67	340	300
9.0*	1.75	56	49	22.0	3.10	106	93	35.0	4.70	164	144	48.0	6.37	223	197	61.0	8.03	283	249	74.0	9.74	343	302
9.5*	1.79	57	51	22.5	3.16	108	95	35.5	4.76	166	146	48.5	6.43	225	199	61.5	8.09	285	251	74.5	9.80	345	304
10.0*	1.84	59	52	23.0	3.22	111	97	36.0	4.83	168	148	49.0	6.50	227	201	62.0	8.16	287	254	75.0	9.87	347	306
10.5*	1.88	61	53	23.5	3.28	113	99	36.5	4.89	170	150	49.5	6.56	230	203	62.5	8.23	289	256	For higher viscosity multiply centistokes value by			
11.0*	1.93	62	55	24.0	3.34	115	101	37.0	4.96	173	152	50.0	6.63	232	205	63.0	8.29	292	258				
11.5*	1.97	64	57	24.5	3.40	117	103	37.5	4.02	175	154	50.5	6.70	234	207	63.5	8.36	294	260				
12.0*	2.02	66	58	25.0	3.46	119	105	38.0	4.08	177	156	51.0	6.76	236	209	64.0	8.42	296	262				
12.5*	2.07	68	60	25.5	3.52	121	107	38.5	4.14	179	158	51.5	6.83	239	211	64.5	8.49	299	264	0.132 4.632 4.08			
13.0*	2.12	70	61	26.0	3.58	124	109	39.0	4.21	182	160	52.0	6.89	241	213	65.0	8.55	301	266				
13.5*	2.17	72	63	26.5	3.64	126	111	39.5	5.27	184	162	52.5	6.94	243	215	65.5	8.62	303	268				
14.0*	2.22	74	65	27.0	3.70	128	113	40.0	5.34	186	164	53.0	7.00	246	217	66.0	8.69	306	270				
14.5*	2.27	75	66	27.5	3.76	130	115	40.5	5.40	188	166	53.5	7.05	248	219	66.5	8.75	308	272				

* The first pat of table marked with an asterisk should not be used for conversion of °E, R.W. No. 1 & SUS to CST.

Note 1 :The above table does not take into account variation of conversion factors relating centistrikes to Saybolt and Redwood units with temperature, the igures given being based on the conversion at 60°C. The values for these two scales and the Engler readings have been rounded of to the number of signiicant igures shown.

Note 2: Conversion of centistrokes to centipoises is efected by multiplying the former by the density of the oil at the same temperature as that the viscosity relates.

