



IDO Premium Plus CK-4



Features & Benefits

- 10% better oxidation protection than CJ-4
- Improved shear stability
- Greater viscosity retention
- Up to 0.89% better fuel economy
- Up to 14% less wear than CJ-4 oils
- Up to 23% better contamination handling
- Prevents piston deposits
- Inhibits chemical attack on non-ferrous metals
- 17 Million Miles of on-road testing with 23,000 hours off-road
- Increased oil drain intervals with regular used oil analysis testing
- Quantifiable increased wear protection for Cams, Tappets, Rings, Cross Heads, Injector Screws and so much more

Premium Heavy-Duty Diesel

Specifications

Meets Requirements Of:	15W-40 CK-4	10W-30 CK-4
API CK-4, CJ-4, CI-4 PLUS, CI-4, CH-4	✓	✓
CAT ECF-3	✓	✓
FORD WSS-M2C171-F1	✓	✓
Cummins CES 20086	✓	✓
Detroit Diesel DDC93K222	✓	✓
MACK EOS-4.5	✓	✓
VOLVO VDS 4.5	✓	✓
Renault VI RLD-4	✓	✓
ACEA E7-16, E9-16	✓	✓
MB 228.31	✓	✓
MAN 3575	✓	✓
MAN 3275	✓	✓
MTU Category 2.1	✓	✓
Deutz DQC III-10 LA	✓	✓
JASO DH-2 MRO (Meets requirements of)	✓	✓

Typical Results

Test Method	15W-40 CK-4	10W-30 CK-4
VISCOSITY (D445)		
cSt @ 40 °C	117	80
cSt @ 100 °C	15.5	11.6
VISCOSITY INDEX (D2270)	139	137
DENSITY (D4502) @15°C (kg/L)	0.87	0.87
POUR POINT (°C) (D97)	-29	-35
FLASH POINT (°C) (D93)	211	208
TBN (D2896) (mgKOH/g)	10.1	10.2

IDO Premium Plus CK-4 next generation oil was formulated to exceed compliance levels set forth by the EPA for 2017 and forward diesel engines.

IDO Premium Plus CK-4 was designed to provide improvements in emissions control, wear protection, TBN retention, shear stability, fuel economy, oxidation resistance and enhanced drain intervals with regular used oil analysis.

IDO Premium Plus CK-4 oils are backwards compatible making them ideal for large, small and mixed fleet operations where multiple service categories are represented. Formulated with high quality base oils coupled with superior CK-4 additive technology, this robust product starts protecting your engine from the click of the ignition.

Experience increased wear protection, improved oxidation resistance, enhanced fuel economy and longer oil life with **IDO Premium Plus CK-4**

Sizes & Order Codes

15W-40 CK-4	10W-30 CK-4
946 ml/1 US qt F0114115	946ml/1 US qt F0114215
5 L /1.32 US gal F0114130	5 L /1.32 US gal F0114230
18.9 L/5 US gal F0114140	18.9 L/5 US gal F0114240
60 L/15 US gal F0114145	60 L/15 US gal F0114245
205 L/54.2 US gal F0114150	205 L/54.2 US gal F0114250
1000 L/264 US gal F0114160	1000 L/264 US gal F0114260
Bulk B0114101	Bulk B0114201



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1.800.574.5823

Supporting data available to demonstrate acceptable performance. Check with your sales associate for latest product approvals. Please note, these are typical performance indicators and can change without notice.

This data sheet replaces previous versions prior to 03-04-19.

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IDO Universal Monograde

Features & Benefits

- Combats corrosion and moisture
- Low ash less than 1%
- Excellent hydraulic oil (SAE 10W and 30)
- Suitable for truck manual transmissions (SAE 50)
- Promotes engine cleanliness
- Excellent resistance to high temperatures

Specifications

Meets or Exceeds	10W	30	40	50
API CF	✓	✓	✓	✓
API CF-2	-	✓	✓	✓
API SF	✓	✓	✓	✓
Allison C4	✓	✓	✓	✓
CAT TO-2	✓	✓	✓	✓
Detroit Diesel- 7SE270	-	✓	✓	-

Typical Results

Test Method	10W	30	40	50
VISCOSITY (D445) cSt @ 40 °C cSt @ 100 °C	41.3 6.5	99.8 11.5	142.8 14.6	213. 1 19.1
VISCOSITY INDEX (D2270)	108	102	101	101
DENSITY @ 15°C (kg/L) (D4052)	0.88	0.89	0.89	0.89
POUR POINT (°C) (D97)	-37	-26	-23	-16
FLASH POINT (°C) (D93)	200	202	204	202
TOTAL BASE NUMBER (mgKOH/g) (D2896)	7.0	6.9	7.0	6.9

Sizes & Order Codes

10W	30	40	50
946ml/1 qt US -	946ml/1 qt US F0009315	946ml/1 qt US -	946ml/1 qt US -
5l /1.32G US -	5l /1.32G US F0009330	5l /1.32G US -	5l /1.32G US -
18.9L/5G US F0089040	18.9L/5G US F0089440	18.9L/5G US F0089540	18.9L/5G US F0089640
205L/54.2 G US F0014550	205L/54.2 G US F0014350	205L/54.2 G US F0014450	205L/54.2 G US F0122550
1000L/264 G US F0008960	1000L/264 G US F0009360	1000L/264 G US -	1000L/264 G US -
Bulk B0008901	Bulk B0009301	Bulk B0009401	Bulk B0009501



Irving IDO Universal oils are blended from select high viscosity base stocks and low-ash additives. This formulation has added detergent to ensure engine cleanliness, minimized ring-sticking and reduced liner-scuffing.

Irving IDO Universal oils prevent sludge formation, reduce bearing corrosion and cut back on engine rusting.

Irving IDO Universal was developed to meet the needs of mixed fleet operators in order to reduce inventory. This oil can be used in high speed diesel engines, construction diesel engines and some marine diesel engine applications.

Irving IDO Universal all grades meet or exceed Allison C-4 specifications for use in their heavy-duty automatic transmissions.

Irving IDO Universal 30 & 40 grades are prime recommendations for Detroit Diesel 2-cycle engines.

Irving IDO Universal oils can also be used as hydraulic oils where appropriate if extra care is taken not to mix them with regular hydraulic oils.



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MAX1 Conventional Passenger Car Motor Oil

Features & Benefits

- Combats corrosion & moisture
- Outstanding resistance to viscosity breakdown
- Maximum wear protection for all engines
- Improved oxidation resistance
- Excellent low speed pre-ignition (LSPI) protection
- Enhanced oil durability & fuel economy over service life

Specifications ✓ Meets Requirements ● Approved * Backwards compatible

Specification	5W-20	5W-30	10W-30	10W-40
API SP	●	●	●	●
API SN Plus/SN*	✓	✓	✓	✓
ILSAC GF-6A	●	●	●	-
ILSAC GF-5*	✓	✓	✓	-
Ford WSS-M2C960-A1	✓	-	-	-
Ford WSS-M2C961-A1	-	✓	-	-
Ford WSS-M2C945-B1*	✓	-	-	-
Ford WSS-M2C946-B1*	-	✓	-	-

Typical Results

Test Method	5W-20	5W-30	10W-30	10W-40
GRADE	SAE 5W-20	SAE 5W-30	SAE 10W-30	SAE 10W-40
VISCOSITY (D445)				
cSt @ 40°C	46.2	58.0	59.0	89.2
cSt @ 100°C	8.2	10.0	9.7	13.6
VISCOSITY INDEX (D2270)	153	159	149	155
DENSITY @ 15°C (D4052), kg/L	0.85	0.85	0.85	0.85
POUR POINT (D5949), °C	-48	-47	-45	-42
FLASH POINT (D7094), °C	203	204	205	206
COLD CRANKING VISCOSITY (D5293), cP				
4208 @ -30°C	4208 @ -30°C	4484 @ -30°C	3666 @ -25°C	5118 @ -25°C
TOTAL BASE NUMBER (D2896), mg KOH/g	7.0	7.0	7.0	7.0
MRV VISCOSITY (D4684), cP	14,500 @ -35°C	19,100 @ -35°C	11,500 @ -30°C	19,500 @ -30°C
HIGH-TEMP HIGH-SHEAR VISCOSITY (D4683), cP @ 150°C	2.64	3.05	2.95	3.73

Sizes & Order Codes

Size	5W-20	5W-30	10W-30	10W-40
946 mL 1 US QT	F0124015	F0124115	F0124215	F0124515
5 L 1.32 US Gal	F0124030	F0124130	F0124230	F0124530
60 L 15.8 US Gal	F0124045	F0124145	-	-
205 L 54.2 US Gal	F0124050	F0124150	-	-
1000L 264 US Gal	F0124060	F0124160	F0124260	-
BULK TOTE	F0124001	F0124101	F0124201	-
BULK	B0124201	B0123801	B0123701	B0123601



MAX 1 Conventional Motor Oil has been formulated to exceed the performance requirements of the latest ILSAC GF-6A specification. The GF-6A specification defines an oil with superior oxidation resistance and fuel economy performance compared to the previous GF-5 category.

MAX 1 Conventional Motor Oil provides excellent protection against LSPI and the specific durability demands of the latest engine designs. The market leading wear performance of the earlier **MAX 1 Conventional Motor Oil** grades has been maintained with the transition to GF-6A and enhanced to provide additional protection against both corrosive and abrasive wear more prevalent in newer designs.

MAX 1 Conventional Motor Oil is suitable for all engine types and provides optimum protection for all modes of operation, from stop-and-go city driving, short trips in cold weather or towing a trailer in the summer months.

MAX 1 Conventional Motor Oil provides maximum protection.



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This data sheet replaces previous versions prior to 05-11-20.

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MAX1 Advanced

100% Synthetic PCMO Features & Benefits

- Outstanding pre-ignition protection
- Enhanced fuel economy
- Extended oil life
- Superior start up protection
- Resists high temperature volatility
- Unique film strengthening technology
- Enhanced detergent and dispersants
- Prevents sludge and deposits



Specifications

✓ Meets ■ Approved

	0W-20 dexos®	5W-20	5W-30 dexos®	10W-30	10W-40
API SN PLUS	■	■	■	■	■
ILSAC GF-5	■	■	■	■	-
GM dexos1™ Gen 2	■	-	■	-	-
Ford WSS-M2C945-B1	-	✓	-	-	-
Ford WSS-M2C946-B1	-	-	✓	-	-
Ford WSS-M2C947-B1	✓	-	-	-	-

Typical Results

Test Method	0W-20 dexos®	5W-20	5W-30 dexos®	10W-30	10W-40
Viscosity (D445) cSt @ 40 °C cSt @ 100 °C	43.7 8.2	43.0 8.0	60.4 10.9	58.9 9.9	91.3 13.8
Viscosity Index (D2270)	165	161	174	154	154
Pour Point (°C) (D97)	-51	-50	-48	-45	-42
Flash Point (°C) (D93)	206	206	206	206	206
Density @ 15°C (D4052) (kg/L)	0.84	0.84	0.85	0.85	0.85

Sizes & Order Codes

Size	0W-20 dexos®	5W-20	5W-30 dexos®	10W-30	10W-40
946 mL/1 US QT	F0094306	F0094506	F0098406	F0094706	F0094006
5L/1.32 US Gal	F0094330	F0094530	F0098430	-	-
60L/15.85 US Gal	F0094345	F0094545	F0098445	-	-
205L/54.2 US Gal	F0094350	F0094550	F0098450	-	-
1000L/264 US Gal	F0094360	F0094560	F0098460	-	F0094060
BULK	B0118801	B0118301	B0118901	B0093701	B0094001

MAX1 Advanced 100% Synthetic is ready to take on the demands placed on your engine oil. New engine hardware such as turbochargers, direct injection and variable valve timing (VVT) place increased stress on your engine oil. These advanced performance vehicles come with extreme temperatures and pressures; your engine oil needs to be just as advanced to handle this power.

MAX1 Advanced 100% Synthetic motor oils contain unique film strength and additives that form protective barriers between critical components, ultimately extending engine life.

MAX1 Advanced 100% Synthetic exceeds the latest performance enhancements for the requirements of North American and Asian manufacturers. Experience greater oxidation resistance, improved turbocharger cleanliness, enhanced fuel economy and so much more with **MAX1 Advanced 100% Synthetic** products.

For those vehicles requiring a dexos1™ Gen 2 formulation to follow GM OEM recommendations our **MAX1 Advanced 100% Synthetic** grades 0W-20 and 5W-30 are fully certified and registered.



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This data sheet replaces previous versions prior to 03-22-19.

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Advant

Ultra High Performance Full Synthetic European



Features & Benefits

- Robust engine performance
- Exceptional wear and sludge protection
- Excellent piston cleanliness

ADVANT 100% synthetic passenger car motor oil offers the ultimate in lubricant protection for European gasoline and diesel powered automobiles.

ADVANT is no ordinary motor oil, it is a sophisticated formula of pure and stable base stocks coupled with the latest in additive technology. This formulation will deliver the performance and protection your engine demands.

ADVANT was formulated to keep your engine as close as possible to factory cleanliness. The tighter the clearances in your engine the cleaner you need to run, even a small deposit can make a major difference in performance.

ADVANT has excellent cold-start protection circulating quickly to create a protective film for vital engine components. When used in extreme high temperatures this protection reduces wear, resists oxidation and retains viscosity stability to extend engine service life.

**Although long life is a feature of the stability of synthetic oils, the engine manufacturers' oil drain intervals should always be respected.*

Specifications

Meets Requirements Of:	5W-30	5W-40
API SN/CF	-	✓
API SL/CF	✓	✓
ACEA A3/B3 - 16	✓	✓
ACEA A3/B4 - 16	✓	✓
ACEA A5/B5 - 16	✓	-
JASO MA-2 (T903-2016)	✓	✓
MB 226.5 (v2016.1)	✓	✓
MB 229.3 (v2012.2)	✓	-
MB 229.3 (v2016.1)	✓	✓
MB 229.5 (v2012.2)	✓	-
VW 502.00/505.00	✓	✓
RN 0710/RN 0700	✓	✓
Porsche A40	-	✓

Sizes & Order Codes

5W-30	5W-40
946 ml/1 US Qt. F0096006	946 ml/1 US Qt. F0000206
5 L/1.32 US Gal N/A	5 L/1.32 US Gal F0000230
60 L/15.8 US Gal F0096045	60 L/15.8 US Gal F0000245
205 L/54.2 US Gal F0096050	205 L/54.2 US Gal F0000250
1000 L/264 US Gal F0096001	1000L/264 US Gal N/A

Typical Results

SAE Grade	5W-30	5W-40
DENSITY @ 15°C (D4052) (kg/L)	0.85	0.85
VISCOSITY (D445)		
cSt @ 40 °C	68.8	84.6
cSt @ 100 °C	11.8	14.1
VISCOSITY INDEX (D2270)	168	173
POUR POINT (°C) (D97)	-36	-36
FLASH POINT (°C) (D93)	211	214
TOTAL BASE NUMBER (D2896) (mg KOH/g)	10.24	10.34
COLD CRANK (D5293) cP@-30(°C)	5365	6389



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This data sheet replaces previous versions prior to 06-11-19

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2-Cycle Plus

Two-Stroke Engine Oil

Features & Benefits

- Superior deposit control, extends spark plug life
- Excellent rust and corrosion protection
- Certified to the highest NMMA® performance standard TC-W3®
- Ashless formulation
- Suitable for premix and oil injection systems
- Specially formulated for outboards and other liquid cooled 2-stroke engines
- Suitable for use in all 2-T DFI (Dual Fuel Injected)
- Outboard engines ex. E-Tec, Opitec, HPDI etc.



Sizes & Order Codes

2-Cycle Plus
946 ml/1 US Qt F000115

Typical Results

Test Method	2 -Cycle Plus
VISCOSITY (D445) cSt @ 40 °C cSt @ 100 °C	27.6 6.2
VISCOSITY INDEX (D2270)	185
DENSITY @ 15 °C (kg/L) (D4052)	0.87
POUR POINT (°C) (D97)	-48
FLASH POINT (°C) (D93)	55



Irving 2-CYCLE Plus is a premium lubricant for water-cooled outboard 2-stroke gasoline engines. This formulation was designed to ensure low carbon, ashless performance and improved ease of mixing with gasoline.

Irving 2-CYCLE Plus is suitable for both pre-mixed and modern oil injection systems. With its distinctive blue color you will have positive confirmation that the oil has been pre-mixed into the gasoline. The ashless formulation provides for clean pistons and cylinders while minimizing deposits that can cause ring-sticking, port-plugging and pre-ignition. It also effectively prevents rust and corrosion, which is very important in the humid environment of outboard engines.

Irving 2-CYCLE Plus is recommended wherever the manufacturer recommends an NMMA® approved lubricant, meeting the current performance standard for such oils, TC-W3®. Engine manufacturers have shown that this oil, when compared to oils of the previous TC-W2 category, doubles the life of the powerhead.



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This data sheet replaces previous versions prior to 05-31-2019.

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Syn Trax

Synthetic Blend 2-Stroke Engine Oil

Features & Benefits

- Ensures higher engine protection, limits deposits on pistons and segments
- Pours easily at temperatures as low as -38°C
- Prevents rust and corrosion, minimizes ring-sticking, port plugging and pre-ignition
- Less fumes escape
- Releases a pleasant vanilla scent



Syn Trax is a synthetic blend lubricant for 2-stroke engines. The synthetic components improve lubricity while providing cooler and more efficient combustion resulting in reduction of smoke which prevents exhaust port deposits and blockage. It has been formulated with snowmobiles in mind, both air and liquid-cooled where the manufacturer recommends a low-ash oil. It meets the stringent requirements of Bombardier® snowmobiles and is power valve optimized. Formulated to provide superior protection for high-performance 2-stroke engines.

Syn Trax prevents deposits on pistons, thereby providing a higher level of lubrication and reducing wear and failure. You can increase the lifespan of your engine and have better protection under heavy loads and high temperatures with this premium oil. Enjoy your ride with reduced smoke emissions and a pleasant vanilla scent.

Syn Trax can be used in oil-injected or pre-mixed systems with a ratio of up to 100:1. This oil is suitable for chain saws, including professional models, as well as string trimmers, lawnmowers, snow blowers, motorcycles, ATVs and any other air-cooled 2-stroke gasoline engine. For water-cooled outboard engines, consider using **Irving 2-Cycle Plus**.

Specifications

Meets requirements of:	
JASO FB, FC, FD	
ISO-L-EGB, EGC, EGD	
API TC	
Meets the requirements of manufacturers including:	
Bombardier	
Arctic Cat	
Polaris	
Yamaha	

Sizes & Order Codes

Syn Trax
946 ml/1 US Qt F0070315

Typical Results

Product	SYN TRAX
VISCOSITY (D445) cSt @ 40 °C cSt @ 100 °C	53.2 8.5
VISCOSITY INDEX (D2270)	135
POUR POINT (°C) (D97)	-40
FLASH POINT (°C) (D93)	99
DENSITY @ 15°C (ASTM D4052) kg/L	0.87

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This data sheet replaces previous versions prior to 12-10-2018.

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TRANSflo



Features & Benefits

- Excellent corrosion and foam prevention
- Safe for all seals
- Promotes transmission cleanliness

Irving TRANSflo is a premium product specially formulated for use in automatic transmissions manufactured in 2005 and earlier for General Motors, Ford, and Chrysler vehicles.

Irving TRANSflo provides excellent low temperature fluidity as well as good viscosity at temperatures in excess of 149°C for bearing and gear lubrication.

Irving TRANSflo meets specifications by Allison as a type C-4 fluid and can be used in Ford model C-6 automatic transmissions built on or after 1977.

Irving TRANSflo can also be used in some power steering, hydro-static systems and power-shift transmissions where this type of oil is recommended.

Irving TRANSflo may also be used as hydraulic fluid due to its excellent low temperature fluidity and red color.

Specifications

Meets Requirements Of
Allison C-3 & C-4
Allison TES-389
American Motors ATF +3 (MS 7176-E)
Audi G 052 162-A1/A2 (ZF Lifeguard 5)
BMW 7045E
BMW ETL-8072B
BMW LA2634
CAT TO-2
Chrysler ATF+2, +3
Ford MERCON®
Ford WSS M2C 183CJ, 166H
GM DEXRON®II
GM DEXRON®IID
GM DEXRON®IIE
GM DEXRON®IIIG
GM DEXRON®IIIH
GM TASA
Hyundai/Kia DEX-II/SP-II
Jaguar JLM 20292
Jaguar JLM 20238
Mazda ATF M-III
Mazda ATF F-I
MB ZF 4HP20
NAG 1 (Chrysler, Jeep, Cherokee)
Opel/GM 19 40 700, 19 40 767, 21005966 Transaxle, 22 17466
Peugot/Citreon Z 000169756, AL4 Automatic gearbox oil (#9730.AE)
Porsche 000 043 205 09, 999 917 547 00, Z 000169756
Renault Matic D2
Renault DPO/AL4
Volvo CE 97340
Volvo 97325
Volvo 97335
Vickers M2950-S, I-286-S
VW G US 000 162
ZF TE-ML 05L
ZF TE-ML 09
ZF TE-ML 21L

Sizes & Order Codes

TRANSflo
946mL/1 US quart F0020815
3.78L/ 1 US gal F0020826
18.9L Pail/ 5 US gal F0082240
205L Drum/ 54.2 US gal F0015650
1000L Cube/ 264 US gal F0020860
Bulk B0020801

Typical Results

Test Method	TRANSflo
COLOUR	RED
VISCOSITY (D445) cSt @ 40°C cSt @ 100°C	33.2 7.1
VISCOSITY INDEX (D2270)	186
POUR POINT (D97) (°C)	-42
FLASH POINT (D93) (°C)	190
DENSITY (D4052) kg/L	0.85

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This data sheet replaces previous versions prior to 04-10-19.

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TRANSflo

DEXRON®-VI Formula

Features & Benefits

- Full synthetic
- Maximum OEM recommended service life
- Exceptional low temperature fluidity
- Excellent resistance to degradation due to heat and oxidation
- Consistent shift performance
- Extends transmission durability
- Improves performance in older transmissions
- Lower viscosity for improved fuel economy
- Backwards compatible to DEXRON® III (H), III (G), and II (E)



Irving TRANSflo DEXRON®-VI is a premium synthetic based transmission fluid designed to provide unparalleled operating performance in 2006 and current General Motors (GM) automatic transmissions, specifically where a DEXRON®-VI fluid is recommended.

Irving TRANSflo DEXRON®-VI offers excellent fluidity at low temperatures allowing for better lubrication and faster start-times in extremely cold temperatures.

Irving TRANSflo DEXRON®-VI protects better and longer than previous automatic transmission fluids to reduce wear and extend the durability of the transmission. It has excellent anti-corrosive and anti-foaming characteristics to help prolong metal components while reducing the chance of cavitation damage. Anti friction enhancing properties ensure smoother, shudder-free shifting and eliminates vibration within the clutch, even when speed shifting.

Specifications

	Approved	Meets	Suitable for Use
DEXRON®-VI (GMW16444)	✓	-	-
Volvo 97342	-	-	✓
Chrysler/Dodge/Jeep 68043742AA	-	-	✓
MB Approval 236.41	-	✓	-
Voith Transmission approved for the 36,000 mile standard drain	-	✓	-

Typical Results

Test Method	TRANSflo DEXRON®-VI
VISCOSITY (D445) cSt @ 40°C cSt @ 100°C	30.0 6.0
VISCOSITY INDEX (D2270)	150
BROOKFIELD VISCOSITY (D2983) cP @ -40°C	12,210
POUR POINT (D5950) (°C)	-55
FLASH POINT (D92) (°C)	206
DENSITY (D4052) kg/L	0.847

Sizes & Order Codes

TRANSflo DEXRON®-VI
946mL/1 US quart F0091115
60 L / 15.85 US Gal F0091145

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This data sheet replaces previous versions prior to 04-10-19.

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TRANSflo TO-4

High Performance Transmission Fluid



Features & Benefits

- Three grades to match any conditions
- Maximizes the life of Caterpillar drive train components
- Proven 5 years of continuous field performance
- Suitable for wet brakes
- Suitable for hydraulic use

TRANSflo TO-4 is a premium transmission fluid specially formulated to meet the exacting requirements of Caterpillar's latest performance specification, TO-4. Caterpillar recommends TO-4 type fluids in all new and rebuilt drive-train components. **TRANSflo TO-4** can be used wherever Caterpillar recommends its own brand TDTO "or equivalent."

NOTE: Unlike the previous TO-2 specification, which allowed engine oils to be used in Caterpillar drive train components, TO-4 oils are designed for use in the drive train ONLY and must NOT be used in the engine.

TRANSflo TO-4 is also suitable for use where Caterpillar TO-2 (obsolete), Eaton-Fuller*, Dana*, Euclid, Vickers M-2950-S or Tremac/TTC* is requested. In addition, field trial studies have been conducted in a variety of equipment with fluids formulated with **TRANSflo TO-4** additive package. * where TO-4 is called for, Komatsu KES 07.868.1, Caterpillar TO-4M, Sperry Vickers/Eaton:1-280-S, Allison C-4, API GL-4

Typical Results

Applications/Claims	10W, 30, & 50
API GL-4	SFU
Allison C4	SFU
Caterpillar TO-4 (TO-4M)	SFU
Caterpillar TO-2 (obsolete)	SFU
Komatsu KES 07.868.1	SFU
Sperry Vickers/Eaton I-280-S	SFU
Vickers M2950S	SFU
Eaton-Fuller ¹	SFU
Dana ¹	SFU
Euclid ¹	SFU
Tremac/TTC ¹	SFU
Paker (Denison UTTO) HF-1 to HF-2	SFU
Wet brake applications	SFU

¹ Where TO-4 is called for Suitable for Use (SFU) - Supporting data from field trial studies to demonstrate acceptable performance

SAE GRADE	10W	30	50
VISCOSITY (D445)			
cSt @ 40 °C	39	99.2	196.4
cSt @ 100 °C	6.1	11.2	17.6
VISCOSITY INDEX (D2270)	101	97	97
BROOKFIELD VISCOSITY (D2983) (°C)			
cP @ -35 °C	134,000	68,000	-
cP @ -25 °C	0	-	-
POUR POINT (°C) (D97)	-42	-27	-9
FLASH POINT (°C) (D92)	226	266	282
DENSITY (D4052) (kg/l)	0.884	0.893	0.900

Sizes & Order Codes

TO-4 10W	TO-4 30	TO-4 50
18.9 L Pail/ 5 US gal F0086240	18.9 L Pail/ 5 US gal F0089940	18.9 L Pail/ 5 US gal F0078640
205 L Drum/ 54.2 US gal F0020550	205 L Drum/ 54.2 US gal F0065650	205L Drum/ 54.2 US gal N/A
1000 L Cube/ 264 US gal F0020560	1000 L Cube/ 264 US gal F0020660	1000 L Cube/ 264 US gal F0020760
Bulk B0020501	Bulk N/A	Bulk B0020701



Blending & Packaging
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Supporting data available to demonstrate appropriate performance. Check with your Sales Representative for latest product approvals. Please note, these are typical performance indicators and can change without notice. This data sheet supersedes any previous version prior to 6/19/2018



TRANSflo MV

Multi Vehicle

Features & Benefits

- Exceptional low temperature fluidity
- Excellent resistance to degradation due to heat and oxidation
- Eliminates slippage and shudder
- Extends integrity and operational life of critical components
- MERCON® -V approved
- Suitable for use in most transmissions, this is a true multi vehicle fluid



Irving TRANSflo MV was designed to meet the performance requirements of global transmissions from North American, European and Asian transmission manufactures.

Irving TRANSflo MV offers excellent fluidity at low temperatures allowing for better lubrication and faster start times in extremely cold temperatures.

Irving TRANSflo MV protects better and longer than previous automatic transmission fluids to reduce wear and extend the durability of the transmission. The friction properties ensure smoother, shudder-free shifting and eliminates vibration within the clutch; even when speed shifting.

Irving TRANSflo MV may also be used as a hydraulic or power steering fluid.

Specifications

Meets the requirements of

High Viscosity Specifications
Acura ATF-Z1
Aisin Warner JWS 3309 (T-IV)
Allison C-3 & C-4
American Motors ATF +3 (MS 7176E)
ATF RED1, RED1K
Audi 5 HP LT71141 (ZF 5 HP 18FL/19FL/24A)
Audi G 052 162-A1/A2
Audi G 052 025-A2
Audi/VW G 052 990
Audi G 052 055
Audi G 053 025-A2
Audi G 055 025 A2 (JWS 3309)
AW-1
Bosch TE-ML 09
BMW JWS 3309 (T-IV)
BMW LA2634
BMW 7045E
BMW ETL-8072B
BMW MINI
CAT TO-2
Chrysler ATF+2, ATF+3 (MS 7176E)
Chrysler/Dodge MOPAR AS 68 RC (T-IV) JWS 3309
Daewoo LT 71141
Daihatsu AMMIX ATF D-II, D-III SP
Daihatsu Friend ATF D-III
Esso LT 71141
FIAT T-IV Type JWS 3309
Ford MERCON®
Ford MERCON®-V
Ford FNR5
Ford M2C138CJ
Ford M2C166H
Ford WSS M2C 922A1, 924A (XT-8-QAW) JWS 3309
Fuso ATF-II
Fuso ATF-SP II
Fuso ATF- A4
GM9986195 (Aisin AW, JWS 3309)
GM TASA
GM DEXRON® II, DEXRON® IID, DEXRON® IIE, DEXRON® IIIG, DEXRON® IIH

High Viscosity Specifications
Hino Blue Ribbon ATF
Honda ATF- Z1 (not for use in CVT)
Honda ATF Ultra II
Honda DW-1
Hyundai/Kia Dex-II/SP-II
Hyundai/Kia SP-III
Hyundai/Kia JWS 3314
Hyundai/Kia JWS 9683
Hyundai/Kia 040000C90SG
Idemitsu K17
ISUZU BESCO ATF SP
ISUZU SCS Fluid
ISUZU 08200-9001
ISUZU BESCO ATF-II, BESCO ATF-III
Jaguar ATF 3403 M115
Jaguar ATF LT71141, ZF 5HP24
Jaguar JLM 20292
Jaguar JLM 21044
Jaguar Fluid 8432
JASO M315-2013 1A
JASO MS315-2013 2A
JEEP ATF +3
Lexus JWS 3309
KIA ATF SP-II, SP-III, SP-IV, SP-IVM, Red 1
Mazda ATF D-II
Mazda ATF M-III, ATF M-V
Mazda ATF F-1
Mazda ATF S-1
Mazda ATF N-1
Mazda ATF 3317
Mini Cooper T-IV
Mitsubishi Diaqueen SK
Mitsubishi Diaqueen SP-II, SP-III
Mitsubishi Diaqueen AW
Mitsubishi Diaqueen J2
NAG 1 (Chrysler, Jeep, Cherokee)
Nissan Matic Fluid C
Nissan Matic Fluid D
Nissan Matic Fluid J
Nissan Matic Fluid K
Nissan Matic Fluid N4
Opel

Sizes & Order Codes

TRANSflo MV	
946 ml/ 1 US Qt.	F0076315
60 L/ 15.85 US Gal	F0076345
205 L/ 54.2 US Gal	F0076350
Bulk	B0076301

Typical Results

Test Method	TRANSflo MV
COLOUR	RED
VISCOSITY (D445) cSt @ 40°C cSt @ 100°C	34.0 7.6
VISCOSITY INDEX (D2270)	202
DENSITY @ 15 °C (D4052) kg/L	0.85
BROOKFIELD VISCOSITY (D2983) cP @ -40°C	9,580
POUR POINT (°C) (D97)	-48
FLASH POINT (°C) (D92)	214

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TRANSflo MV

Multi Vehicle

Specifications Continued

Meets the requirements of

High Viscosity Specifications
Peugot/Citreon Z 000169756
Porsche T-IV (JWS 3309)
Renault Samsung SATF-D
Ssang young DSIH 5M-66
Saab T-IV (JWS 3309)
Saturn T-IV (JWS 3309)
Scion
Subaru ATF
Subaru ATF for Vivio 3 speed
Subaru ATF 5AT
Subaru ATF, ATF HP
Subaru K0140Y0700
Suzuki AT OIL 5006
Suzuki ATF 2326
Suzuki ATF 2384K
Suzuki ATF 3309
Suzuki ATF 3314
Suzuki ATF 3317
Suzuki ATF AW-1
Texaco 7045-E
Texaco 8072B
Texaco N402
Toyota ATF D-II, ATF D-III
Toyota ATF T-III, ATF T-IV
Vickers M2950-S, I-286-S
Volvo CE 97340
Volvo 97325
Volvo 97335
VW G US 000 162
VW G-055-025 A2 (JWS 3309)
ZF-TE-ML 05L
ZF-TE-ML 09
ZF-TE-ML 11A, 11B
ZF TE-ML 21L

Low Viscosity Specifications
Honda DW-1
Hyundai/Kia SP-IV
Hyundai/Kia SP-IV M
Hyundai/Kia SP-IV RR
Hyundai/Kia NWS 9638
JWS 3324 (WS)
Mazda ATF FZ
Mitsubishi Diaqueen SP-IV
Mitsubishi Diaqueen J3
Mitsubishi Diaqueen ATF PA
Nissan Matic Fluid S
Saab 93 165 147
Toyota ATF WS

Transfer Case Applications
Ford MERCON®-V
Ford Part#XL-12
GM IID, IIH

Power Steering Applications
Chrysler MS-1872
Chrysler MS 5931
Chrysler MS 9602
Ford M2C195-A
GM P/N 89021184
GM P/N 1052884 (GM 9985010)
GM P/N 12345866 (GM 9985835)
Hyundai/Kia PSF-3
Mercedes-Benz 236.3 (P/N 000 989 88 03)
Mitsubishi PS fluid, Diamond SP-III
Nissan PSF-II
Saab P/N 45 30 09 800
Subaru P/N K0209A0080
ZF TE-ML 09



Always consult your owner's manual for verification of fluid type and grade!

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GEAR OIL

Extreme Heavy Duty Gear Oil



Features & Benefits

- Broad grade offering
- Non-corrosive
- Resists sludge formation
- Field proven performance
- Anti-micropitting



GEAR OIL is intended for use as heavy-duty, Extreme Pressure (EP) oil for industrial gear sets. Each grade in the series is blended from quality, high viscosity index (VI) paraffinic base oils.

Specifications

Meets Requirements Of	68	100	150	220	320	460
AIST 224	✓	✓	✓	✓	✓	✓
AGMA 9005-F16 Antiscuff	✓	✓	✓	✓	✓	✓
David Brown S1.53.101 E	-	✓	✓	✓	✓	✓
ISO 12925-1:2018(E) CKC	✓	✓	✓	✓	✓	✓
ISO 12925-1:2018(E) CKD	✓	✓	✓	✓	✓	✓
JIS K 2219:2006 (Class 2)	✓	✓	✓	✓	✓	✓
JOY SK025318-0004	✓	-	-	✓	✓	-
DIN 51517 Part III (2018)	✓	✓	✓	✓	✓	✓

Typical Results

TEST METHOD	68	100	150	220	320	460
AGMA GRADE	2EP	3EP	4EP	5EP	6EP	7EP
VISCOSITY (D445) cSt @ 40°C cSt @ 100°C	69.1 9.6	102.4 12.3	152.4 15.9	227.2 20.1	322 25.1	478.3 31.8
VISCOSITY INDEX (D2270)	119	112	107	102	100	97
DENSITY @ 15°C (D4052) kg/L	0.87	0.88	0.88	0.89	0.90	0.91
POUR POINT (D97) (°C)	-34	-27	-18	-12	-9	-10
FLASH POINT (D93) (°C)	178	184	183	180	184	183
4-BALL WEAR (D4172) (mm)	< 0.37 (ALL GRADES)					
4-BALL EP (D2783) LOAD WEAR INDEX (kg) WELD POINT (kg)	>45 (ALL GRADES) > 220 (ALL GRADES)					
RUST PREVENTION (D665B)	PASS (ALL GRADES)					
COPPER CORROSION (D130)	1B (ALL GRADES)					

GEAR OIL contains a non-lead EP, anti-rust, anti-oxidation, corrosion inhibitors and anti-foam suppressant additives. These oils are non-corrosive to yellow metal gear set components. They will resist the formation of sludge at high temperatures and can be used in normal service up to a continuous 93°C (200°F). Above this temperature, the oil should be changed more frequently or an oil cooler should be installed.

GEAR OIL is formulated to protect against harmful microscopic wear caused by micropitting. This formula helps to protect gear teeth from wear at the earliest stages. The result of micropitting can lead to severe gear tooth damage.

GEAR OIL in the appropriate grade is recommended for industrial and marine service in straight and spiral bevel, helical, herringbone and spur gear sets.

These oils are not suitable for vehicle and heavy equipment differentials, transmissions and planetary gear drives which require extra surface-active EP protection against shock-loads and wider operating temperature ranges. In these applications, use **Irving HDH**.

www.irvingoil.com/lubricants
1.800.574.5823

Supporting data available to demonstrate acceptable performance. Check with your sales associate for latest product approvals. Please note, these are typical performance indicators and can change without notice.

This data sheet replaces previous versions prior to 08.03.19.

www.irvingoil.com/lubricants 1.800.574.5823

GEAR OIL

Extreme Heavy Duty Gear Oil

Sizes & Order Codes

Size	68	100	150	220	320	460
18.9 L/ 5 US Gal	F0086640	-	F0084740	F0086340	F0086440	-
205 L/54.2 US Gal (Metal)	F0012250	F0011650	F0011750	F0011950	F0012150	F0004750
205 L/54.2 US Gal (Plastic)	-	F0084650	-	F0086350	F0004650	-
1000 L/ 264 US Gal	F0004860	-	F0004260	F0004460	F0004660	F0004750
BULK TOTE	-	-	F0107901	-	-	-
BULK	B0004801	B0004101	B0004201	B0004401	B0004601	B0004701



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This data sheet replaces previous versions prior to 08.13.19

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SYN GEAR

Full Synthetic Gear Oil



Features & Benefits

- Top level performance
- Non corrosive to yellow metal
- Non-foaming
- Long life – extended drain intervals
- Compatible with mineral gear oils
- Excellent stability

SYN GEAR oils offer a wider operating temperature range than the equivalent grades of mineral-based gear oils, as synthetic oils have a degree of natural 'multi-grading'. This can be important in applications where low temperature startup may be necessary or where there is a wide variation in ambient temperatures.

SYN GEAR oils have highly effective EP additives to prevent the welding and transfer of metal between the contact surfaces of heavily-loaded gear teeth. This reduces the possibility of damage to the gear surfaces even when shock loading is present.

SYN GEAR oils are non-corrosive to gearbox and bearing materials and will prevent the rusting of iron containing metals. This oil separates readily from water. The water will settle to the bottom of the gearbox where it can be drained off. Oil and water mixture can reduce the lubricating abilities, act as a promoter of oxidation and other degenerative processes.

SYN GEAR is not recommended where constant operating temperatures exceed 100°C. In the appropriate grades, these oils are recommended for all types of gear sets except automotive differentials. For this application, we recommend **SYN HDH**.

Specifications

Meets Requirements of the Following:	150 & 220
US Steel 222 & 224	X
AGMA 250.04 & 9005-D94	X
DIN 51517 Part 3	X
David Brown S1.53 101	X
Fives P-35, P-59, P-63, P-74, P-76, P-77, P-78	X

Sizes & Order Codes

SYN GEAR 150	SYN GEAR 220
18.9L Pail (5 US gal) F0085740	18.9L Pail (5 US gal) F0085840
205L Metal (54.2 US gal) F0071950	205L Metal (54.2 US gal) F0019650

Typical Results

ISO GRADE	150	220
AGMA GRADE	4EP	5EP
VISCOSITY (D445) cSt @ 40°C cSt @ 100°C	151 20.3	217 27.6
VISCOSITY INDEX (D2270)	156	164
POUR POINT (°C) (D97)	-36	-33
DENSITY @ 15°C (D4052) kg/L	0.8691	0.8694
FLASH POINT (°C) (D92)	274	260
TIMKEN LOAD (D2782) (kg)	36.2	36.2
FZG LOAD STAGE	12	12
4-BALL EP (D2783) LOAD WEAR INDEX (kg)	51	51



Blending & Packaging

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SYN HDH & SYN TRANS 50



Features & Benefits

- Extreme protection
- Long life – enhanced fluid and equipment durability
- Excellent stability
- Improved economy
- Reduces heat
- Non corrosive to yellow metal
- Non Foaming

Meets Requirements Of:	SYN HDH 75W-90	SYN TRANS 50
API MT-1	X	X
API GL-5	X	
Mack GO-J Plus	X	
Mack TO-A Plus		X
Eaton Transmission Div., PS-164 Rev. 7 (Not Eaton listed)		X
Eaton Roadranger extended drain (Not Officially Approved by Eaton)		X
ARVIN MERITOR 0-81		X
Navistar TMS 6816		X
Meritor O-81		X
Spicer Transmission extended drain		X
ZF Freedomline		X
ZF TE-ML 02L		X
Dana synchronized and non- synchronized transmissions		X

SYN HDH and SYN TRANS 50 use synthetic base oil for excellent stability, long life, extreme temperature operation, improved fuel economy, reduced wear and cleaner components. Mack Trucks Inc approves **SYN HDH** for use under its GO-J and GO-J Plus programs and also approves **SYN TRANS 50** under its TO-A Plus program.

SYN HDH has a complete protection package for the extreme pressure (EP) conditions of differentials, including limited slip, and planetaries working under the heaviest load conditions. It meets the performance requirements of API* GL-5, Rockwell Corporation and Dana Corporation.

SYN HDH is available in a multi-grade to cover the broadest possible temperature ranges. The use of synthetic base rather than mineral oil reduces friction in extreme conditions, increasing fuel economy by making more horsepower available to the driving wheels.

SYN TRANS 50 is specially formulated for extended drain and sever service in manual transmissions in class 6, 7 and 8 trucks where straight mineral oils (non-EP) or SAE 50 diesel engine oil is usually recommended.

SYN TRANS 50 has wider operating temperature range than the alternatives. At low temperatures, this gives easier shifting with less drag and gear wear and lubricating vital transmission parts quickly. At high temperatures, this oil provides a thicker protective oil film than mineral oil lubricants, reducing friction and wear.

NOTE: **SYN TRANS 50** IS NOT APPROVED FOR USE AS ENGINE OIL.

Sizes & Order Codes

SYN HDH 75W-90	SYN TRANS 50
18.9 L/ 5 US Gal F0085940	18.9 L/ 5 US Gal F0086040
60 L/15.8 US Gal F0020045	60 L/15.8 US Gal F0020245
205 L/54.2 US Gal F0073650	205 L/54.2 US Gal N/A

Typical Results

SAE GRADE	SYN HDH 75W-90	SYN TRANS 50
DENSITY @ 15°C (ASTM D4052) kg/L	0.866	0.8400
VISCOSITY (D445) cSt @ 40 °C	99.8	121.5
cSt @ 100 °C	14.9	18.4
VISCOSITY INDEX (D2270)	156	170
POUR POINT (°C) (D97)	-36	-44
FLASH POINT (°C) (D92)	212	223
COPPER CORROSION (D130)	-	1A



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LUBEX EP

Premium Multipurpose Grease



Features & Benefits

- Available in 3 NLGI grades
- High Drop Point
- Disc & non-disc brake wheel bearing approved
- Green in color for easy identification
- GC/LB approved
- Good water resistance
- Extreme pressure protection
- Superior load and wear protection
- Multipurpose – reduces need for multiple greases

LUBEX EP is premium grease developed to meet the growing demand for higher quality multipurpose grease. Its complex thickener gives a wide range of performance benefits over a variety of applications. Grease can be considered as a suspension of oil in a matrix. The matrix can be formed in oil by the reaction of an acid and a base, producing what is called soap. Complex grease is made when several different ingredients are used.

LUBEX EP is remarkable in its ability to overcome most of the traditional weaknesses of greases. It has excellent mechanical stability under repeated mechanical stress and shows little tendency to separate. It has good resistance to water, making it a good choice where water contamination is unavoidable. The grease is able to give top-level protection from extreme pressure (EP) load wear and damage, as well as protection from corrosion and rust. It has a very high dropping point and excellent resistance to oxidation.

LUBEX EP is available in 3 standard NLGI (National Lubricating Grease Institute) grades. Grades are primarily used to indicate the pumpability of the grease. Grade 0 is suitable for winter conditions and instances when the grease has to be pumped through long supply lines or to the spray nozzles of a centralized lubrication system. Grade 1 should be used for hand application in winter-outdoor conditions. Grade 2 is used for all general indoor and summer-outdoor needs

Size & Order Codes

LUBEX EP 0	LUBEX EP 1	LUBEX EP 2
400g Box 10 Tubes FG001512	400g Box 10 Tubes FG001612	400g Box 10 Tubes FG001712
17Kg / 37.5 lbs. Pail FG001540	17Kg / 37.5 lbs. Pail FG001640	17Kg / 37.5 lbs. Pail FG001740
55Kg / 121.3 lbs. Keg n/a	55Kg / 121.3 lbs. Keg FG001645	55Kg / 121.3 lbs. Keg FG001745
180Kg / 396.8 lbs. Drum FG001550	180Kg / 396.8 lbs. Drum N/A	180Kg / 396.8 lbs. Drum FG001750

Typical Results

NAME	0	1	2
THICKENER TYPE	Lithium Complex		
NLGI GRADE	0	1	2
COLOR/APPEARANCE	Green / Smooth		
VISCOSITY, OIL COMPONENT (D445) cSt @ 40°C	198-242	198-242	198-242
WORKED PENETRATION (D217) @ 25°C	355-385	310-430	265-295
OPERATING TEMPERATURE °C	-20 / 182	-15 / 218	-20 / 218
DISPENSING TEMPERATURE °C	-20	N/A	N/A
4-BALL EP TEST WELD POINT (D2596) Kg	315min	315min	315min
4-BALL WEAR (D2266) WEAR SCAR DIAM. (mm)	0.49 max	0.43 max	0.43 max
DROPPING POINT (°C) (D2265)	224	232	260
TIMKEN OK LOAD (D2509) lb	55	55	55
LOW TEMPERATURE TORQUE (D4693) (N.m)	1.9 max	2.5 max	2.7 max



Blending & Packaging

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This data sheet supersedes any previous version prior to 5/24/2018.

LUBEX EP 2 SPECIAL

High Performance Multipurpose Grease



Features & Benefits

- High performance multi-purpose grease
- Lithium complex thickener
- Excellent mechanical stability
- Multipurpose – reduces inventory
- Excellent adhesion
- Water washout resistance
- High dropping point
- Reduces leakage

LUBEX EP SPECIAL is high performance grease developed to meet the needs of today's demanding industrial and heavy commercial users where typical EP grease is not enough. The Lithium complex thickener gives a wider range of performance benefits over a wider range of applications.

LUBEX EP SPECIAL is remarkable in its ability to overcome most of the traditional weaknesses of other grease.

LUBEX EP SPECIAL has excellent mechanical stability under repeated mechanical stress with low separation tendency. The high dropping point makes it ideal where heat can excessively thin other greases. Extreme pressure additives offer outstanding wear protection under the most severe shock loading. A unique rust and corrosion inhibitors ensure longevity of equipment life. The high quality base oil and Lithium complex thickener is enhanced with a polymer to improve adhesion tendency and water washout resistance, making it the ideal choice where water contamination is unavoidable.

LUBEX EP SPECIAL is available in NLGI (National Lubricating Grease Institute) Grade 2. It is ideal for mobile applications such as forestry, mining and construction as well as industrial applications including saw mills and paper manufacturing.

Size & Order Codes

LUBEX EP 2 Special
400g Box 10 Tubes FG008012
55Kg 121.3 lbs. Keg FG008345

Typical Results

NAME	Lubex EP 2 Special
THICKENER TYPE	Lithium Complex
NLGI GRADE	2
COLOR/APPEARANCE	Red / Tacky
VISCOSITY, OIL COMPONENT (D445) cSt @ 40°C cSt @ 100°C	210-300 19-22
WORKED PENETRATION (D217) @ 25°C	265-295
OPERATING TEMPERATURE (°C)	-15 to 225
4-BALL EP TEST WELD POINT (D2596) (kg)	500
LOAD WEAR INDEX (D2596)	55
DROPPING POINT (°C) (D2265)	287
POUR POINT (°C)	-12
TIMKEN OK LOAD (D2509) (lb)	60
RUST PREVENTION (D1743)	PASS



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WEARTEX

Semi-Fluid Extreme Pressure Grease



Features & Benefits

- Resists thermal breakdown
- High dropping point
- High stability
- Versatile
- Excellent lubricant for certain crushers
- Superior EP protection
- Excellent protection against wear and corrosion

WEARTEX is semi-fluid grease using a Lithium complex thickener. It provides excellent rust protection and has excellent resistance to oxidation, giving long and durable service. Although semi-fluid, WEARTEX has a very high dropping point. This, along with WEARTEX's excellent resistance to oxidation, makes it grease that can be used even in the hottest environments, use full up to 180°C (350°F).

Mechanical working of greases can sometimes change their nature. But **WEARTEX** has excellent mechanical stability and will keep its grade longer than most other types of grease, and it resists the separation of the oil from its thickener even under the toughest conditions.

With a full 23 Kg (50 lbs.) of Timken OK load, a measure of the grease's ability to prevent wear under high-load conditions, **WEARTEX** is a true extreme pressure (EP) grease. Because of its semi-fluid nature, it can be used in industrial gearboxes where very heavy oils are otherwise required, or where leaks from the housing make the use of oils wasteful.

WEARTEX is recommended for many mobile equipment centralized lubricator systems. It is also recommended by a number of crusher manufacturers for the lubrication of Pitman bearings where constant extrusion of grease is used to provide a seal against the possible entry of rock dust and water into the bearing.

Size & Order Codes

WEARTEX
17Kg 37.5 lbs. Pail
FG002640

Typical Results

NAME	WEARTEX
THICKENER TYPE	Lithium Complex
NLGI GRADE	00
COLOR/APPEARANCE	Brown/Smooth
VISCOSITY, OIL COMPONENT (D445)	
cSt @ 40°C	90-110
cSt @ 100°C	10-11
WORKED PENETRATION (D217) @ 25°C	400-430
OPERATING TEMPERATURE °C	-23 to 93
TIMKEN OK LOAD (D2509) lb	50



Blending & Packaging

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Supporting data available to demonstrate appropriate performance.
Check with your Sales Representative for latest product approvals.
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This data sheet supersedes any previous version prior to (5/17/2018).



AF MOLY PLUS

5% Moly Heavy Duty Grease

Features & Benefits

- Good load-carrying ability
- Good high temperature performance
- Good water resistance
- Satisfies Caterpillar's 5% "moly" content

Sizes & Order Codes

Moly Plus 0	Moly Plus 2
400G Box 10 Tubes FG006712	400G Box 10 Tubes FG007812
17KG (37.5 lbs.) Pail FG006740	17KG (37.5 lbs.) Pail FG007840
55KG (121.3 lbs.) FG006745	55KG (121.3 lbs.) n/a
180KG (396.8 lbs.) Drum FG006750	180KG (396.8 lbs.) Drum FG007850

Typical Results

NLGI Grade	0	2
COLOUR	Grey	Grey
THICKENER TYPE	Lithium Complex	Lithium Complex
APPEARANCE	Smooth	Smooth
VISCOSITY, OIL COMPONENT (D445) cSt @ 40°C	155-185	155-185
WORKED PENETRATION (D217) @ 25°C	355-385	265-295
DROPPING POINT (D2265) (°C)	260	260
4-BALL-EP (D2596) WELD POINT (kg)	400	400
4-BALL WEAR (D2266) WEAR SCAR DIAM. (mm)	0.60 max	0.60 max
MoS ₂ CONTENT (%)	5%	5%
OPERATING TEMP (°C)	-30 to 200	-20 to 220
LOW TEMP. TORQUE (D4693) (N-m)	2.4	2.4
OIL SEPERATION (D1742) (%)	4.0	4.0



AF-MOLY PLUS is heavy duty grease that is fortified with 5% molybdenum disulfide to provide dry film lubrication for load-bearing surfaces in applications where the grease may tend to be squeezed out and where there is a high degree of rubbing rather than rolling motion.

AF-MOLY PLUS is ideal for automatic greasing systems on construction equipment and is recommended for the lubrication of joints, slides, splines, pins, bushings, linkages hinges and many other applications.

AF-MOLY PLUS satisfies the requirements of many equipment manufacturers for greases that must contain at least 3% "moly". It also satisfies Caterpillar's requirement for special application grease that must contain 5% "moly".

In general greases that contain "moly", or any other dry lubricant or filler are not recommended for use in rolling high-speed bearings. The particle size of "moly" is extremely small however particles in the grease can cause surface distress in the repetitively loaded surfaces of rolling bearings.

AF-MOLY PLUS is ideal for use in automatic greasing systems. It is available in NLGI grade 0 for easy pumping in such systems.



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This data sheet replaces previous versions prior to 01/30/19

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PREMIUM HYDRAULIC OIL



Features & Benefits

- Excellent corrosion and wear protection for long pump life
- Excellent foam resistance for efficient pump operation
- Excellent water tolerance where contamination is unavoidable
- Outstanding oxidation resistance for long service life

Typical Results

Test Method	15	22	32	46	68	100
GRADE	ISO 15	ISO 22	ISO 32	ISO 46	ISO 68	ISO 100
COLOUR (D1500)	1.0	1.0	1.5	1.5	2.5	2.5
VISCOSITY (D445) cSt @ 40°C cSt @ 100°C	15.3 3.6	22.2 4.7	32.4 5.8	44.2 7.2	68.8 9.6	101.9 12.3
DENSITY (D4052), kg/L	0.84	0.84	0.85	0.85	0.86	0.87
VISCOSITY INDEX (D2270)	119	133	122	124	119	113
POUR POINT (D5949), °C	-55	-50	-45	-43	-40	-35
FLASH POINT (D93), °C	189	202	219	221	230	223
OXIDATION LIFE (D943), HRS	5000+	5000+	5000+	4500+	3000+	2000+
ZINC CONTENT, (D4951) %WT	0.04	0.04	0.04	0.04	0.04	0.04
DEMULSE (D1401), TIME TO 40/40/0, MIN.	15	35	20	10	10	5

Sizes & Order Codes

Size	15	22	32	46	68	100
3.78L 1 US Gal	-	-	F0006626	-	-	-
18.9L 5 US Gal	F0087640	F0087740	F0082840	F0088140	F0088240	F0087540
205L 54.2 US Gal	-	F0013150	F0013250	F0013350	F0013450	F0012950
1000L 264 US Gal	-	F0006460	F0006660	F0007060	F0007260	-
Bulk Tote	-	F0087640	F0105701	F0109801	F0105801	-
Bulk	B0006101	B0006401	B0006601	B0007001	B0007201	B0006001

IRVING PREMIUM HYDRAULIC oils are high performance anti-wear hydraulic oils. These oils are blended from quality paraffinic mineral oil which gives them their ability to maintain their viscosity over a relatively wide range of operating temperatures.

IRVING PREMIUM HYDRAULIC oils are fortified with additives to provide the best possible wear-protection and service life.

IRVING PREMIUM HYDRAULIC oils protect hydraulic pumps and motors while resisting deterioration, water contamination and sludge formation.

IRVING PREMIUM HYDRAULIC oils provide superior performance in all critical areas as proven by industry standard tests, many of them developed by the pump manufacturers themselves.

IRVING PREMIUM HYDRAULIC oils are NOT recommended for use with pumps that contain silver-plated parts. For these applications, use Irving D&E oils.



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This data sheet replaces previous versions prior to 03-04-19.

www.irvingoil.com/lubricants 1.800.574.5823

HYDRAULIC

Premium Hydraulic Oil

Specifications

Meets Requirements Of:	15	22	32	46	68	100
DIN 51524-2 (HLP)	✓	✓	✓	✓	✓	✓
ASTM D6158 (HM)	✓	✓	✓	✓	✓	✓
ISO 11158 (HM)	✓	✓	✓	✓	✓	✓
SAE MS 1004 (HM)	✓	✓	✓	✓	✓	✓
Parker (formerly Denison) HF-0, HF-1, HF-2	-	-	✓	✓	✓	-
Eaton M-2950-S, I-286-S3 and 35VQ25 (Obsolete)	-	-	✓	✓	✓	-
Bosch Rexroth RE 90220, 90240 (Obsolete)	✓	✓	✓	✓	✓	✓
GM LS-2	-	✓	✓	✓	✓	-
Fives P-68	-	-	✓	-	-	-
Fives P-69	-	-	-	-	✓	-
Fives P-70	-	-	-	✓	-	-
AIST 126	-	-	✓	✓	✓	-
AIST 127	-	-	✓	✓	✓	-

Always consult your owner's manual to check the type and quality of the fluid to be used!

Supporting data available to demonstrate acceptable performance. Check with your sales associate for latest product approvals.

Please note, these are typical performance indicators and can change without notice.

This data sheet replaces previous versions prior to 03-04-19.

www.irvingoil.com/lubricants 1.800.574.5823

HYDRAULIC ZF 46

Premium Zinc Free, Inherently Biodegradable Hydraulic Fluid



Features & Benefits

- Zinc free
- Inherently biodegradable
- Excellent oxidation stability
- Good sludge and particulate control
- Exceptional wear protection
- Excellent separation from water

Specifications

Meets Requirements Of:
ISO 11158-HM
ASTM D6158-HM
SAE MS 1004-HM
DIN 51524-2
Parker HF-0, HF-1, HF-2

Typical Results

Test Method	ZF 46
ISO GRADE	46
DENSITY @ 15°C (ASTM D4052) (kg/L)	0.8568
VISCOSITY (D445) cSt @ 40 °C cSt @ 100 °C	45.6 7.2
VISCOSITY INDEX (D2270)	118
POUR POINT (°C) (D97)	-30
FLASH POINT (°C) (D93)	216
OECD 301B	Inherently biodegradable

HYDRAULIC ZF 46 is a premium high-performance zinc free, inherently biodegradable hydraulic fluid, developed to perform in extreme conditions and environmentally sensitive areas. The Hydraulic ZF 46 additive system means superior oxidation and stability while providing protection from wear, rust and corrosion. The result is a silicone free, low foaming product.

HYDRAULIC ZF 46 is formulated to provide superior performance over traditional hydraulic additive packages in severe duty and high-load applications. It is developed to increase the life of the fluid while reducing environmental impact.

HYDRAULIC ZF 46 can extend oil drain intervals, which can reduce costs. It can potentially improve efficiency during the length of the oil drain due to the reduction in deposits.

HYDRAULIC ZF 46 is formulated to have good sludge and particulate control for improving protection of critical components having strict tolerances like servo-valves and pumps.

HYDRAULIC ZF 46 is formulated with anti-wear additives to maximize equipment life and reduce maintenance costs.

HYDRAULIC ZF 46 has excellent water separation properties allowing the water to separate from the fluid while maintaining it during service.

Sizes & Order Codes

ZF 46
18.9 L/ 5US Gal F0100340
1000L/264 US Gal F0100360
BULK B0100301

www.irvingoil.com/lubricants
1.800.574.5823



BIO-HYDRAULIC

Premium Biodegradable Hydraulic Oil



Features & Benefits

- Readily biodegradable
- Excellent choice for hydraulic and circulation systems operating in environmentally sensitive areas

Specifications

Meets or Exceeds manufactures and industry test standards	
Bio-degradation ASTM D5864	Ultimate Biodegradable
Classification	Pw1

Typical Results

ISO Grade	46
Density @ 15°C (D4052), kg/l	0.876
Viscosity (D445) cSt @ 40°C	43.8
cSt @ 100°C	9.7
Viscosity Index (D2270)	215
Pour Point (D97), °C	-38
Flash Point (D92), °C	243
Fire Point (D92), °C	266
4-Ball Wear, mm	0.35
FZG Gear Test	12
Emulsion Tendency	40/40/0 10 min
Biodegradation Classification	Ultimate Pw1
VGP/EAL Compliant	Yes

Irving Bio-Hydraulic 46 is a premium environmentally responsible hydraulic fluid engineered to provide exceptional performance in hydraulic and circulation systems.

Irving Bio-Hydraulic 46 satisfy the requirements for ultimate biodegradability and non-toxicity making it an excellent choice for hydraulic and circulation systems operating in environmentally sensitive areas.

Irving Bio-Hydraulic 46 meets or exceeds most major hydraulic pump and system manufacturer's toughest fluid requirements. It contains anti-wear and film strength additives for hydraulic systems operating under high load and high-pressure settings. It also provides excellent protection against rust and corrosion.

Irving Bio-Hydraulic 46 complies with the "biodegradable", "minimally-toxic" and "not bio-accumulative" standards as defined in Appendix A of the 2013 Vessel General Permit issued by the United States Environmental Protection Agency.

Sizes & Order Codes

Bio-Hydraulic 46
18.9L (5.0 US Gal) F0123540

www.irvingoil.com/lubricants
1.800.574.5823

Supporting data available to demonstrate acceptable performance. Check with your sales associate for latest product approvals. Please note, these are typical performance indicators and can change without notice.

This data sheet replaces previous versions prior to 01-20-2020.

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IRSOL

Multi-use, Low Odor Solvent



Features

- Low odor
- Good solvency

IRSOL is a good hydrocarbon solvent with optimum evaporation rates.

IRSOL shows good solvency for all types of hydrocarbons, from heavy oils, greases and waxes to oil-based paints and inks. It can be used for general cleaning, de-greasing, paint thinning, ink preparation and other similar uses.

IRSOL is a solvent that boils over at a range of temperatures 310°F to 390°F.

IRSOL should be treated with the same care that is due all chemicals. Avoid vapor inhalation.

IRSOL, like all such solvents, can remove natural skin oil and fats, so avoid direct skin contact by using barrier creams or chemical-resistant gloves.

Benefits

- Very versatile

Typical performance results

NAME	METHANOL
DENSITY @ 15°C	0.79
DISTILLATION (D-86)	
IBP (°C)	162
50% Pt. (°C)	176
End Pt. (°C)	199
KAURI-BUTANOL (D-113)	37
ANILINE Pt. (°C) (D-611)	65.2
COMPOSITION (%vol.)	
PARAFFINS	51
AROMATICS	0.5
NAPHTHENES	48.5
FLASH POINT (D-56) (°C)	45.6
RELATIVE EVAPORATION (N-BUTYL ACETATE=1)	0.12

Available sizes & part numbers

	18.9L (5.0 US Gal)	205L (54.2 US Gal)	1000L (264 US Gal)	Bulk
IRSOL	F0089840	F0024850	F0009760	R0648

Check with sales representative or website for the latest product approvals.



Lubricants

www.irvinglubricants.com

Compressor Oils

Long Life Compressor Oil



Features & Benefits

- Suitable for all types of air compressors
- Range of grades available
- Simplifies plant lubrication
- Excellent all-round performance
- Increased oxidation protection
- Superior thermal stability
- Excellent air and water separation
- Excellent wear protection
- Non-zinc based additives package
- Does not contain dispersants
- Little tendency to foam & form emulsions
- Resists oxidation
- Reduces deposit formation
- Hydrovane rated to 7,000 hours
- TUV

COMPRESSOR OILS are specially made for the proper lubrication of a wide variety of air compressor types. The combination of top quality mineral base oils and special additives provides long oil and compressor life even in the toughest conditions.

COMPRESSOR OILS provide excellent wear protection without the use of zinc-based additives. This is an advantage with some screw-type compressors where the zinc can encourage deposits on the housing wall.

COMPRESSOR OILS do not contain the dispersants typically found in engine oils and so show very little tendency to foam or form emulsions when water is present.

COMPRESSOR OILS have excellent resistance to oxidation and the formation of deposits even when working at discharge temperatures as high as 90°C. Under normal conditions, drain intervals of 1000 hours are possible. To maximize oil drain interval, consider using Irving Blending & Packaging's Used Oil Analysis Program.

COMPRESSOR OILS simplify the choice of lubricant where various types of air compressors are in service, including piston, vane, screw, scroll and lobe compressors. They are not suitable for use where gases other than air are being compressed.

Sizes & Order Codes

Compressor Oil 46
205L Drum (54.2 US gal) F0000750

Typical Results

ISO GRADE	46
ASTM COLOUR	1.0
VISCOSITY (D445)	
cSt @ 40°C	47.0
cSt @ 100°C	6.8
VISCOSITY INDEX (D2270)	98
DENSITY @ 15°C (D4052), Kg/L	0.879
FLASH POINT (°C) (D92)	228
POUR POINT (°C) (D97)	-27
FOAM PREVENTION (D892)	
Seq. 1, Tendency/Stability (ml)	0/0
DEMULSIBILITY @ 54°C (D2711)	
ml. Oil	46
ml. Water	33
ml emulsion (minutes)	1 (5)
RUST PREVENTION (D665B)	PASS
OXIDATION (D943)	
Hours to 2.0 TAN	>2500



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Supporting data available to demonstrate appropriate performance.
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This data sheet supersedes any previous version prior to 5/23/2018



DEF

Diesel Exhaust Fluid

Features & Benefits

- API Certified
- Meets ISO 22241-1:2019
- Nontoxic, nonpolluting, nonhazardous and non-flammable solution
- Reduces harmful emissions by up to 90%
- Increases fuel efficiency

Typical Results

Test	Units	Typical	Min	Max
Urea Content	% (m/m)	32.5	31.8	33.2
Density at 20°C	kg/L	1.0899	1.087	1.093
Refractive Index at 20°C	-	1.3830	1.3814	1.3843
Alkalinity (as Ammonia)	% (m/m)	<0.1	-	0.2
Biuret	% (m/m)	0.20	-	0.3
Aldehydes	mg/kg	<0.5	-	5
Insoluble matter	mg/kg	<0.1	-	20
Phosphates	mg/kg	<0.05	-	0.5
Calcium	mg/kg	<0.1	-	0.5
Iron	mg/kg	<0.1	-	0.5
Copper	mg/kg	<0.1	-	0.2
Zinc	mg/kg	<0.1	-	0.2
Chromium	mg/kg	<0.1	-	0.2
Nickel	mg/kg	<0.1	-	0.2
Aluminum	mg/kg	<0.1	-	0.5
Magnesium	mg/kg	<0.1	-	0.5
Sodium	mg/kg	<0.1	-	0.5
Potassium	mg/kg	<0.1	-	0.5
Identity (FTIR)		Identical to reference	-	-

Sizes & Order Codes

Size	Code
3.78 L / 1 US gal	F0102526
9.46 L / 2.5 US gal	F0102510
208 L / 54.9 US gal	F0102550
1250 L / 330 US gal	F0102565
Bulk	B0101801



IRVING DEF (Diesel Exhaust Fluid) is a 32.5% (AUS 32) Aqueous Urea Solution produced with high purity urea mixed with demineralized water and was formulated to meet the specifications of ISO 22241-1:2019 for reducing NOx emissions in diesel engines.

IRVING DEF transforms harmful nitrogen oxide (NOx) emissions from diesel powered vehicles into harmless water vapor and nitrogen.

IRVING DEF is produced to exceed the stringent regulations of the 2010 EPA (Environmental Protection Agency) Clean Air Act requirements mandating the reduction of harmful Nitrogen Oxide and particulate matter emissions by up to 90% while helping to increase fuel efficiency. When it comes to DEF, quality and purity are what really counts. SCR (Selective Catalytic Reduction) systems are the preferred technology to achieve EPA mandated reductions, DEF contaminants or impurities can cause this system to malfunction or fail. It is critically important to maintain the standards set forth by the ISO 22241-1 program.

IRVING DEF is certified as a Diesel Exhaust Fluid by the American Petroleum Institute.



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1.800.574.5823

Supporting data available to demonstrate acceptable performance. Check with your sales associate for latest product approvals. Please note, these are typical performance indicators and can change without notice.

This data sheet replaces previous versions prior to 08.03.19.

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DEF

Diesel Exhaust Fluid

ISO 22241-3:2017 - Shelf Life as a Function of Storage Temperature

Constant Ambient Storage Temperature (°C)	Minimum Shelf Life (Months)
≤10	36
≤25	18
≤30 ^a	12
≤35	6
>35	Significant loss of shelf life: check every batch before use

NOTE: The main factors taken into account to define the shelf life in this table are the ambient storage temperature and the initial alkalinity of AUS 32. The difference in evaporation between vented and non-vented storage containers is an additional factor.

^a To Prevent decomposition of AUS 32, prolonged transportation or storage above 30 °C should be avoided.

Never store Irving DEF in direct sunlight.

Table Reference:

International Organization for Standardization. (2017). Diesel engines – NOx reduction agent AUS 32 – Part 3: Handling, transportation, and storage (ISO Standard No. 22241-3:2017). Retrieved from <https://www.iso.org/standard/66410.html>



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