-AUTOMOTIVE LUBRICATING OILS-

GOLDOYL PREMIUM OILS
10W-30, 10W-40, 15W-40, 20W-50

PERFORMANCE:
Lower oil consumption, Good fuel efficiency, Superior deposit control & rust and wear protection, Longer drainage interval, Superior engine cleanliness,

PERFORMANCE STANDARDS:
API CH4/SJ Services.

APPLICATIONS:
Recommended for new generation imported or Indian cars and buses and also trucks.

CHARACTERISTICS				
SAE GRADE	**10W-30**	**10W-40**	**15W-40**	**20W-50**
Kin. Vis. @100 ^{O}C , cst	10.0 – 11.5	14.0 – 15.5	13.5 – 15.5	17.5 – 19.5
VI, min	120	135	135	130
Flash point, COC, °C, Min	200	200	220	220
TBN, mg KOH/gm	9-11	9-11	9-11	9-11

GOLDOYL CF – ENGINE OILS.
10W, 20, 30, 40, 50, 20W-40.

PERFORMANCE BENEFITS:
Long drive, Extended drainage interval, Excellent engine cleanliness, Improves fuel efficiency, lowers oil consumption, longer component life.

PERFORMANCE STANDARD:
API CF4/SJ. MIL – L 2104C, & IS 13656 – 2002 EDL 4.

APPLICATIONS:
Super charged diesel engines of heavy commercial vehicles of all makes.

CHARACTERISTICS						
SAE GRADE	**10W**	**20**	**30**	**40**	**50**	**20W40**
KIN VIS @ 100^{O}C	5MIN	6 – 8	10 – 12	13 – 16	18 – 20	13.5 – 15.5
VI	100	100	100	100	100	120
FLASH POINT	200	200	200	220	230	200
POUR POINT	-27	-6	-6	-6	-6	-6
TBN	9.5 – 12	9.5 – 12	9.5 – 12	9.5 – 12	9.5 – 12	9.5 - 12

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

GOLDOYL PREMIUM GASOLINE ENGINE OILS.
5W-20, 10W-40.

PERFORMANCE BENEFITS:
Superior Rust and Wear protection, Slug control, Longer engine life, Better fuel economy, Lower oil consumption, Extended drain interval.

PERFORMANCE STANDARD:
APISL/CI 4.

APPLICATIONS:
Recommended for new generation, imported and Indian passenger vehicles using gasoline and diesel engine.

CHARACTERISTICS			
SAE GRADE	**5W – 20**	**10W -40**	**15W - 40**
KIN VI @ 100 ^{O}C	8.0 – 9.3	13.5 – 15.5	13.5 – 15.5
VI	145	135	135
FLASH POINT	190	200	200
TBN	7.5 – 8.5	7.5 – 8.5	7.5 – 8.5

GOLDOYL PREMIUM AUTOMOTATIVE GEAR OILS
90 & 140, 80W - 90 & 85W – 140

GEAR 90 & 140

PERFORMANCE BENEFITS:
EXCELLENT EP CHARACTERTISTICS, GOOD OXIDATION STABILITY, RESISTANCE TO CORRISION, LONG SERVICE LIFE.

PEFORMANCE STANDARDS:
APIGL4/GL5 MIL – L 2105 & IS 1118 – 2002.

APPLICATIONS:
Heavy duty applications in differentials and of passenger cars truck, vans and buses.

GEAR 80W – 90 & 85W – 140.

PERFORMANCE BENEFITS:
Multi grade gear oil for severe duty operation, excellent oxidation stability suitable for manual , increased service life, protection against wear due to high EP characteristics.

APPLICATIONS:
HYPOID, spiral bevel or worn gears systems.

CHARACTERISTICS				
SAE GRADE	**90**	**140**	**80W – 90**	**85W - 140**
KIN @ 100^{o}c	16 – 18	28 – 34	14 – 15.5	28 - 32
VI	90	90	90	90
FLASH POINT	180	180	180	180

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

GOLDOYL TRACTOR OILS (U):
30, 15W- 30.

PERFORMANCE BENEFITS:
All weather applications, long fluid life, total lubrication for engines, hydraulic transmissions, wet brakes etc.

APPLICATION:
Engine parts, transmission, final drive, wet brakes and hydraulics.

PERFORMANCE STANDARDS:
API CE/SF, MIL – L – 2104 B.

CHARACTERISTICS		
SAE GRADE	**30**	**15W - 30**
KIN @ 100 °C	10 – 11	10 – 11
VI	90	110
FLASH POINT	190	200
TBN	9.5 – 12.5	9.5 – 12.5

GOLDOYL TRACTOR OILS (G):
20W- 40.

PERFORMANCE BENEFITS:
All weather applications, long fluid life, protects against corrosion and oxidation with good EP properties.

PERFORMANCE STANDARD:
API CD/IS 13656 – 2002 E-DL2 MIL – L – 2105 & API GL-4.

APPLICATIONS:
Specially recommended for the engine combined and hydraulic system of tractors.

CHARACTERISTICS	
SAE GRADE	**20W – 40**
KIN @ 100 C	13.5 – 15.5
VI	120
FLASH POINT	200
TBN	9.5 – 12.5

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

GOLDOYL
C4SAE10, C4SAE30.

Performance Benefits:
Desired friction characteristics to the clutch, anti rust protection for the components of the system. Good seal compatibility protects gear & other lubricated parts against wear. Smooth operation of precision hydraulic control system. High oxidation and thermal stability.

Applications:
Recommended for commercial power shift . Example, Crawler tractor, excavation, scrapers, shovel loaders, log loaders, dumpers.

Performance Standard:
Meets, TES-228 for hydraulic fluid – Type C4 of DETROIT DIESEL ALLISION, DIVISION OF GENERAL MOTORS CORPORATION USA.

CHARACTERISTICS		
SAE GRADE	**C4SAE10,**	**C4SAE30**
KIN VISCOSITY	5.6 MIN	9.5 – 12.5
VI	100	100
FLASH POINT	160	160
POUR POINT	-30	-18

GOLDOYL TRANSFLUID (G)

PERFORMANCE BENEFITS:
Extended life of Gear Boxes, smooth chatter free clutch engagement, reduces slug and varnish formation. Excellent thermal and oxidation stability protects parts against rusting.

PERFORMANCE STANDARAD:
Meets GENERAL MOTORS TYPE A SUFFIX A. DAIMLER BENZ DBL 6623 – 10.

APPLICATIONS:
Recommended for automatic and power steering units and also for synchromesh gear boxes. Extended life of gear boxes, bearings and other lubricated parts.

CHARACTERISTICS	
SAE GRADE	**TRANSFLUID (G)**
KIN VISCOSITY	7.5 – 7.8
VI	150
FLASH POINT	180
POUR POINT	-39

***HEALTH & SAFETY**

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GOLDOYL PUMPSET OIL
30 & 40.

PERFORMANCE BENEFITS:
Minimal wear & tear, increased engine life, minimum maintenance cost.

APPLICATIONS:
Recommended for slow, medium and high speed stationery diesel engines, equipped on agricultural pump sets. Operating on HSD or LDO.

CHARACTERISTICS		
SAE GRADE	**30**	**40**
KIN VISCOSITY	9.5 – 12.5	13 – 15
VI	95	95
FLASH POINT	220	220
TBN	4.0 – 5.0	4.0 – 5.0

RADIATORS COOLANTS

For all Domestic and imported Cars, Jeeps, Vans, Tempos and Diesel Vechicles.

Aluminium Compatib0le.
coolant excels at providing superior cooling system protection, in all weather conditions. It's advanced formula combine's optimum protections against radiator boil over the superior all metals protectiobn that inhibits scale formation and rust corrosion. Protect non-metallic system component like gasket hoses and thrust seals. Anti-freeze Engine Coolant.

- **Quality tested, meets or exceeds.**
- **Society of Automotive Engineers (SAE) J 1034**
- **ASTM D-4985; FORD ESE M-97844-A**
- **BS; 5117-1995**
- **IS;5759-1970 & JIS K-2234**
- **Suitable for Japanese, Korean and European Automobiles.**

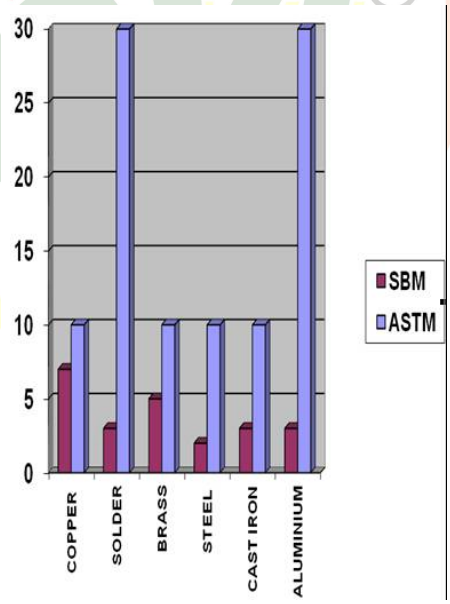
Recommended Mixture Ratio

Coolant	**30%**	**50%**	**60%**	**70%**
Soft Water	**70%**	**50%**	**40%**	**30%**
Protects against Boil-over to Degree Celsius.	**125**	**129**	**132**	**135**
FREEZING POINT	**-14**	**-34**		

For tropical hot climates mix one part SBM Coolant with two parts water. Never use more than 70% Coolant

ASTM STANDARDS

Materials tested with ASTM standards compared to SBM Coolant. (Lower the corrosion value, better the protection).



*HEALTH & SAFETY

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-INDUSTRIAL LUBRICATING OILS-

HYDRAULIC OILS (ANTIWEAR TYPE)

These Anti-wear type oils Conform to IS: 10522.1983 (reaffirmed 2004) specifications. Meet the requirement of high-pressure systems of high pump speed. They are recommended for hydraulic and circulation systems of wide variety of equipments. These oils pass Vickers V – 104c vein pump test.

These oil are also used for compressor crank case lubrication but not recommended for lubrication of turbines and equipments having silver coated components

SBM	IOCL	HPCL	BPCL	GULF	CASTROL LTD
GOLDOYL Hydraul 32, 46, 68, 100, 150	SERVO SYSTEM.32-150	ENKLO 32 150	HYDROL 32 – 150	HARMONY 32 - 150	HYSPIN AWS 32 - 150

CHARACTERISICS

SAE GRADE	K.vis @40°C CST ASTM D -445	FLASH PO1NT COC °C MIN ASTM D -92	VISCOSITY INDEX Min
32	30 – 35	190	95
46	43 – 50	200	95
68	64 – 74	206	95
100	95 – 110	210	95
150	140 – 165	220	95

HYDRAULIC OILS

They are used in circulation lubrication system for gears and bearings. They provide excellent performance at elevated temperature found in paper mills coal pulverisers and calendar bearings.

These grades are also recommended for use in machine tools hydraulic and circulation systems, compressors and enclose gear boxes which do not require EP type lubricants.

SBM	IOCL	HPCL	BPCL	GULF	CASTROL LTD
GOLDOYL Hydraul 220, 320, 460	SERVO SYSTEM.220 - 460	ENKLO 220 – 460	HYDROL 220 - 460	HARMONY 220 - 460	HYSPIN AWS 220 - 460

CHARACTERISICS

SAE GRADE	K.vis @40°C CST ASTM D -445	FLASH PO1NT COC °C MIN ASTM D -92	VISCOSITY INDEX Min
220	200 – 245	230	90
320	290 – 350	230	90
460	420 – 500	260	90

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

STEAM CYLINDER OILS

STREAM CYLENDER OILS	SBM	IOCL	HPCL	BPCL	GULF	CATROL LTD
Stream cylinder oils for lubrication of calendar hearings and sugar mill roll bearings and are also recommended for lubrication of worm gears.	GOLDOYL CYLIN C - 460/530	SERVO CYL C4 60	CYNDOL TC 460	BHARAT ENGOL J460	SENAT E 460	CRESTA VA

TYPICAL TEST FIGURES

PRODUCT	K.vis@ 100 °C CST ASTM D 445	FLASH PO1NT COC °C Min ASTM D—92	Copper Strip Corrosion @ 100°C for3 hrs ASTM D- 130	Pour Point C Max ASTM D-97	TIMKEN OK LOAD KG. Min
GOLDOYL CYLIN C460	440—480	280	1	3	90
GOLDOYL CYLIN C'530	480-540	280	1	3	90

INDUSTRIAL GEAR OILS

Premium Quality extreme pressure industrial gear oils having excellent oxidation resistance and thermal stability Recommended for all heavy enclosed gear drives with circulation to splash lubricating system operating under heavy or shock load conditions. Meet IS: 8406- 1993 DIN 51517 part 3. Cincinnati Milacron P -63, P – 77, P – 59 & P – 35

SBM	IOCL	HPCL	BPCL	TIDE WATER	CASTROL LTD
GOLDOYL Gear SP 68, 100, 150, 220, 257, 320 &460	Servo mesh SP 68, 100, 150, 220 320 &460	Parthan EP 68, 100, 150, 220, 320&460	Amocam 68, 100. 150, 220, 320&460	APPRES LUBE 68 -460	ALPHA SP 68 - 460

TYPICAL TEST FIGURES

PRODUCT	K.vis @ 40 °C CST ASTM D- 445	FLASH POINT COC °C Min ASTM D -92	VISCOSITY INDEX Min
GOLDOYL Gear SP 68	62 – 74	204	90
GOLDOYL Gear SP 100	90 – 110	204	90
GOLDOYL Gear SP 150	135 – 165	204	90
GOLDOYL Gear SP 220	198 – 242	232	90
GOLDOYL Gear SP 257	250 – 280	232	90
GOLDOYL Gear SP 320	288 – 352	232	90
GOLDOYL Gear SP 460	414 – 506	232	90s

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

COMPRESSOR OILS

Compressor cylinder lubricating oils recommended for high performance of reciprocating and rotary air compressors cylinder lubrication. Meet the requirement of DIN 51506 VD-L group and ISO: DIS - 6521 specifications for air compressor oil.

GOLDOYL	IOCL	HPCL	GULF	BPCL	CASTROL LTD
C. PRESS 32, 46, 68 100, 150, 220, & 320	SERVO PRESS 32 TO 320	HYCON C 220 / C320 NUMATIC 100, 220 AND CYUNDER OIL 220/320.	GULF COMPRESSOR OIL	BHAR.AT COMPRESSOR OIL 32, 68, 100, 150, 220 & 320	AIRCOL PD 68 & 100

TYPICAL TEST FIGURES

PRODUCT	K.vis @ 40 ^{0}C CST ASTM D- 445	FLASH POINT COC ^{o}C Min ASTM D -92	VISCOSITY INDEX Min
C. PRESS 32	29 – 35	190	95
C. PRESS 46	42 – 50	200	95
C. PRESS 68	64 – 74	200	95
C. PRESS 100	90 – 110	210	95
C. PRESS 150	135 – 165	220	95
C. PRESS 220	200 – 240	230	95
C. PRESS 320	290 – 350	240	95

REFRIGERATION COMPRESSOR OILS

They meet IS4578 – 1989 Specifications. Highly refined low pour oils with good chemical stability and ready solubility in liquefied refrigerants.

Wide range of refrigeration compressors (both reciprocating and rotary) using all conventional refrigerants except sulphur-di-oxide and CFC.

SBM	IOCL
GOLDOYL FREEZE 32,46,68	SERVO FRIZ 32,46,68

TYPICAL TEST FIGURES

PRODUCT	K.vis @ 40 ^{0}C CST ASTM D- 445	FLASH POINT COC ^{o}C Min ASTM D -92	POUR POINT
FREEZE 32	29 – 35	160	-30
FREEZE 46	42 – 50	160	-27
FREEZE 68	64 – 74	170	-24

*HEALTH & SAFETY

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

GENERAL PURPOSE SPINDLE AND MACHINERY OILS

General-purpose lubricating machinery oils recommended for textile paper machine tools and all types of industrial machineries. They contain film strength and anti rust additives and provide good oiliness for general lubrication of machinery					
SBM	IOCL	HPCL	GULF	BPCL	CASTROL LTD
GOLDOYL MACHINOL 32, 46, 68, 100, 150, 220 & 320	SSERVOLINE 32, 46, 68, 100, 150, 220 & 320	YANTROL 32, 46, 58, 100, 150, 220 & 320	TRRMOFIN 20 SECURITY 32T0 320	BHARAT CABOL 32T0 320	MAGNA OILS

TYPICAL TEST FIGURES

PRODUCT	K.vis @ 40 ^{0}C CST ASTM D- 445	FLASH POINT COC ^{o}C Min ASTM D -92	VISCOSITY INDEX Min
MACHINOL 32	29 – 35	190	95
MACHINOL 46	42 – 50	200	95
MACHINOL 68	64 – 74	200	95
MACHINOL 100	90 – 110	210	95
MACHINOL 150	135 – 165	220	95
MACHINOL 220	200 – 240	230	95
MACHINOL 320	290 – 350	240	95

HONING OILS

Very light viscosity Honing oil with excellent lubricity characteristics. ft has the extra fluidity to ensure quick thorough flushing action and the absence of any material, which might cause to stone glazing, ensuring very good surface finish. It also gives long life to the honing stones. Recommended for honing of steel liners ball bearing races super finishing operations even on hardened metals and asia flat honing operations. Non-staining and non-corrosive to cuprous metals.

	IOCL	HPCL	BPCL	CASTROL LTD
GOLDOYL HONING OIL G	SERVO HONE 7	TRIMOFIN20	NORCAM A	HONILO 430, 480 & 481

TYPICAL TEST FIGURES

PRODUCT	K.vis @ 40 ^{0}C CST ASTM D- 445	FLASH POINT COC ^{o}C Min ASTM D -92
GOLDOYL HONING OIL G	7 – 10	130

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

TURBINE OILS

SBM	IOCL	HPCL
GOLDOYL TURBINOL 32, 46, 57, 68, 100	SERVO PRIME 32,46 , 57, 68	TURBINE OIL 32,46, 57, 68

Excellent selectivity refined paraffin base stocks containing Antioxidant, rust inhibitor and Antifoam additives. They exhibit excellent demulsibility, anti-foaming combined with the ability to release entrained air quickly. These properties are retained during prolonged service. These Oils meet BS 489/983, IS: 1012-2002 specifications, They are recommended for lubricants of steam, gas and hydraulic turbines. Can also be used in hydraulic systems requiring outstanding long life properties.

TYPICAL TEST FIGURES

PRODUCT	K.vis @ 40 ^{0}C CST ASTM D- 445	FLASH POINT COC ^{o}C Min ASTM D -92	VISCOSITY INDEX Min
TURBINOL 32	29 – 35	190	95
TURBINOL 46	42 – 50	200	95
TURBINOL 57	54 – 60	200	95
TURBINOL 68	64 – 74	200	95
TURBINOL 100	90 – 110	220	95

THERMOPACK OILS

SBM	IOCL	HPCL	BPCL	GULF	CASTROL LTD
GOLDOYL THERM 500 & 600	Servo THERM Medium And Special	HYTHERM 500 & 600	THREMAL 32	GULF THERM OIL 32	PERFECTO HT5.

TYPICAL TEST FIGURES

PRODUCT	K.vis @40°C CST ASTM D -445	FLASH PO1NT COC °C MIN ASTM D -92	VISCOSITY INDEX Min
THERM 500	27-33	200	95
THERM 600	27-33	200	95

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

QUENCHING OILS

SBM	IOCL	HPCL	BPCL	TIDE WATER	CASTROL LTD
GOLDOYL QUENCH 11, 107, 707 & CII	SERVO QUENCH 11, 107, 707 & CII	META QUENCH 39,42,43	CABOL 32, QUENCHING OILC	VEEDOL QUENCHING OILC	CASTROL ILOQUENC H1,32.

TYPICAL TEST FIGURES

PRODUCT	K.vis @40°C CST ASTM D -445	FLASH PO1NT COC °C MIN ASTM D -92	VISCOSITY INDEX Min	SPECIFICATION
QUENCH II	27-33	196	90	Meets IS-2664-l980 (reaffirmed 1993) straight mineral type medium grade Specifications.
QUENCH G II	27-33	196	90	Meets IS:2664-1980 (updated) compounded type oil specifications
QUENCH 107	19-25	176	90	Posses quenching characteristics neither too slow or nor too fast and recommended for hardening of many components such as bolts, setscrew, Crankshafts, axles, brake, drums etc..
QUENCH 707	19-25	176	90	Meets IS: 2664-1980 additive type quenching oil specifications.

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

METAL WORKING LUBRICANTS

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 like pressing, stamping, deep drawing, wire drawing, tube drawing and forging. During these operations considerable amount of heat and stress are generated. Draw Oil grades are tailor made to satisfy the various requirements included in metal drawing / forging operations. The product has been specially developed for aluminium wire drawing applications. this product ensures nil wire breakage and scouring. The product can be used for deep drawing of wires, tube drawing, forming, spinning and other similar medium to heavy duty operations of carbon steels and non-Ferrous metals.

SBM	HPCL
GOLDOYL DRAW OIL 123	DRAWMET - 44
GOLDOYL DRAW OIL 300	DRAWMET – 15

PRODUCT	K.VIS @40° C CST ASTM D -445	FLASH PO1NT COC °C MIN ASTM D -92	NEUTRALISATION NO ,mgKOH/g MAX)	*COLOUR / APPERANCE*	*COPPER STRIP CORROSION ASTMD -1500*	*PENETRATION 0.1MM UNITS; UNWORKED MAX*	*PH OF 10% EMULSION*	*SAP. VALUE/ TOTAL FATTY MATTER*
DRAW OIL 123	-	-	-	White/Cream Homogeneous Paste	*1*	*320*	*8.5 – 9.0*	*55%*
DRAW OIL 300	290 – 305	244	0.4	Clear Bright Liquid	-	-	-	18-22

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

SUGAR MILL ROLL OILS

DESCRIPTION	SBM	TIDE WATER	APAR LIMITED	HPCL	IOCL
Specially formulated ideal lubricants for heavily loaded Sugar Mill Roll Bearings. Form high strength lubricating films thereby providing excellent bearing wear and corrosion besides withstanding severe washing action of cane juice. Also recommended in centralized lubrication system of slow speed spure and helical gears.	GOLDOYL SMR 85,175 & 260	Veedol Mill Roll Oil .2.3 & 4.	Power SM 85, 175 & 260	Crushwell 2, 4 & 5.	Servo SM -85, 175 & 260

TYPICAL TEST FIGURES

PRODUCT	K.vis@ 100 °C CST ASTM D 445	FLASH PO1NT COC °C Min ASTM D—92	Copper Strip Corrosion @ 100°C for3 hrs ASTM D- 130	Pour Point C Max ASTM D-97	TIMKEN OK LOAD KG. Min
SMR —85	40—45	230	1	6	13.5
SMR —175	75—85	240	1	6	13.5
SMR —260	100—120	250	1	9	13.5

OPEN GEAR & WIRE ROPE COMPOUNDS

Tack compounds are heavy viscous black adhesive residual petroleum products fortified with special tackiness agents. They all have pronounced stringiness and excellent film strength to withstand high pressure encountered in heavily loaded open gears. Good resistance to water washout and hence provides rust protection. Meet IS; 9554-1980 Grade 2, 3 & 4 Specifications.

SBM	TIDE WATER	APAR LIMITED	HPCL	IOCL
GOLDOYL TACK 10, 20, 30 & 40	Veedol AMACLAC 74, 79 & 85	Power OGC 120 & 140	HYTAK 0,1,2, & 5	Servo Coat 110, 120, 140, & 170

TYPICAL TEST FIGURES

PRODUCT	K.vis@ 100 °C CST ASTM D 445	FLASH PO1NT COC °C Min ASTM D—97	Copper Strip Corrosion @ 100°C for3 hrs ASTM D- 130	Pour Point C Max ASTM D-97	TIMKEN OK LOAD KG. Min
TACK 10	80 – 120	240	1	1	NIL
TACK 20	200 – 250	240	1	1	NIL
TACK 30	400 – 500	250	1	1	NIL
TACK 40	700 – 750	270	1	1	NIL

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

CUTTING OILS (FLUIDS)

Cutting fluid is a type of coolant and lubricant designed specifically for metalworking processes, such as machining, stamping and other cutting operations. There are two kinds of cutting fluids, which are Neat (straight) cutting oil, Soluble (oil-water emulsions) cutting oil, They may be made from petroleum distillates (mineral & base oil), Depending on context and on which type of cutting fluid is being considered, it may be referred to as cutting fluid, cutting oil, cutting compound, coolant oil, or lubricant.

There are generally three types of liquids: mineral (Neat Cutting Fluid), semi-synthetic, and synthetic. Semi-synthetic and synthetic cutting fluids represent attempts to combine the best properties of oil with the best properties of water by suspending emulsified oil in a water base. These properties include: rust inhibition, tolerance of a wide range of water hardness (maintaining pH stability around 9 to 10), ability to work with many metals, resist thermal breakdown, and environmental safety.

NEAT CUTTING OILS

Mineral oils, which are petroleum-based, Chlorine-free neat cutting oil designed for very hard machining operations on ferrous metals, Excellent anti-wear and extreme pressure performance, preventing the formation of built-up edges and increasing the life time of the equipment. These vary from the thick, dark, sulfur-rich cutting oils used in heavy industry to light, clear oils.				
	IOCL	HPCL	BPCL	CASTROL LTD
CUT ABA	SERVO CUT 151	TRIMOFIN 21	BHARAT NORCAM 22	ILOCUT 482

TYPICAL TEST FIGURES

PRODUCT	K.vis @ 40 ^{0}C CST ASTM D- 445	FLASH POINT COC ^{o}C Min ASTM D -92	VISCOSITY INDEX Min
CUT ABA	29 – 35	190	95

SOLUBLE CUTTING OILS

Semi-synthetic coolants, also called "soluble oil," are an emulsion or micro or macro emulsion of water with mineral oil. A typical CNC machine tool usually uses emulsified coolant, which consists of a small amount of oil emulsified into a larger amount of water through the use of a detergent. Synthetic coolants are usually water-based .

Water is a good conductor of heat but has drawbacks as a cutting fluid. It boils easily, promotes rusting of machine parts, and does not lubricate well. Therefore, other ingredients are necessary to create an optimal cutting fluid.

Superior quality soluble type metal working fluid, forming stable milky white emulsion. Gives excellent surface finish and extended tool life.

	IOCL	HPCL	BPCL	GULF	CASTROL LTD
CUT SS	SERVO CUT SUPER	KOOL CUT 40	SHEROL B	EMULSIL NA	COOLEDGE SL

TYPICAL TEST FIGURES

PRODUCT	K.vis @ 40 ^{0}C CST ASTM D- 445	PH OF 5% SOLUTION IN DISTILLED WATER	CAST IRON COROSSION
CUT ABA	35 – 40	9.5	PASSES

*HEALTH & SAFETY

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

RUST PREVENTIVE OILS
RUSTNIL

GODLOL RUSTNIL 528, 628, 728		IOCL	BPCL	HPCL	CASTROL LTD
PROPRIETORY GRADE, OIL BASED RUST PREVENTIVES CONTAINING SOLUBLE CORROSION INHIBITORS. POSSESSES MODERATE WATER DISPLACEMENT CHARACTERISTICS. FORMS AN OILY FILM WHEN APPLIED BY SPRAYING/DIPPING/BRUSHING.PROVIDES RUST PREVENTION EVEN IN HUMID & SALINE ATMOSPHERE. INHIBITS RUST DURING IN-BETWEEN OPERATIONS AND STORAGE BEFORE WRAPPING.PROTECTS FROM RUSTING STEEL SHEETS AND STRIPS,METAL STACKS DURING TRANSIT AND STORAGE.OIL FILM CAN BE EASILY REMOVED BY WIPING WITH RAGS SOAKED IN PETROLEUM SOLVENTS (KEROSENE, MTO)/ ALKALINE DEGREASANTS. INTERNAL PROTECTION OF GEAR BOXES, ASSEMBLIES & COLD ROLLED STELL COMPENNTS.	RUSTNIL 528, 628, 728.	SERVO RP 125	RUSTROL 164	RUSTOP 285, 286, 287	RUSTILO

TYPICAL PHYSICO – CHEMICAL PROPERTIES FOR PRODUCT

PRODUCT	K.vis@ 40 °C CST ASTM D 445	FLASH PO1NT COC °C Min ASTM D—92	Copper Strip Corrosion @ 100°C for3 hrs ASTM D- 130	SAP. VALUE
RUSTNIL 528	26 – 32	190	<1	5.0 – 7.0
RUSTNIL 628	160 – 170	190	<1	4.5 – 5.0
RUSTNIL 728	250 – 270	210	<1	4.5 – 6.0

We also manufacture dewatering rust preventives equivalent to "Castrol DWX – 32".

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

ALL PURPOSE / MULTI PURPOSE GREASES

These are lithium soap high melting point multipurpose greases having excellent water resistance properties, high oxidation stability, maximum structural stability with superior Anti-rust and Anti-corrosion properties available in NLGI -2 & 3 consistencies. They meet the requirement of IS-7623-1993 & IPSS: 1-09-006 specification and US steel 374 requirement. Widely used in steel plants heavy engineering unit's textile mills petrochemical and chemical units. Also recommended for all grease lubricated parts of automobiles including commercial vehicles.

	IOCL	HPCL	BPCL	CHAKAROL	CASTROL LTD
GEM MP-2 & MP-3	SERVO GEM2&3	LITHON 2&3	BHARAT UNIVEX A & BHARAT MP-3 /	AP-2 & AP-3	AP-2 & AP-3

TYPICAL TEST FIGURES

CHARACTERISTICS	GEM MP-2	GEM MP-3
Structure & appearance	Amber to yellow, smooth & buttery	Amber to yellow, smooth & buttery
Worked penetration at 25 °C after 60 strokes	265 - 280 (NLGI - 2)	220 - 250 (NLGI - 3)
Drop point C min	180	180
Free alkanity/ free acidity % (Max)	0.1	0.1
Copper strip corrosion	NEGATIVE	NEGATIVE

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

EP GREASES

NLGI Grades 00, 0, 1 & 2

These EP Greases are premium quality lithium based greases containing an extreme pressure additive suitably formulated to meet the demand for boundary lubrication. These products possess excellent shear stability high load carrying capacity prevents excessive wear, seizure. There particularly useful for situations warranting usage of extreme pressure greases subjected shock loads at temperatures at to about 140 °C . They meets IS 7623: 1993 (2 & 3 EP Type) and IPSS : 1-09-005-99. These greases meet the requirements of industrial greases applications for plain and antifriction bearings requiring higher load bearing ability, such as automotive, earth moving equipments, gear couplings, electric motors, mining equipments and general industrial machinery.

SBM	IOCL	HPCL	BPCL	BALEMEROL
GOLDOYL EP GREASES	SERVO GEM EP	HP LITHON EP	MAK LANTHAX EP	LIPREX EP GREASES

TYPICAL TEST FIGURES

NLGI 00	00	0	1	2
Colour	BROWN TO DARK BROWN	BROWN TO DARK BROWN	BROWN TO DARK BROWN	BROWN TO DARK BROWN
Structure	SMOOTH	SMOOTH	SMOOTH	SMOOTH
Soap	LITHIUM	LITHIUM	LITHIUM	LITHIUM
Worked Penetration @ 25 °C . a) 60 double strokes b) 1000000 strokes	400-430 -	350 – 380 -	310 – 340 +/- 30 OF 60 X	265 – 295 +/- 30 OF 60 X
Drop Point °C . min	170	180	180	180
Heat Stability @ 100 °C . 30 hrs, loss % wt max	-	-	6	5

***HEALTH & SAFETY**

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.

VISCOSITY INDEX CHART

cST	ENGLER°	SUS	R.W.No. 1 Sec	cST	ENGLER°	SUS	R.W.No. 1 Sec	cST	ENGLER°	SUS	R.W.No. 1 Sec	cST	ENGLER°	SUS	R.W.No. 1 Sec	cST	ENGLER°	SUS	R.W.No. 1 Sec	cST	ENGLER°	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	32	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	7.37	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	5.02	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	5.08	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	5.14	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	5.21	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.

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 Range* 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	33.8-34.9
15	13.5-16.5	75.8-89.1	37.0-38.3	36.4-37.8	36.0-37.3
22	19.8-24.2	105-126	39.7-41.4	39.1-40.6	38.5-40.0
32	28.8-35.2	149-182	42.9-45.0	42.0-43.8	41.4-42.9
46	41.4-50.6	214-262	47.1-49.9	45.4-47.8	44.2-46.2
68	61.2-74.8	317-389	53.0-56.9	50.3-53.4	48.6-51.1
100	90.0-110	469-575	61.4-66.9	56.8-61.0	54.0-57.2
150	135-165	708-869	74.0-81.9	66.6-72.7	62.1-67.2
220	198-242	1046-1283	90.3-101	79.3-87.6	72.6-79.5
320	288-352	1531-1878	112-126	95.7-106	86.3-95.3
460	414-506	2216-2717	139-158	116-130	104-115
680	612-748	3298-4046	178-202	145-162	127-142
1000	900-1000	4885-5994	227-257	181-204	156-175
1500	1350-1650	7385-9063	293-331	229-256	204-219

* Conversion based on 95 VI

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)

SAE VISCOSITY GRADES FOR ENGINE OILS[a]
SAE J300 DEC 99

SAE Viscosity Grade	Low Temperature Viscosities		High-Temperature Viscosities		
	Cranking[b] (cP) max at temp °C	Pumping[c] (cP) max with no yield stress at temp °C	Low Shear Rate Kinematic[d] (cSt) at 100°C		High Shear[e] Rate (cP) at 150°C min
			min	max	
0 W	6200 at -35	60,000 at -40	3.8	—	—
5 W	6600 at -30	60,000 at -35	3.8	—	—
10 W	7000 at -25	60,000 at -30	4.1	—	—
15 W	7000 at -20	60,000 at -25	5.6	—	—
20 W	9500 at -15	60,000 at -20	5.6	—	—
25 W	13,000 at -10	60,000 at -15	9.3	—	—
20	—	—	5.6	<9.3	2.6
30	—	—	9.3	<12.5	2.9
40	—	—	12.5	<16.3	2.9 (0W - 40, 5W - 40, 10W - 40 grades)
40	—	—	12.5	<16.3	3.7 (15W - 40, 20W - 40, 25W - 40, 40 grades)
50	—	—	16.3	<21.9	3.7
60	—	—	21.9	<26.1	3.7

[a] ASTM D 3244
[b] ASTM D 5293
[c] ASTM D 4684
[d] ASTM D 445
[e] ASTM D 4683, ASTM D 4741, CEC-L-36-A-90

Automotive Gear Lubricant Viscosity Classifications – SAE J306

SAE Viscosity Grade	Max Temperature for Viscosity of 150,000 cP (°C)[1,2]	Kinematic Viscosity at 100°C (cSt)[3]	
		min[4]	max
70 W	-55[5]	4.1	–
75 W	-40	4.1	–
80W	-26	7.0	–
85 W	-12	11.0	–
80	–	7.0	<11.0
85	–	11.0	<13.5
90	–	13.5	<24.0
140	–	24.0	<41.0
250	–	41.0	–

[1] ASTM D 2983.
[2] Additional low-temperature viscosity requirements may be appropriate for fluids intended for use in light-duty synchronized manual transmissions.
[3] ASTM D 445.
[4] Limit must also be met after testing in CEC L-45-T-93, Method C (20 hours).
[5] The precision of ASTM D 2983 has not been established for determinations made at temperatures below -40°C. This fact should be taken into consideration in any producer-consumer relationship.

*HEALTH & SAFETY

These products are unlikely to present any significant health or safety hazard when Properly used in the recommended application and standards of industrial and Personal hygiene are maintained.