

OEHC® LUBRICANTS PRODUCT INDEX

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OEHC® CJ-4 / SN 15W40 DIESEL MOTOR OIL

OEHC® CJ-4/SN 15W-40 motor oil is for use in diesel engines under service conditions from mild to heavy duty with fuel of any sulfur level. This oil is recommended for use in nearly all two- and four-cycle diesel applications. The current formulation meets all API Service Classifications up to CJ-4 including CI-4, CI-4 PLUS, and CH-4. OEHC® CJ-4/SN 15W-40 is also suitable where Cummins CES 20081, Mack EO-O Premium Plus, Detroit Diesel DDC 93K218, Volvo VDS-4, Renault VI RLD-3, CAT® ECF-3 and ECF-1-a, ACEA E7 and E9 specifications are demanded.

This oil should not be used in Caterpillar TO-4 applications, two-cycle gasoline engines, aircraft engines, or EMD Diesel engines.

Typical Properties:

Product: OEHC® CJ-4/SN 15W-40	
Product Code:	61129
SAE Viscosity Grade	15W-40
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	15.6
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	118
Viscosity Index (ASTM D-2270)	139
Total Base Number (ASTM D-2896)	9.2
Flash Point °C (°F) (ASTM D-92)	237,(458)
Pour Point °C (°F) (ASTM D-97)	-34,(-29)
Zn (ppm)	1100
Ca (ppm)	2300
P (ppm)	1000

Revision September 06, 2016

OEHC[®] CF-2 / SL DIESEL MOTOR OILS

OEHC[®] CF-2, CF/SL Diesel Motor Oils are for use in diesel engines under service conditions from mild to heavy duty with fuel of any sulfur level. The current formulations meet API Service Classifications up to CF, CF-2. Several viscosity grades are also suitable where Allison C-4 or Caterpillar TO-2 fluids are specified. Follow the performance specifications below.

These oils should not be used in Caterpillar TO-4 applications, two-cycle gasoline engines, aircraft engines, or EMD Diesel engines. Always follow manufacturer's recommendations for API specification and grade.

Performance Specifications:

Product Code	1111	1112	1113	1114	1115
Specification	10W	20W	30	40	50
API CD*	X	X	X	X	X
API CD-II*			X	X	X
API CE*	X	X	X	X	X
API CF	X	X	X	X	X
API CF-2			X	X	X
API SH	X	X	X	X	X
API SJ		X	X	X	X
API SL		X	X	X	X
Allison C-4	P		P		
CAT TO-2	X	X	X	X	

X = Meets requirements
 * = Obsolete Service Category
 P = Meets performance requirements, follow viscosity

Typical Properties:

Product: OEHC [®] CF, CF-2/SL Monograde Diesel Motor Oils					
Product Code	1111	1112	1113	1114	1115
SAE Viscosity	10W	20W	30	40	50
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	7.0	8.5	11.0	14.0	18.0
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	44	63	95	135	200
Viscosity Index (ASTM D-2270)	110	105	105	100	100
API Gravity (ASTM D-1298)	30.8	30.0	28.0	27.0	27.0
Sulfated Ash, % (ASTM D-874)	1.20	1.20	1.20	1.20	1.20
Total Base Number (ASTM D-2896)	9.0	9.0	9.0	9.0	9.0

Revision July 25, 2012

OEHC[®] CH-4 / SJ DIESEL MOTOR OILS

OEHC[®] CH-4/SJ Diesel Motor Oils are for use in diesel engines under service conditions from mild to heavy duty with fuel of any sulfur level. These diesel engine oils are recommended for use in many older two- and four-cycle diesel applications. These formulations meet the API CH-4/SJ service classification and are also recommended for use in older API service classifications such as CD.

OEHC[®] CH-4/SJ Diesel Motor Oils deliver superior performance by protecting against corrosion, soot thickening, sludge formation, and valve train, ring, and liner wear. An advanced detergent system neutralizes impurities to prevent deposit formation on engine parts.

These oils should not be used in Caterpillar TO-4 applications, two-cycle gasoline engines, aircraft engines, or EMD Diesel engines. Always follow equipment manufacturer's recommendations on viscosity and service categories.

Typical Properties:

Product: OEHC [®] CH-4/SJ Diesel Motor Oils					
SAE Viscosity Grade	10W-30	30	40	50	20W-50
Product Code	90592	90591	90593	90594	90275
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	11.2	11.4	14.2	18.6	17.0
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	70.7	100.3	138.0	205.8	142.3
Viscosity Index (ASTM D-2270)	151	100	100	100	130
API Gravity (ASTM D-1298)	31.2	27.5	27.5	27.5	29.3
Zinc, ppm	1300	1300	1300	1300	1300
TBN, mg KOH/g	10.5	10.5	10.5	10.5	10.5

Revision November 13, 2015

OEHC® SAE 25W60 API CF-4 / SG DIESEL MOTOR OILS

OEHC® CF-4/SG Diesel Motor Oils are for use in diesel engines under service conditions from mild to heavy duty with fuel of any sulfur level. These diesel engine oils are recommended for use in many older two- and four-cycle diesel applications. These formulations meet the API CF-4/SG service classification and are also recommended for use in older API service classifications such as CD.

OEHC® CF-4/SG Diesel Motor Oils deliver superior performance by protecting against corrosion, soot thickening, sludge formation, and valve train, ring, and liner wear. An advanced detergent system neutralizes impurities to prevent deposit formation on engine parts.

These oils should not be used in Caterpillar TO-4 applications, two-cycle gasoline engines, aircraft engines, or EMD Diesel engines. Always follow equipment manufacturer's recommendations on viscosity and service categories.

Typical Properties:

Product:	OEHC® CF-4/SG Diesel Motor Oils
SAE Viscosity Grade	25W-60
Product Code	90588
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	22.6
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	216.1
Viscosity Index (ASTM D-2270)	128
API Gravity (ASTM D-1298)	29.3
Zinc, ppm	1300
TBN, mg KOH/g	7.5

Revision November 13, 2015

OEHC® SN - CONVENTIONAL MOTOR OILS

OEHC® API Service SN Conventional Motor Oils are designed to meet the high performance requirements initiated in 2011 automotive lines. OEHC® API SN Conventional Motor Oils use high quality petroleum base stocks along with state of the art additive technology to create high quality motor oil for use in gasoline powered engines. OEHC® API Service SN Conventional Motor Oils provide excellent protection against wear and deposits in the engine, while extending the life of emission control components. This premium blend of motor oil allows up to 5,000 miles between oil changes.

OEHC® API Service SN Conventional Motor 5W-20, 5W-30, and 10W-30 viscosities are Resource Conserving and are ILSAC GF-5 approved. These oils are fully backwards compatible to all older API gasoline powered engine specifications such as SM, SL, SJ, etc.

Always follow manufacturer's recommendations for service classification, viscosity grade and drain intervals.

Typical Properties:

Product: OEHC® SN Conventional Motor Oils					
SAE Viscosity Grade	5W-20	5W-30	10W-30	10W-40	20W-50
API Classification, (ILSAC Classification)	SN (GF-5)	SN (GF-5)	SN (GF-5)	SN	SN
Product Code	51125	51126	51127	51128	51120
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	8.6	10.9	9.9	15.7	17.9
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	49.7	64.9	64.1	107.4	147.4
Viscosity Index (ASTM D-2270)	151	160	139	153	134
Total Base Number (ASTM D-2896)	7.9	7.9	7.9	7.9	7.9
API Gravity (ASTM D-1298)	33.0	33.0	31.7	32.2	29.2
Zn (ppm)	850	850	850	850	850
Ca (ppm)	2100	2100	2100	2100	2100

Revision October 23, 2015

OEHC® NON - DETERGENT MOTOR OILS

OEHC® Non-Detergent Motor Oils are general purpose lubricants. OEHC® Non- Detergent Motor Oils are mixtures of petroleum base stocks to achieve a viscosity equivalent to the denoted SAE viscosity grade. These lubricants are efficient for many types of general lubrication where no performance additives are needed.

Always follow manufacturer's recommendation for quality certification and SAE viscosity grade.

Typical Properties:

Product: OEHC® Non Detergent Motor Oil					
SAE Viscosity	10	20	30	40	50
Product Code	1151	1152	1153	90586	90587
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	7.0	8.5	10.9	14.0	18.2
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	48.0	65.0	87.0	137.4	202.4
Viscosity Index (ASTM D-2270)	102	101	111	98	98
API Gravity (ASTM D-1298)	33.8	32.0	28.3	29.3	29.3

Revision November 13, 2015

OEHC[®] AUTOMATIC TRANSMISSION FLUID (ATF) M/D III

OEHC[®] Automatic Transmission Fluid M/D III is formulated from select highly refined base oils blended with a specially balanced additive combination. This product has outstanding high temperature oxidation resistance, dispersancy and detergency, offers excellent protection against corrosion, wear and rust, and is compatible with the various automatic transmission components such as elastomeric seals and plastic parts.

OEHC[®] ATF M/D III's high viscosity index permits use over a wide temperature range by providing excellent low temperature fluidity and at the same time retaining the desired viscosity at high temperatures. It contains special friction modifiers that provide the smooth lock-ups required by the ATF specifications.

OEHC[®] ATF M/D III is recommended for use in most types of automatic transmissions model year 2005 and earlier. This generally includes all automatic transmissions except those specifying Ford M2C33-F (Type F) fluids. It may also be used in Allison automatic transmissions, including those that require C-4 fluids, and CATERPILLAR[®] transmissions requiring TO-2 performance. It satisfies Ford specifications M2C138-CJ and M2C166-H.

Always follow manufacturer's recommendations for fluid type and specification.

Typical Properties:

Product:	OEHC [®] ATF M/D III
Product Code	1311
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	7.0
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	33.4
Viscosity Index (ASTM D-2270)	179
API Gravity (ASTM D-1298)	33.6

Revision October 30, 2014

OEHC[®] AUTOMATIC TRANSMISSION FLUID (ATF) MERCON V

OEHC[®] ATF MERCON V is an automatic transmission fluid specifically designed to work in a wide variety of automatic transmissions. OEHC[®] ATF MERCON V formulation has been extensively field tested to demonstrate the fluids' compatibility in a variety of types and brands of automatic transmissions. OEHC[®] ATF MERCON V automatic transmission fluid demonstrates excellent protection from wear, sludge buildup, and corrosion in the transmission. Refer to table for compatibility with specific types of transmissions.

Features:

- Protects metal parts from corrosion
- Provides excellent oxidative stability under severe conditions
- Reduces sludge and varnish build-up
- Protects transmission gears and allows them to operate smoothly
- Maintains lubricity
- Flows well for cold start-up
- Provides excellent shift feel with no shudder
- Prevents fluid breakdown at higher operating temperatures
- Thoroughly field tested
- Performance surpasses minimum specifications

Typical Properties: OEHC[®] ATF MERCON V is offered in a dyed red version and natural amber brown. The two products are differentiated by product code.

Product: OEHC [®] ATF MERCON V Automatic Transmission Fluid		
Product Code	1310	91310
Color	Red	Amber brown
Kinematic Viscosity @ 100 °C cSt (ASTM D-445)	7.6	7.6
Kinematic Viscosity @ 40 °C cSt (ASTM D-445)	39.7	39.7
Viscosity Index (ASTM D-2270)	165	165
API Gravity (ASTM D-1298)	32.0	32.0

OEHC® ATF MERCON V Automatic Transmission Fluid Suitable for use in these Applications:

- Allison C-4
- Allison TES-295
- Allison TES-389
- Audi G 052 162
- Audi G 052 990
- Audi G 055 025
- BMW 7045E
- BMW LA2634
- BMW LT 71141
- BMW 5 Series
- Chrysler ATF's
- Chrysler Mopar AS68RC
- Dexron®
- Dexron®-II and II D
- Dexron®- III G and III H
- Esso LT 71141
- Ford FNR5
- Ford Mercon®
- Ford Mercon ® V
- Ford XL-12 Transfer Case
- GM AutoTrak II
- Honda ATF-Z1
- Hyundai/Kia SP-II, and SP-III
- Idemitsu K17
- JASO 1-A
- JWS 3309, 3314, 3317
- Kia Red-1
- MAN 339: F, V1, V2, Z1, and Z2
- Mazda ATF-M III
- Mazda ATF-MV
- Mercedes GL-45 (ATF 3403)
- Mercedes Benz: 236.1, 236.2, 236.3, 236.5, 236.6, 236.7, 236.9, 236.10, 236.11, 236.81
- Mitsubishi Diamond SP-II , SP-III, and Diaqueen ATF J2, J3
- Nissan 402
- Nissan Matic-D, Matic-J, and Matic K
- PSA AL-4
- Renault DP-0
- Shell 3403
- Shell LA 2634
- Subaru ATF, ATF-HP
- Suzuki 3314 and 3317
- Texaco N402, ETL-7045E, ETL- 8072B
- Toyota T, T-II,T-III, and T-IV
- Voith 55.6335.XX (G607), (G1363)
- Voith H55.6336
- Volvo Pass Car (4-6 sp)
- Volvo; 97340, 97341
- Volvo P/N 1161540/1161640
- VW G 055 025
- VW G 052 162
- VW G 052 990
- ZF TE-ML 03D, 04D, 05L, 09, 14A, 14B, 16L, 17C

OEHC® ATF MERCON V Automatic Transmission Fluid is a high viscosity product and does not meet the viscosity profiles of the following low viscosity specifications. Field testing has demonstrated proof of no harm but will not provide fuel economy benefits of the genuine oils.

- Aisin Warner AW-1
- Honda DW-1
- Hyundai/Kia SP-IV, SPH-IV, SP- IV RR, and SP-4M
- Hyundai NWS-9638
- JASO 1-A-LV
- JWS 3324
- Mitsubishi ATF-J3 and SP-IV
- Nissan Matic-S and Matic-W
- ZF 6 Speed (S671 090 255)
- Toyota WS
- Audi G 055 005 and G 055 162
- BMW 83 22 0 142 516
- Mercedes Benz 236.12, 236.91, and 236.14
- Saab 93 165 147
- VW G 052 540, G 055 005, and G 055 162
- Volvo 6 Speed MY 2011-2013 P/N 31256774/31256675

OEHC® ATF MERCON V Automatic transmission fluid is not recommended for: Continuous variable transmissions (CVT), Ford Type F, Ford Mercon® SP & LV, and Mercedes Benz 236.8 and 236.15. Always follow manufacturers' recommendations.

Revision November 19, 2014

OEHC® GL-1 GEAR OILS

OEHC® GL-1 Gear Oils are non-detergent, general purpose lubricants. OEHC® GL-1 Gear Oils are a mixture of petroleum base stocks to achieve a viscosity equivalent to SAE 90 and SAE 140 gear oils. These lubricants are efficient for many types of general lubrication where no performance additives are needed.

API GL-1 gear oils are often required for spiral-bevel and worm gears and some manual transmissions without synchronizers in trucks or farming equipment. Always follow manufacturer's recommendation for quality certification and SAE viscosity grade.

Typical Properties:

Product: OEHC® GL-1 Gear Oils		
Product Code	1441	1442
SAE Viscosity Grade, J306	90	140
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	15.48	28.6
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	163.49	419.4
Viscosity Index (ASTM D-2270)	96	95
API Gravity (ASTM D-1298)	29.6	28.0

Revision November 16, 2015

OEHC® MULTI - PURPOSE GEAR OILS

OEHC® Multi-Purpose Gear Oils are used for the lubrication of gears operating under severe conditions, including automotive applications. High quality HVI base stocks blended with a sulfur- phosphorous extreme pressure additive package provide superior performance including anti-weld, anti-scuff, and anti-wear properties.

OEHC® Multi-Purpose Gear Oils are available in API GL-4 and GL-5 performance levels. The GL- 4 level is designed for spiral-bevel and hypoid gears under moderate speeds and loads. This level is recommended for some manual transmissions and transaxles.

OEHC® GL-5 Multi-Purpose Gear Oils have multi-grade characteristics and are recommended for hypoid gears in moderate and severe service, including shock-loading, and some manual transmissions. GL-5 Gear Oils also meet the MIL-L-2105D specification.

OEHC® GL-4, GL-5 Multi-Purpose Gear Oils are not intended for use in automotive gear boxes that require a limited slip gear oil, these applications are covered by OEHC® LS GL-5 gear oils. Always follow manufacturers' recommendations for correct type and viscosity grade of gear lubricant.

Typical Properties:

Product: OEHC® GL-4 and GL-5 Gear oils				
Product Code	1421	1422	1411	1412
API Classification	GL-4	GL-4	GL-5	GL-5
SAE Viscosity Grade	90	140	80W-90	85W-140
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	14.8	30.2	15.6	27.2
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	149.5	415.0	160.7	378.1
Viscosity Index (ASTM D-2270)	98	98	99	97
API Gravity (ASTM D-1298)	28.3	28.0	28.2	26.3

Revision July 26, 2012

OEHC® TO-4 FLUIDS

OEHC® TO-4 Fluids are formulated to meet the CATERPILLAR® TO-4 transmission specification. These fluids provide smooth power transfer in the extreme operating conditions of modern heavy duty equipment. OEHC® TO-4 Fluids do not contain VI improvers or friction modifiers and are available in SAE 10W, 30, 50 and 60 monogrades. TO-4 Fluids meet the obsolete CAT® TO-2 specifications and the SAE 10W and 30 grades can be used in Allison C-4 applications.

OEHC® SAE 10W TO-4 Fluid is suitable for use in equipment calling for CAT® HYDO™ Advanced 10. Other manufacturers using a TO-4 type fluid are Eaton Powershift, Komatsu- Dresser, and Terex. Consult manufacturer’s recommendations before using.

OEHC® TO-4 Fluids can be used where the following specifications are required:

- CAT® TO-4 (formal approvals are not issued)
- CAT® TO-2 (OBSOLETE)
- Allison C-4 (off-road applications) Komatsu Micro Clutch (formal approvals are not issued)
- Komatsu Equipment (formal approvals are not issued)
- Vickers M-2950-S Dana Powershift* Tremac/TTC* Eaton Fuller*
- CAT® HYDO™ Advanced 10 **

* Where TO-4 is called for

**SAE 10W viscosity grade

Always follow equipment manufacturer’s recommendations for proper fluid type. TO-4 fluids ARE NOT for use in farm tractors requiring transmission hydraulic fluids.

Typical Properties:

Product	OEHC® TO-4 Fluids			
SAE Viscosity Grade	10W	30	50	60
Product Code	1301	1303	1305	1306
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	6.5	11.0	19.0	23.0
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	44.0	104.0	250.0	283.0
Viscosity Index (ASTM D-2270)	105	105	100	100
Total Base Number (ASTM D-2896)	7.5	7.5	7.5	7.5
API Gravity (ASTM D-1298)	30.0	29.1	27.0	26.6

Revision July 26, 2012

OEHC® TRACTOR FLUID (J-20C)

OEHC® Tractor Fluid fulfills the torque transfer, hydraulic, and power transmission requirements of farm tractors and implements. Specifically, it has been tailored to:

- Lubricate the transmission, differential and final drive gears
- Act as a power steering, power brake, power take-off, hydraulic, and implement drive fluid
- Provide a medium with the correct friction stability and heat transfer properties for proper operation of the tractor wet brakes and power take-off units.

OEHC® Tractor Fluid is an outstanding product for tractor lubrication. Its superior extreme pressure and anti-wear performance protects tractor transmissions, axles, and hydraulic pumps. The frictional characteristics of the fluid minimize “chatter” while enabling the proper operation of wet brakes. These characteristics provide smooth engagement of the power take-off clutch.

OEHC® Tractor Fluid provides excellent rust and corrosion protection and good oxidation stability for high temperature service. Tractor Fluid is a SAE viscosity grade 10W-30 and meets API GL-4 gear oil specifications. OEHC® Tractor Fluid should not be used where a Caterpillar TO-4 fluid is required.

Typical Properties:

Product: OEHC® Tractor Fluid	
SAE Viscosity Grade	10W-30
Product Code	1200
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	10.80
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	66.00
Viscosity Index (ASTM D-2270)	150
Ash, wt%	1.30

OEHC[®] Tractor Fluid is recommended for use in most hydraulic fluid and transmission oil applications for tractors and implements including:

- AGCO: Massey Ferguson M-1145, M-1143, M-1141, M-1138, M-1135 Permatran III, White Q-1826
 - Massey Ferguson M-1110, 1127 (A&B), 1129A Permatran, 1139
 - Oliver: Type 55, 5J
 - New Idea Q1802
 - Minneapolis-Moline/White: Q-1705, 1722, 1766, 1766B (UTHF), 1802
 - Deutz: Hyd Trans Fluid; Deutz-Allis 25743, 272843; Allis-Chalmers PowerFluid PF-821 & PF821 XL, 25741, 246634 Hydr Trans Fluid
 - Landini Tractor Hydraulic Fluid
 - AGCO-Allis
- Allison C-4 (as part of JD20C)
 - Allison C-2, C-3
- API GL-4
- Case New Holland MAT 3505 , MAT 3506
 - JI Case MS-1204, 1205, 1206 (Powergard PFT), 1207 (HyTran Plus), 1209 (HyTran Ultra or Multi Tran)
 - JI Case MS-1210
 - IHC B-5 (International Harvester), B-6 HyTran
- Case New Holland MAT 3525 &3526, ESN M2C86B
 - FNHA-2-C-200, FNHA-2-C-201, JI Case MS-1216, MS-123-, MS-1317, MS-143, 144, 1145 (TCH Fluid), MS-185 (TFD Fluid), M2C (A-C), ESN-M2C134A, B, C, D; ESN-M2C-77A, ESN- M2C86-A&C, ESN-M2C-41B, ESN-M2C-43, ESN-M2C-48B&C, ESN-M2C53-A&B, ESN- 142A, ESN-M2C143, ESN-M2C92A, ESN-M2C159 (A,B,C)
 - International Farmall JIC-143, 144, 145, JIC185
 - Versatile Gear & Hydraulic Transmission Fluid, 23 M &24M
 - Renk-Doromat 873 or 874 A/B Bus Automatic Transmission Fluid
 - Fiat-Hesston AF-87
 - Valcatores, Steiger HTF (SEMS 17001)
- Eaton Vickers
 - Sperry Vickers/Eaton I-286-S, M-2950-S
- JCMAS (Japanese Construction Mechanization Association) HK P-041 &P-042
- John Deere J-20C
 - J14 (A,B,C), JDT303, J20A,B HyGard, J121A, Quatrol
- Komatsu
- Kubota UDT
 - M80B &Yanmar
- Parker (Dennison UTTO, HF-0,1,2)
- Volvo (VCE 1273.03, WB101)

- Other
 - Steiger Hydr Trans Fluid
 - Sauer Sunstrand/Danfoss Hydro Static Trans Fluid

Key:

- Active Specification
 - Obsolete specification superseded by corresponding active UTHF specification

Revision August 19, 2014

OEHC® ANTI - WEAR HYDRAULIC OILS

OEHC® Anti-Wear (AW) Hydraulic Oils are superior anti-wear hydraulic and circulating fluids specially formulated with high quality base stocks and improved thermally stable zinc additives. These oils offer outstanding resistance to sludge formation, are chemically stable, and exhibit excellent anti-wear properties. OEHC® AW Hydraulic Oils also contain anti-foam agents to limit air entrainment in hydraulic systems, and demulsifiers to separate water from the oil in the sump.

OEHC® AW Hydraulic Oils are recommended for service in vane, piston, and gear pumps when used according to the manufacturers' recommendations. The oils provide maximum service life to these pumps as well as other system components. OEHC® AW Hydraulic Oils ISO 10 and ISO 22 products can also be used as spindle lubricants.

OEHC® AW Hydraulic Oils meet the following specifications:

- Denison HF-0, 1, and 2
- Vickers M-2950-S, I-286-S
- Cincinnati Milacron P-68, 69, 70
- US Steel 126, 127, and 136
- DIN 51524 Part 2

Typical Properties:

Product: OEHC® Anti-Wear Hydraulic Oils							
ISO Viscosity	10	22	32	46	68	100	150
Product Code	90418	1211	1212	1213	1214	1215	1216
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	2.76	4.30	5.40	6.80	8.70	11.40	15.00
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	11.20	22.00	32.00	46.00	68.00	100.00	150.00
Viscosity Index (ASTM D-2270)	77	100	100	100	100	100	100
RPVOT, min (ASTM D-2272)	(no data)	300	300	300	300	200	200
Emulsion Separation, min (ASTM D-1401)	(no data)	10	10	15	15	15*	15*
Pour Point, °C (ASTM D-97)	(no data)	-24	-37	-20	-25	-12	-12
Flash Point, °F (ASTM D-92)	(no data)	(no data)	435	446	470	(no data)	(no data)

OEHC® R&O HYDRAULIC AND TURBINE OILS

OEHC® R&O Hydraulic and Turbine Oils are formulated with rust and oxidation inhibitors for use in hydraulic systems calling for non-AW fluids, turbines, and as a general bearing lubricant. These oils are made from selected high viscosity index paraffinic base stocks and premium quality additives to give outstanding performance.

The base oils' high viscosity index imparts superior temperature-viscosity characteristics. Long service life in closed circulation systems is assured by low carbon-forming tendency and excellent resistance to oxidation, rust and foaming. The versatility of OEHC® R&O Hydraulic and Turbine Oils makes them suitable for a wide variety of applications in industrial fields. They give excellent service in a range of chain and enclosed gear drives, turbines, and are recommended in hydraulic systems where a high quality non- AW hydraulic fluid is specified, including heat transfer applications.

OEHC® R&O Hydraulic and Turbine Oils are also suitable for use in the circulating systems of a large variety of industrial machinery, and for the lubrication of electric motors and turbo-generators where R&O hydraulic oil is recommended.

These lubricants do not contain anti-wear additives, and should not be used where an anti-wear hydraulic fluid is required. They are zinc-free, allowing them to be used in systems containing silver bearings, or otherwise requiring zinc-free oil.

OEHC® R&O Hydraulic and Turbine Oils meet the following performance specifications:

- Cincinnati Milacron P-38(ISO 32), P-55(ISO 46), and P-57(ISO 68)
- General Electric GEK-32568
- Solar Turbines ES9-224

- DIN 51524, Part 1
- Denison HF-1
- Hägglunds-Denison HF-0 Bench Tests

Typical Properties:

Product: OEHC® R&O Hydraulic and Turbine Oils									
ISO Viscosity	22	32	46	68	100	150	220	320	460
Product Code	90283	1222	1223	1224	1225	1226	1227	1228	1229
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	4.3	5.5	6.8	8.7	12.2	15	19.4	23.4	30
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	22	31.7	44.7	67	100.5	150	228.2	307.5	440.1
Viscosity Index (ASTM D-2270)	101	112	110	101	113	100	97	95	101
Turbine Oxidation (ASTM D-943)	5000	5000	5000	5000	4000	2500	1500	1200	1100
RPVOT, min (ASTM D-2272)	700	700	700	600	400	300	300	300	300

Revision January 9, 2014

OEHC® LITHIUM EP MP2 GREASE

OEHC® Lithium EP MP2 Grease is heavy-duty lithium complex grease designed for high load capabilities. It is formulated with high-viscosity base oils and a synergistic combination of high quality EP and Heavy-Duty additives. This grease also contains a tackiness additive to enhance retention on lubricant parts. In addition, it offers excellent structural and oxidation stability and high resistance to water washout.

OEHC® Lithium EP MP2 Grease is designed for heavy-duty applications found in the construction and mining industry. It can also be used in automotive, trucking and farming setting. This grease can provide excellent protection of on and off-highway parts like ball joints and drive shafts.

Product Features:

- High-viscosity base oil
- Superior oxidation resistance and rust protection
- Outstanding extreme pressure protection
- Excellent water resistance
- Good mechanical and shear stability

Customer Benefits:

- Suitable for use with large bearings running under severe operating conditions and medium to low speed bearings
- Minimizes chemical deterioration over an extended period of storage and provides enhanced service life to equipment
- Provides effective wear protection for ball joints, drive shafts and other parts subjected to extreme pressure and shock loading
- Works effectively in water ingress conditions as well as in dusty/harsh environments

Applications:

- OEHC® Lithium EP Grease can be used wherever lithium greases are recommended or preferred, such as in suspension systems, wheel bearings, universal joints, ball joints and anti-friction plain bearings. Also it is well suited for lubrication in the pulp and paper mill industry, such as paper machine wet ends, felt roller bearings, couplings and press sections.

Typical Properties:

Product Number	914AA	Test Method
Color	Amber	Visual
Texture	Smooth, Tacky	Visual
NLGI Grade	2	ASTM D 217
Worked Penetration	265-295	
Change in Pen after 100,000 strokes	+ 20	ASTM D-217
Drop Point ,^o F	500 Min.	ASTM D 2265
Viscosity @ 40 C ,cSt	451	
Viscosity @ 100 C ,cSt	28.4	
Viscosity @ 100 F ,SUS	2429	ASTM D 445
Viscosity @ 210 F ,SUS	140	
Type of thickener	Lithium complex	-
4-Ball EP load, kg	500	ASTM D 2596
4-Ball Wear @ 40 kgf, wear scar dia, mm	0.50 mm	ASTM D 2266
Timken OK load , lbs	80	ASTM D 2509
Water washout @ 175 ^o F, % wt.	2.0	ASTM D 1264
Water Spray off, % wt.	10 max.	ASTM D 4049
Wheel Bearing Leakage , gm	3.0	ASTM D 1263
Rust Test	Pass	ASTM D-1743

Revision November 13, 2015

OEHC® HI - TEMP MP2 GREASE

OEHC® Hi - Temp MP2 Grease is multi-purpose lithium complex grease fortified with specialty additives to meet severe requirements of wide range of applications of the industry. The appearance is smooth, adhesive, tacky and red in color. This grease is capable of operations from a 0 degree Fahrenheit to 350 degrees Fahrenheit.

Product Features:

- Excellent Mechanical Stability
- Very Good Oxidation and Corrosion protection
- Outstanding Extreme Pressure Protection
- Wide temperature Operability (0⁰ F to + 350⁰ F)
- Good Water Resistance

Customer Benefits:

- Resists thinning in bearings, thereby minimizing leakage leading to extended long life service
- Protects steel and copper alloy bearings against rust and corrosion
- Provides effective wear protection for ball joints, drive shafts and other parts subjected to high pressure and shock loading.
- offers excellent low temperature pumpability and high temperature protection
- It effectively resists washout by water, assuring all-weather lubrication

Applications:

Recommended for extended service in heavy-duty automotive, trucks, buses, farm tractors, construction equipment, high temp wheel bearings (Disc Brakes), roller & ball bearings, electric motor bearings, throw-out bearings, universal joints, chassis, fifth wheel, etc.

Typical Properties:

#	Property	Test Method	OEHC® Hi- Temp (Code 920RA)
1.	Color	Visual	Red
2.	Texture	Visual	Smooth , Tacky
3.	NLGI Grade	ASTM D 217	2
4.	Worked Penetration	ASTM D-217	285
5.	Drop Point , ° F	ASTM D 2265	550
6.	Viscosity @ 40 C ,cSt	ASTM D 445	224
7.	Viscosity @ 100 C ,cSt		17.4
8.	Viscosity @ 100 F ,SUS		1194
9.	Viscosity @ 100 F ,SUS		89.9
10.	Type of thickener	-	Lithium complex
11.	Weld load, kg	ASTM D 2596	315
12.	Timken OK load , lbs	D 2509	60

OEHC® INDUSTRIAL EP GEAR OILS

OEHC® Industrial EP Gear Oils have excellent oxidative and thermal stability allowing them to resist thickening produced by high temperatures. OEHC® Industrial EP Gear Oils are non-corrosive to gear and bearing materials such as steel, copper, bronze, Babbitt, and cadmium-nickel. These oils provide superior foam resistance and water separation, as well. The low pour points of the lower viscosity grades (ISO VG 68, 100, 150) make them suitable for gears and bearings exposed to winter weather.

OEHC® Industrial EP Gear Oils excel in the lubrication of heavily loaded enclosed gear drives and reducers on drives of all sizes. OEHC® Industrial EP Gear Oils lubricate a variety of gears including spur, bevel, herringbone, and worm designs. They are also suitable for industrial hypoid type gears where speed, temperature, and load are not excessive. OEHC® Industrial EP Gear Oils can be used with bath, splash, circulating, and spray-type lubrication systems.

OEHC® Industrial EP Gear Oils are ideal for applications such as steel mills where gear cases are often near red-hot steel; and, they are for use in circulating systems where water contamination is a hazard.

OEHC® Industrial EP Gear Oils are suitable for a wide variety of industrial and mobile equipment, gear systems, chain drives, sprockets, plain and anti-friction bearings, slide guides, flexible couplings, etc.

OEHC® Industrial EP Gear Oils are recommended for use in transmission gear cases and open pit and underground mining machinery.

OEHC® Industrial EP Gear Oils meet the performance requirements of extreme pressure lubricants of the American Gear Manufacturer's Association (AGMA) Specification 9005-D94. They also meet US Steel specification 224 requirements, and API Service GL-2.

OEHC® Industrial EP Gear Oils are not recommended for the lubrication of automotive hypoid gears, for which GL-5 Multi-Purpose Gear Oils are recommended.

Typical Properties:

Product: OEHC® Industrial EP Gear Oils								
Product Code	1434	1435	1436	1437	1438	1439	90350	90346
ISO Viscosity Grade	68	100	150	220	320	460	680	1000
Kinematic Viscosity @ 40°C, cSt (ASTM D-445)	66.3	95.0	148.6	217.7	302.1	461.1	714.6	1000
Kinematic Viscosity @ 100°C, cSt (ASTM D-445)	9.1	11.1	14.9	19.1	23.5	31.2	47.3	53
Viscosity Index (ASTM D-2270)	112	102	100	99	99	99	115	101
API Gravity (ASTM D-1298)	31.0	29.5	28.9	28.6	27.5	29.1	26.7	29.0
AGMA number EP	2	3	4	5	6	7	8	8A

Revision July 26, 2012