



ERA OILFIELD  
SERVICES lubricants

## ERA INDUSTRIAL LUBRICANTS FOR FPSO AND MARINE

Industrial lubricants range for civil construction, mining, power, FPSO and marine activities.

Providing cost effective factory direct pricing of high quality lubricants manufactured by one of the worlds leading brands to international standards including :

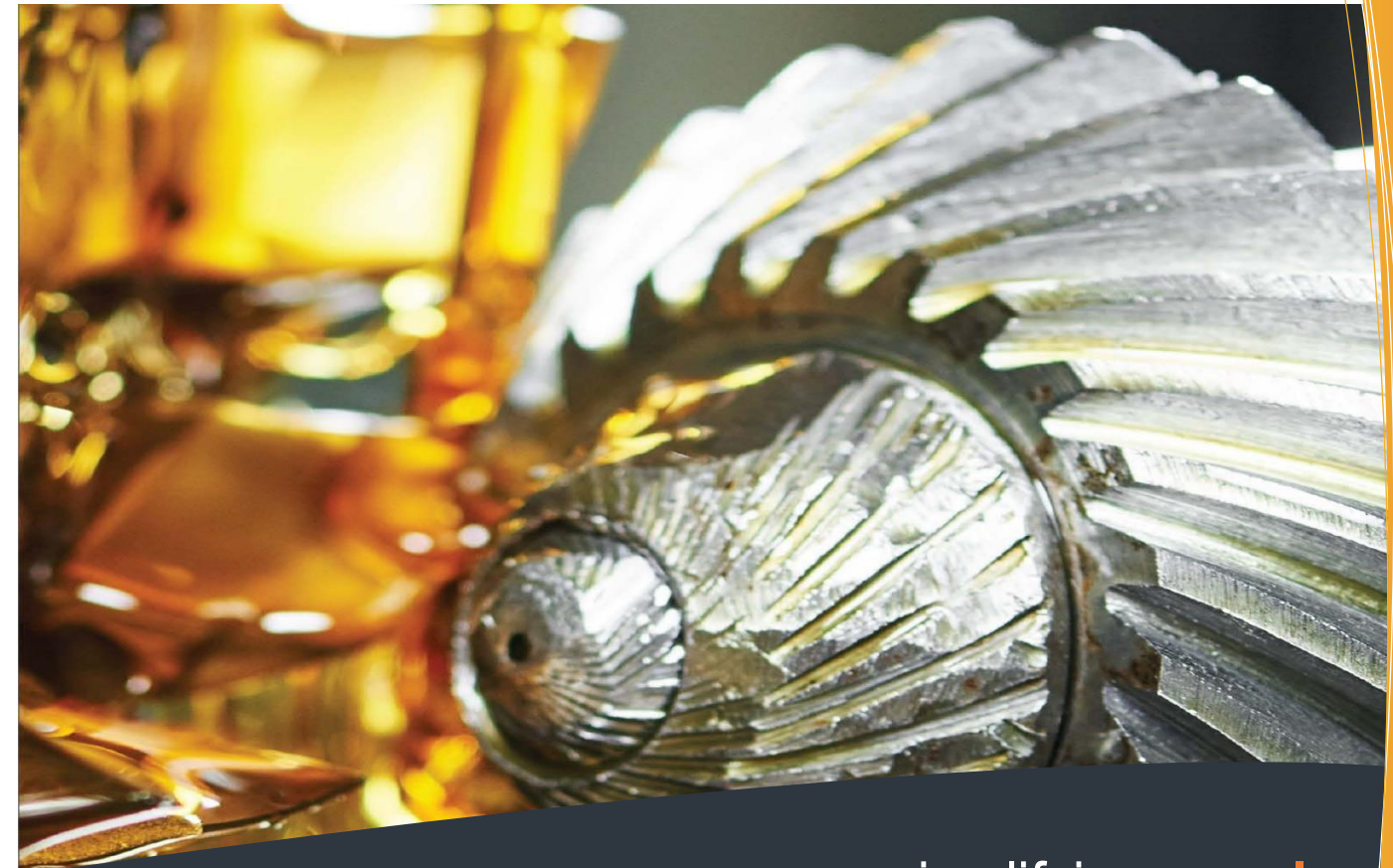
- Hydraulic Oils
- Industrial Gear Oils
- Bearing Greases
- Transformer Oils
- Pneumatic Oils
- High Performance Greases
- Metal Cutting fluids
- Heat transfer Oils
- Turbine Oils
- Compressor Oils

For specific information view the included PTTEP equivalence chart to find your standard OEM lubricants and speak to us about the PTTEP equivalent direct from factory solutions.

Authorised export resellers for PTTEP (Thailand) PCL across the full range of industrial lubricants.

ERA Oilfield  
Services  
lubricants

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simplifying **supply**  
**chains**

# Lubricants at work for you

## CONNECTING DIRECTLY TO FACTORY SUPPLY CHAINS

- Cost effective
- Managed supply chain
- Volume access
- International standard manufacturing
- Premium Product Ranges
- Marine
- Mining
- Industrial

Finding the right lubricant, when you need it, at a price that meets your budget and performs to the highest technical performance requirements of your clients.

ERA Oilfield Service (Thailand) Co Ltd., have over 10 years of experience supplying well service, drilling, completion and industrial equipment and services to SE Asia, MENA and Africa.

We now expand our excellence to ensuring that our clients have the best lubricants to maximise asset lifespan and improve asset performance.

# Lubricant solutions for your FPSO and marine needs

## HYDRAULIC OILS

- HYDRAULIC BIOSYN ( BIODEGRADEABLE )
- HLP (ANTI WEAR ANTI OXODANT ADDITIVES)
- HYDRAULIC HVI (HIGH VISCOSITY)
- HYDRAULIC OIL (STANDARD )

## GENERAL HYDRAULIC OILS STANDARDS

Denison HF-0, HF-1, HF-2  
Eaton Vickers M-2950-S, 1-286-S  
DIN 51524 Part 2 HLP Type  
US Steel 127, 136  
MAG (Cincinnati Milacron) P-68, P-69, P-70  
ISO 11158 Category HM  
GM LS-2  
SEB 181 222  
JCMAS HK P041  
Bosch Rexroth RD 90220-1  
ISO 15380 HEES  
Parker (formerly Denison) HF-1, HF-2, HF-6 ,  
Eaton 03-401-2010  
Vessel General Permit IVGP)

## TECHNOLOGY, PRODUCT AND LOGISTICS A TOTAL END TO END SOLUTION.

## FPSO AND MARINE LUBRICANTS

- HYDRAULIC BIOSYN (DEGRADEABLE)
- TRANSFORMER OILS
- COMPRESSOR OILS
- GEAR OILS (ENCLOSED)
- GEAR OIL (OPEN)
- TURBINE OILS
- ENGINE OILS
- HEAT TRANSFER OILS
- HP COMPLEX GREASES

## COMPARISON CHARTS FOR PTTEP PRODUCTS

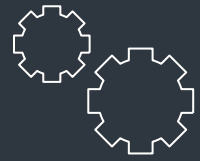
Regardless of your existing branded supply, ERA are delighted to offer the PTTEP range of lubricants meeting full international standards and full technical equivalence.

Refer to the following Comparison Charts, identify your existing branded supplier and note the PTTEP equivalent product.

Contact us to discuss how we can supply you with quality solutions in lubrication.

## ERA SOLUTIONS

- FACTORY DIRECT EXPORT PTTEP
- ERA BRANDED FACTORY SOLUTIONS
- LOGISTICS MANAGEMENT
- DIRECT DELIVERY GLOBALLY
- COMPARISON CHARTS FOR PTTEP PRODUCTS
- COST EFFECTIVE UNIT AND VOLUME PRICING
- CONTINUOUS CLIENT SUPPORT
- CERTIFIED PRODUCT RANGE TO INTERNATIONAL STANDARDS



## CUSTOM SOLUTIONS

Marine  
Oil and Gas  
Construction  
Automotive  
Heavy Industrial  
Mineral Mining  
Factory Production  
Metal Machining



## CONTACT US

CONTACT US VIA WEB:

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+66 8 4345 8730




# PRODUCT COMPARISON CHART

ตารางเปรียบเทียบผลิตภัณฑ์หล่อลื่น

# น้ำมันไฮดรอลิก

COMPARISON CHART FOR HYDRAULIC OIL


	SHELL	MOBIL	CALTEX	CASTROL	BP	IDEMITSU	OTHERS
<b>HYDRAULIC BIOSYN</b> 32, 46, 68	NATURELLE HF-E 32, 46, 68	EAL HYDRAULIC 32, 46	HYDRA 32, 46, 68	BIOBAR RANGE 32, 46, 68	-	-	CONOGO SYNTERRA 32, 46, 68 TOTAL BIO PRESLIA HT 32, 46, 68
<b>HYDRAULIC HVI</b> 15, 32, 46, 68, 100	TELLUS S2 V 15, 32, 46, 68, 100	DTE 10 EXCEL 15, 32, 46, 68, 100	RANDO HDZ 15, 32, 46, 68, 100	HYSPIN AWH-M 15, 32, 46, 68, 100	ENERGOL SHF-HV 15, 32, 46, 68, 100	-	ESSO UNIVIS N 15, 32, 46, 68, 100 SUN'SOIL HYDRAULIC HVI 32, 46, 68
<b>HYDRAULIC</b> 32, 37, 46, 68, 100	TELLUS S2 M 32, 46, 68, 100	DTE 24 (32), 25 (46), 26 (68), 27 (100)	RANDO HD 32, 46, 68, 100	HYSPIN AWS 32, 46, 68, 100	ENERGOL HLP-HM 32, 46, 68, 100	SUPER FLUID 32, 46, 68, 100	ESSO NUTO H 32, 46, 68, 100 SUN'SOIL HYDRAULIC AW 32, 46, 68, 100
<b>HLP</b> 32, 46, 68, 100	HYDRAULIC S1 M 32, 46, 68	-	HYDRAULIC OIL AW 32, 46, 68, 100	-	-	FLUID EX 32, 46, 68	BANGCHAK HYDRAULIC AW 32, 37, 46, 68, 100

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG

กลุ่มไฮดรอลิก  
HIGH VISCOSITY INDEX

# น้ำมันเกียร์อุตสาหกรรม

COMPARISON CHART FOR INDUSTRIAL GEAR OIL


	SHELL	MOBIL	CALTEX	CASTROL	BP	IDEMITSU	SUN'SOIL	OTHERS
<b>DRIVERA SYNTHETIC W</b> 150, 220, 320, 460, 680	OMALA S4 WE 150, 220, 320, 460, 680	GLYGOYLE 150, 220, 320, 460, 680	-	ALPHASYN PG 150, 220, 320, 460	ENERSYN SG-XP 150, 220, 320, 460, 680	-	-	KLUBERSYNTH GH 6-150, 6-220, 6-320, 6-460, 6-680 RENOLIN PG 150, 220, 320, 460, 680
<b>DRIVERA SYNTHETIC S</b> 220, 320, 460, 680	OMALA S4 GX 220, 320, 460, 680	MOBILGEAR SHC 630 (220), 632 (320), 634 (460), 636 (680)	MEROPA SYNTHETIC EP 220, 320, 460, 680	ALPHASYN EP 220, 320, 460, 680	ENERSYN EP-XF 220, 320, 460, 680	-	-	KLUBERSYNTH GEM 4-220N, 320N, 460N, 680N RENOLIN UNISYN CLP 220, 320, 460, 680
<b>DRIVERA SF</b> 150, 220, 320, 460, 680	OMALA S2 GX 150, 220, 320, 460, 680	MOBILGEAR 600XP 150, 220, 320, 460, 680	MEROPA XL 150, 220, 320, 460, 680	ALPHA SP 150, 220, 320, 460, 680	-	-	-	TOTAL CARTER XEP/EP 150, 220, 320, 460, 680 KLUBER OIL GEM 6-150-N, 6-220-N, 6-320-N, 6-460-N, 6-680-N MOTOREX GEAR COMPOUND PLUS 150, 220, 320, 460, 680
<b>GEAR OIL EP</b> 68, 100, 150, 220, 320, 460, 680	OMALA S2 G 68, 100, 150, 220, 320, 460, 680	MOBILGEAR 626 (68), 627 (100), 629 (150), 630 (220), 632 (320), 634 (460), 636 (680)	MEROPA 68, 100, 150, 220, 320, 460, 680	ALPHA EP 68, 100, 150, 220, 320, 460, 680	ENERGOL GR-XF 150, 220, 320, 460	GEAR LUBE 68, 100, 150, 220, 320, 460	INDUSTRIAL GEAR 150, 220, 320, 460	ESSO SPARTAN EP 150, 220, 320, 460
<b>DRIVERA W</b> 460	OMALA S1 W 460	600W SUPER CYLINDER 460	VANGUARD 460	-	ENERGOL DC-C 460	-	-	-
<b>DRIVERA SMR</b> 105, 130, 180, 220, 280, 460	GADUS S1 OG 100 [105] 200 [220]	-	-	SMR Heavy [105]	-	-	-	PETRACHEM SMR 5 [130] WHITMORE CB#9000 [280]
<b>HITACK H</b>	GADUS S1 OG 1600	MOBILTAC NC 375 1260	CHEVRON OPEN GEAR 800 NC	-	-	-	-	-

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG  
\* ตัวเลขที่แสดงในวงเล็บ [ ] คือความหนืดที่ 100 องศาเซลเซียส

กลุ่มไฮดรอลิก  
SYNTHETIC


# น้ำมันหล่อลื่นสำหรับเครื่องขุดเจาะ

COMPARISON CHART FOR ROCK DRILL OIL

	SHELL	MOBIL	CALTEX	CASTROL	BP	SUN'SOIL	OTHERS
<b>AIR TOOL EP</b> 320	AIR TOOL S2 A 320	ALMO 532 (320)	ARIES 320	ROCK DRILL 320	-	SUN'SOIL ROCK DRILL	VALVOLINE ROCK DRILL OIL 320

# น้ำมันเทอร์ไบน์

COMPARISON CHART FOR TURBINE OIL

 <b>ptt</b> Lubricants	SHELL	MOBIL	CALTEX	CASTROL	BP	IDEMITSU	OTHERS
<b>TERBIN M</b> 32, 46	-	DTE 732 M (32)	GST PREMIUM 32	-	-	-	-
<b>TERBIN EP</b> 32, 46, 68	TURBO CC 32, 46	DTE 832 (32), 846 (46)	GST EP 32, 46	PERFECTO XEP 32, 46, 68	TURBINOL X-EP 32, 46	-	MOBIL (ESSO) TERESSO GTC 32, 46
<b>TERBIN T</b> 32, 46, 68, 100	TURBO T 32, 46, 68, 100	DTE 732 (32), 746 (46), 768 (68)	REGAL R&O 32, 46, 68, 100	PERFECTO X 32, 46, 68	-	SUPER TURBINE OIL 32-s (32), 46-s (46), 68-s (68)	-
<b>TERBIN</b> 32, 46, 68, 100, 150, 220, 320	-	DTE LIGHT(32), MEDIUM(46), HEAVY MEDIUM(68), HEAVY(100)	-	PERFECTO T 32, 46, 68, 100	ENERGOL HL-C 32, 46, 68, 100, 150, 220, 320	FLUID EX 32, 46, 68	MOBIL (ESSO) TERESSO 32, 46, 68

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG

# น้ำมันคอมเพรสเซอร์อัดอากาศ และสารทำความเย็น

COMPARISON CHART FOR AIR AND REFRIGERATION COMPRESSOR OIL

 <b>ptt</b> Lubricants	SHELL	MOBIL	CALTEX	CASTROL	BP	CONOCO	OTHERS
<b>AEROL SYNTHETIC S 46</b>	CORENA S4R 46	RARUS SHC 1025	CETUS 46	AIRCOL SR 46	-	-	PETRO-CANADA COMPRO XL-S46 FUCHS RENOLIN UNISYN OL TOTAL DACNIS SH 46
<b>COMPRESSOR OIL S</b> 32, 46, 68	CORENA S2 R 46, 68	-	COMPRESSO OIL RA 32, 46, 68	AIRCOL PD 32, 46, 68	-	-	-
<b>COMPRESSOR OIL</b> 46, 68, 100, 150	CORENA S2 P 68, 100, 150	MOBIL RARUS 425 (46), 426 (68), 427 (100), 428 (150)	RPM COMPRESSOR OIL 46, 68, 100, 150	-	ENERGOL RC-R 32, 46, 68	-	-
<b>HIFREEZE R</b> 68	CLAVUS 68	GARGOYLE ARCTIC OIL 30 (68)	CAPELLA OIL WF 68	-	ENERGOL LPT 68	REFRIGERANT COMPRESSOR OIL 68	-
<b>HIFREEZE A</b> 68	REFRIGERATION OIL S2 FR-A 68	-	-	AIRCOL AMS 68	-	AMMONIA COMPRESSOR OIL 68	PETROCANADA REFLO A68

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG

# น้ำมันหล่อลื่นสำหรับ เครื่องยนต์ก๊าซอุตสาหกรรม


COMPARISON CHART FOR STATIONARY GAS ENGINE OIL

 <b>ptt</b> Lubricants	SHELL	MOBIL	CALTEX	CASTROL	PETRONAS	VALVOLINE	OTHERS
<b>METHANA 3540 SAE 40</b>	MYSELA S5 S, S5 N 40	PEGASUS 605 ULTRA 40	HDAX 7200 SAE 4	DURATEC HPL	GEO NG, BLG SAE 40	GEO PLUS LA SAE 40	-
<b>METHANA 2740 SAE 40</b>	MYSELA S3 S 40	PEGASUS 710, 610 40	HDAX 5300 40	-	-	-	GUASCOR 40
<b>METHANA 2540 SAE 40</b>	MYSELA S3 N 40	PEGASUS 805, 705 40	HDAX 5200 40	-	GEO XS 40	-	-
<b>GASTECH 500 SAE 40</b>	-	PEGASUS 605, 505 40	HDAX LOW ASH 40	-	-	-	-

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG

# จาระบีกลุ่มอุตสาหกรรม


COMPARISON CHART FOR INDUSTRIAL GREASE

 Lubricants	SHELL	MOBIL	CALTEX	CASTROL	BP	SUN'SOIL	OTHERS
<b>MOLY-PLEX SMR GREASE</b>	GADUS S4 V2600 AD	-	-	MILL BRASS	-	-	WHITMORE BUSHING LUBRICANT
<b>MOLY-PLEX GREASE 2</b>	GADUS S3 V460D 2	MOBILGREASE XHP 462 MOLY 2	MINE GREASE PREMIUM 2 STARPLEX POLY MPMG 2	-	ENERGREASE LC-M 2	-	TRANE LITHIUM COMPLEX MOLY 2
<b>LI-PLEX GREASE 2, 3</b>	GADUS S3 V220C 2	MOBIL UNIREX N 2, 3 MOBILGREASE XHP 222 (2)	CALTEX DELO GREASE EP / CALTEX LMX GREASE 2	LMX GREASE 2	ENERGREASE LC RANGE 2	-	PULZAR Z-4 TRANE SUPER LXT
<b>MOLY-EP GREASE 2</b>	-	MOBILGREASE SPECIAL 2	MOLYGREASE EP 2	-	ENERGREASE LMS-EP 23	-	PULZAR Z-3
<b>EP GREASE 0, 1, 2, 3</b>	GADUS S2 V220 0, 1, 2	MOBILUX EP 0, 1, 2, 3	EP GREASE C / MULTIFAK EP 0, 1, 2, 3	SPHEEROL EPL 0, 1, 2	ENERGREASE LS-EP RANGE 0, 1, 2, 3	SPECIAL EP GREASE 2, 3	PULZAR Z-2 TRANE SUPER LT 3
<b>MP GREASE 2, 3</b>	GADUS S2 V100 2, 3	-	-	SPHEEROL AP 2, 3	ENERGREASE LS RANGE 2, 3	-	PULZAR Z-1
<b>CHASSIS GREASE 2, 3</b>	CHASSIS HD 2, 3	-	-	-	-	CHASSIS GREASE 2, 3	PULZAR HEAVY GREASE CROCODILE SG-406
<b>CUP GREASE 3</b>	CUP GREASE 3	-	CUP GREASE 3	-	CUP GREASE 3	CUP GREASE 3	CROCODILE SG-306

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG

# น้ำมันหมุนเวียน / น้ำมันถ่ายเทความร้อน

COMPARISON CHART FOR CIRCULATING OIL / HEAT TRANSFER OIL

 Lubricants	SHELL	MOBIL	CALTEX	CASTROL	IDEMITSU	SUN'SOIL	OTHERS
<b>CIRCULAR P 150, 220, 320, 460, 680</b>	MORLINA S2 B 150, 220, 320, 460, 680	VACUOLINE 128 (150), 133 (220), 137 (320), 146 (460), 148 (680)	-	HYSPIN VG 150, 220	MECHANIC OIL 150, 220, 320, 460	-	-
<b>CIRCULAR 32, 46, 68, 100, 150</b>	MORLINA S1 B 100, 150	-	CANOPUS 32, 46, 68, 100, 150	MAGNA RANGE 32, 46, 68, 100, 150	-	CIRCULATING OIL	-
<b>HITEMP 600LT</b>	-	-	GS THERM AB 20	-	-	-	FUCHS RENOLIN THERM 330 ADDINOL HEAT TRANSFER OIL WX 15 TOTAL SERIOLA K 3120 EASTMAN THERMINOL 55
<b>HITEMP 600</b>	-	-	TEXATHERM 46	HEAT TRANSFER OIL 1590	DAPHNE THERMIC OIL 46S	SUNTHERM 46	CHEVRON HEAT TRANSFER OILS 46
<b>HITEMP 500</b>	HEAT TRANSFER OIL S2	MOBILTHERM 605	TEXATHERM 32	PERFECTO HT 5	THERMIC OIL 32	SUNTHERM 32	-

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# น้ำมันหม้อแปลงไฟฟ้า

COMPARISON CHART FOR TRANSFORMER OIL

 Lubricants	SHELL	MOBIL	CALTEX	CASTROL	BP	SUN'SOIL	OTHERS
<b>HIVOLT 99 PLUS (Naphthenic Base)</b>	DIALA S4	MOBILECT 44	TRANSFORMER OIL INHIBITED	TRANSFORMER OIL	-	-	NYNAS GIMINI X
<b>HIVOLT PLUS (Paraffnic Base)</b>	DIALA S4	-	-	-	-	-	-

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG

# น้ำมันตัดกลึงโลหะ

COMPARISON CHART FOR METAL CUTTING FLUID

ptt Lubricants	SHELL / HOUGHTON	MOBIL	CALTEX	CASTROL	IDEMITSU	SUN'SOIL	OTHERS
HIKUT N 20	MACRON 498 CF-20	MOBILMET 446 (20)	-	-	MAGPLUS GC-22 (20)	NEAT CUT 200 SERIES (20)	-
HIKUT N 10, 11	-	MOBILMET 422 (10), 424 (11)	-	VARIOCUT C 334 (10), C 462 (11)	MAGPLUS LA 10 (10), 15 (11)	NEAT CUT 200 SERIES (11)	-
HIKUT SYN W 10	HOCUT®767 HOCUT 767®B HOUGTO-GRIND®60	MOBILCUT 321 (10)	-	SYNTILO 9902 (10), 9930 (11)	AQUA COOL CC (11)	SUN'SOIL SYNGRIND (10), SYNCOOL (11)	-
HIKUT SEMI W 10, 30	-	MOBILCUT 231 (30)	-	CLEAREDGE 6519 (10)	-	-	-
HIKUT W 10	HOCUT 787-B HOCUT 795 H HOCUT 795 Shell Dromus BA	KUTWELL 42 MOBILCUT 122	AQUATEX 3180	COOLEGE B1	COOL E MAXICOOL MS	CUTTING OIL PREMIUM SOLUBLE	-

น้ำมันตัดกลึงโลหะชนิดที่ละลายน้ำ  
NEAT CUTTING OIL

น้ำมันตัดกลึงโลหะชนิดผสมน้ำ  
WATER SOLUBLE CUTTING OIL

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG

# น้ำมันหล่อลื่นจักรเย็บผ้า / น้ำมันหล่อลื่นรางเลื่อนอุตสาหกรรม

COMPARISON CHART FOR TEXTILE SPINNING / SLIDEWAY OIL

ptt Lubricants	SHELL	MOBIL	CALTEX	CASTROL	IDEMITSU	SUN'SOIL	OTHERS
SPINDLE OIL 10, 22	MORLINA S2 BL 10, 22	VELOCITE NO. 6 (10), 10 (22)	SPINDURA 10, 22	HYSPIN SPINDLE OIL 10, 22	SUPER MULTI OIL 10, 22	SPINDLE OIL 10, 22	BP SPINDLE OIL 10, 22
NEEDELA KLEAR 10, 22	-	-	-	-	-	-	TOTAL TIXO STAINLESS DIVINOL TEXTOL WE plus KLUBER MADOL 934
NEEDELA 10, 22, 32	-	-	-	FABRICAL HS 10, 22, 32	-	-	-
SLIDEWAY OIL 32, 68, 220	TONNA S2 M 32, 68, 220 TONNA S3 M 32, 68, 220	VACTRA NO. 1 (32), 2 (68), 4 (220)	WAY LUBRICANT X 68	MAGNA RANGE GC (32), BD (68), CF (220)	MULTI WAY 32MT (32), 68MT (68) SUPER MULTI OIL 32, 68, 220	WAYLUBE 68, 220	-

น้ำมันหล่อลื่นจักรเย็บผ้า  
TEXTILE SPINNING OIL

น้ำมันหล่อลื่นรางเลื่อนอุตสาหกรรม  
SLIDEWAY OIL

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG

# น้ำมันชุบโลหะ / น้ำมันกันสนิม

COMPARISON CHART FOR QUENCHING OIL / RUST PREVENTIVE OIL

ptt Lubricants	SHELL / HOUGHTON	MOBIL	CALTEX	CASTROL	IDEMITSU	SUN'SOIL	OTHERS
RUSTPROTEC M30	-	EXXON RUST-BAN 343	-	-	DAPHNE OIL COAT RE	RUST PREVENTIVE 570	-
RUSTPROTEC S30	RUSTKOTE 943	EXXON RUST-BAN 392	-	RUSTILO DWX 20	-	RUST PREVENTIVE 560	-
RUSTPROTEC S60	RUSTKOTE 945 HOUGHTON RUSTCOAT 301	-	-	-	-	-	-
HIQUENCH ULTRA 110	-	-	-	-	-	-	HOUGHTON QUENCH KT SONOCO HIGH SPEED QUENCHING OIL 1070 PETROFER MARQUENCH 729T
HIQUENCH ULTRA	VOLUTA OIL C 10401 SHELL VOLUTA C 400	MOBILFENSO 90	-	ILOQUENCH 22	-	-	HOUGHTON DASCO-QUENCH LBA-15 CONOCO HYDROCLEAR QUENCH OIL 22HS
HIQUENCH 33	VOLUTA OIL C 32 (33) SHELL VOLUTA C 202	MOBILTHERM R 28 (33)	QUENCHTEX A (18)	ILOQUENCH 1 (18), 32 (33)	MASTER QUENCH A (18)	-	-

น้ำมันกันสนิม  
RUST PREVENTIVE OIL

น้ำมันชุบโลหะ  
QUENCHING OIL

\* ตัวเลขที่แสดงในวงเล็บ ( ) คือความหนืดตามระบบ ISO VG

# TYPICAL CHARACTERISTIC

Product	ISO VG	Density @ 15°C , g/cm <sup>3</sup>	Kinematic Viscosity at 40 °C , cSt	Kinematic Viscosity at 100 °C , cSt	VI	Flash Point , °C	Pour Point , °C	TAN , mgKOH/g
HYDRAULIC BIOSYN 32	32	0.94	32.0	6.10	147	280	-36	-
HYDRAULIC BIOSYN 46	46	0.94	46.0	8.10	144	264	-36	-
HYDRAULIC BIOSYN 68	68	0.94	68.0	11.0	146	290	-36	-
HYDRAULIC HVI 15	15	0.87	15.0	3.86	15	200	-33	0.55
HYDRAULIC HVI 32	32	0.88	32.0	6.45	158	216	-36	0.55
HYDRAULIC HVI 46	46	0.88	46.0	8.36	155	220	-33	0.60
HYDRAULIC HVI 68	68	0.88	68.0	10.8	152	228	-33	0.62
HYDRAULIC HVI 100	100	0.89	100	15.2	133	232	-33	0.62
HYDRAULIC 32	32	0.87	32.0	5.56	103	230	-12	0.45
HYDRAULIC 37	-	0.87	37.0	5.88	103	232	-12	0.47
HYDRAULIC 46	46	0.88	46.0	6.92	102	242	-9	0.50
HYDRAULIC 68	68	0.88	68.0	8.90	102	256	-9	0.55
HYDRAULIC 100	100	0.89	100	11.1	98	276	-6	0.58
HLP 32	32	0.87	32.0	5.46	104	232	-9	0.30
HLP 46	46	0.88	46.0	6.88	103	240	-9	0.34
HLP 68	68	0.88	68.0	8.77	99	248	-9	0.40
HLP 100	100	0.89	100	11.1	96	270	-6	0.40
DRIVERA SYNTHETIC S 220	220	0.86	220	26.1	149	240	-45	0.68
DRIVERA SYNTHETIC S 320	320	0.86	320	35.3	153	242	-42	0.68
DRIVERA SYNTHETIC S 460	460	0.86	460	47.1	159	248	-39	0.70
DRIVERA SYNTHETIC S 680	680	0.86	680	65.2	167	254	-39	0.70
DRIVERA SYNTHETIC W 150	150	1.06	150	26.2	209	282	-45	0.06
DRIVERA SYNTHETIC W 220	220	1.06	220	37.6	220	284	-42	0.06
DRIVERA SYNTHETIC W 320	320	1.06	320	54.2	237	284	-39	0.07
DRIVERA SYNTHETIC W 460	460	1.07	460	76.3	246	284	-36	0.08
DRIVERA SYNTHETIC W 680	680	1.07	680	111	261	286	-33	0.10
DRIVERA SF 150	150	0.87	150	16.2	114	246	-33	0.73
DRIVERA SF 220	220	0.87	220	22.3	119	238	-30	0.72
DRIVERA SF 320	320	0.88	320	29.9	122	234	-30	0.72
DRIVERA SF 460	460	0.88	460	37.7	125	234	-27	0.73
DRIVERA SF 680	680	0.88	680	50.2	129	230	-24	0.73
DRIVERA W 460	460	0.90	460	32.0	101	Min 250	-9	0.38
GEAR OIL EP 68	68	0.89	68.0	8.90	102	218	-12	0.15
GEAR OIL EP 100	100	0.89	100	11.4	101	224	-12	0.17
GEAR OIL EP 150	150	0.90	150	15.2	100	226	-12	0.17
GEAR OIL EP 220	220	0.90	220	19.6	96	236	-12	0.17
GEAR OIL EP 320	320	0.90	320	24.7	96	238	-12	0.19
GEAR OIL EP 460	460	0.91	460	30.7	96	242	-12	0.19
GEAR OIL EP 680	680	0.91	680	39.5	95	266	-12	0.19
DRIVERA SMR 105	-	1.00	5380	107	-	Min 220	-	-
DRIVERA SMR 130	-	1.00	9080	123	-	Min 220	-	-
DRIVERA SMR 180	-	1.01	13910	181	-	Min 220	-	-
DRIVERA SMR 220	-	1.03	22690	236	-	Min 220	-	-
DRIVERA SMR 280	-	1.02	33100	284	-	Min 220	-	-
DRIVERA SMR 460	-	1.03	105200	463	-	Min 220	-	-
HITACK H	-	-	-	1150	-	260	-	-
AEROL SYNTHETIC S 46	46	0.99	46.0	8.83	170	276	-57	-
COMPRESSOR OIL S 32	32	0.86	32.0	5.58	112	224	-15	0.21
COMPRESSOR OIL S 46	46	0.86	46.0	6.84	104	232	-12	0.22
COMPRESSOR OIL S 68	68	0.87	68.0	8.82	103	244	-12	0.25
COMPRESSOR OIL 46	46	0.88	46.0	6.85	100	222	-9	0.28
COMPRESSOR OIL 68	68	0.88	68.0	8.67	96	226	-6	0.29
COMPRESSOR OIL 100	100	0.89	100	11.4	96	232	-6	0.29
COMPRESSOR OIL 150	150	0.89	150	14.9	96	240	-6	0.31
HIFREEZE A 68	68	0.86	68.0	8.95	108	250	-42	0.01
HIFREEZE R 68	68	0.90	68.0	6.74	30	200	-33	<0.02
MOLD OIL N 01	-	-	8.68	-	-	-	-	-
MOLD OIL N 02	-	-	8.12	-	-	154	-	-
MOLD OIL C	-	-	41.6	-	-	162	-	-
MOLD OIL C 02	-	0.89	46.3	-	-	-	-	-
TERBIN M 32	32	0.84	32.0	5.92	131	242	-12	0.04
TERBIN M 46	46	0.85	46.0	7.61	130	250	-12	0.04
TERBIN EP 32	32	0.86	32.0	5.58	112	218	-9	0.10
TERBIN EP 46	46	0.86	46.0	6.95	108	224	-9	0.15
TERBIN EP 68	68	0.87	68.0	9.12	104	234	-9	0.14
TERBIN T 32	32	0.86	32.0	5.58	112	236	-18	0.14
TERBIN T 46	46	0.86	46.0	6.84	104	244	-9	0.15
TERBIN T 68	68	0.87	68.0	8.82	103	250	-9	0.15
TERBIN T 100	100	0.88	100	11.2	98	264	-9	0.15
TERBIN 32	32	0.87	32.0	5.44	104	236	-9	0.14
TERBIN 46	46	0.88	46.0	6.78	102	244	-9	0.15
TERBIN 68	68	0.88	68.0	8.69	100	250	-9	0.15
TERBIN 100	100	0.89	100	11.1	96	264	-9	0.15
TERBIN 150	150	0.89	150	14.8	96	272	-9	0.15
TERBIN 220	220	0.89	220	18.9	95	278	-9	0.15



# TYPICAL CHARACTERISTIC

Product	ISO VG	Density @ 15°C , g/cm <sup>3</sup>	Kinematic Viscosity at 40 °C , cSt	Kinematic Viscosity at 100 °C , cSt	VI	Flash Point , °C	Pour Point , °C	TAN , mgKOH/g
TERBIN 320	320	0.90	320	24.1	95	284	-9	0.15
CIRCULAR P 150	150	0.89	150	14.8	96	226	-15	0.10
CIRCULAR P 220	220	0.90	220	19.6	95	236	-12	0.11
CIRCULAR P 320	320	0.90	320	23.8	92	240	-12	0.11
CIRCULAR P 460	460	0.90	460	29.8	92	246	-12	0.12
CIRCULAR 32	32	0.87	32.0	5.36	100	200	-9	0.09
CIRCULAR 46	46	0.88	46.0	6.72	100	218	-9	0.09
CIRCULAR 68	68	0.88	68.0	8.60	98	222	-6	0.09
CIRCULAR 100	100	0.89	100	11.1	96	228	-6	0.09
CIRCULAR 150	150	0.90	150	14.9	96	236	-6	0.10
HITEMP 600 LT	-	0.87 (25°C)	12.8	2.70	7	210	-63	0.03
HITEMP 500	-	0.87	30.0	5.23	97	212	-9	0.29
HITEMP 600	-	0.88	46.0	6.76	97	220	-6	0.29
SPINDLE OIL 10	10	0.85	10.0	2.76	85	180	-9	0.23
SPINDLE OIL 22	22	0.87	22.0	4.28	100	204	-9	0.23
SLIDEWAY OIL 32	32	0.88	32.0	5.44	98	212	-9	0.54
SLIDEWAY OIL 46	46	0.89	46.0	6.79	98	220	-9	0.54
SLIDEWAY OIL 68	68	0.89	68.0	8.71	98	220	-9	0.55
SLIDEWAY OIL 220	220	0.89	220	19.2	97	240	-6	0.55
NEEDELA 10	10	0.83	10.0	2.67	116	174	-12	0.20
NEEDELA 22	22	0.84	22.0	4.39	110	208	-12	0.22
NEEDELA 32	32	0.85	32.0	5.54	110	226	-12	0.23
AIRTOOL EP	320	0.89	320	24.9	100	248	-21	-
NATURECOOL W01	-	-	43.9	-	-	-	-	13.0
NATURECOOL W02	-	-	43.9	-	-	-	-	13.0
HIKUT SYN W10	-	-	1.79	-	-	-	-	-
HIKUT SEMI W30	-	-	65.3	-	-	-	-	-
HIKUT SEMI W10	-	-	10.0	-	-	-	-	-
HIKUT N10	-	0.86	11.4	-	-	168	-	-
HIKUT N11	-	0.87	22.0	-	-	176	-	-
HIKUT N20	-	-	30.5	-	-	200	-	-
HIKUT W10	-	-	42.0	-	-	-	-	-
HIQUENCH ULTRA 110	-	0.84	24.2	4.95	133	232	-	-
HIQUENCH ULTRA	-	0.84	21.6	4.56	100	230	-12	0.30
HIQUENCH 33	-	0.86	31.6	5.28	98	200	-9	0.20
RUSTPROTEC M30	-	0.84	9.56	-	-	168	-27	-
RUSTPROTEC M60	-	0.84	9.57	-	-	168	-27	-
RUSTPROTEC S30	-	-	-	-	-	48	-	-
RUSTPROTEC S60	-	-	-	-	-	48	-	-
PUNCHING OIL AF 1	-	0.77	1.40	-	-	64	-	0.05
PUNCHING OIL AF 8	-	0.82	7.40	-	-	170	-	3.69
METAFORM 10P	-	0.86 (30°C)	8.43	2.44	113	148	-	-
METAFORM 22T	-	0.87 (30°C)	22.8	4.53	112	190	-	-
METAFORM 54T	-	0.87 (30°C)	53.4	7.67	107	204	-	-
METAFORM 50V	-	0.89 (30°C)	51.3	7.70	114	202	-	-
METAFORM 89V	-	0.89 (30°C)	8.93	11.2	113	220	-	-
METAROLL W02	-	-	45.9	-	-	-	-	-
CLEARA SYNTHETIC 220	220	0.91	221	26.1	151	304	-33	-
PARAFEX 2000M	-	0.87	29.7	5.18	105	230	-9	-
PARAFEX 3000M	-	0.89	99.7	11.2	97	266	-9	-
PARAFEX 4000M	-	0.90	503	32.5	96	320	-12	-
AROMEX 2000	-	1.00	-	9.10	-	234	15	-
AROMEX 3000	-	0.99	-	29.9	-	284	15	-
AROMEX 4000	-	1.00	-	80.1	-	314	12	-
RUBBERA 400	-	0.93	363	20.2	-	276	-	-
RUBTEDA 401	-	0.95	-	19.8	-	270	-	-
RUBTEDA 502	-	0.96	-	24.1	-	272	-	-
WHITECH 2	-	0.83	7.12	2.28	104	158	-39	-
WHITECH 3	-	0.83	13.2	3.41	116	204	-24	-
WHITECH 4	-	0.84	19.5	4.26	112	228	-21	-
WHITECH 8	-	0.85	41.4	7.31	142	252	-15	-
NAPHTEX S13	-	0.88	96.8	10.5	-	252	-	-
NAPHTEX S14	-	0.92	389	19.8	-	264	-15	-
NAPHTEX S15	-	0.91	67.1	7.02	-	202	-33	-
CYLINDER OIL 50	50	-	-	8.00 - 15.0	-	180	24	-
CYLINDER OIL 90	90	-	-	18.0 - 22.0	-	200	27	-
CYLINDER OIL 250	250	-	-	60.0 - 80.0	-	230	27	-

Product	ISO VG	Density @ 15°C , g/cm <sup>3</sup>	Kinematic Viscosity at 40 °C , cSt	Kinematic Viscosity at 100 °C , cSt	VI	Flash Point , °C	Pour Point , °C	TBN, mgKOH/g	Sulfated Ash, %wt.
GASTECH 500	40	0.875	129	14.4	110	262	-12	5.7	0.47
METHANA 2540	40	0.883	133	14.5	108	256	-15	5.7	0.44
METHANA 2740	40	0.876	124	13.8	109	282	-15	7.2	0.65
METHANA 3540	40	0.873	115	13.4	112	278	-33	6.8	0.54