

WILLIAMSON COUNTY BID FORM

FLUIDS AND GREASE

BID NUMBER: 09WCA012

NAME OF BIDDER: Arnold Oil Co.

Mailing Address: 1617 E. 6th St.

City: Austin State: TX Zip: 78702

Email Address: jRonshausen@arnoldoil.com

Telephone: (512) 476-2401 Fax: (512) 476-7711

ITEM #	DESCRIPTION	PRICE PER 55 GALLON DRUMS	PRICE PER 5 GALLON PAIL	PRICE PER 1 GALLON CASE LOT	# GALLONS PER CASE	PRICE PER 1 QUART CASE LOT	# QUARTS PER CASE
1	15W40 CJ4 Engine Oil for Diesel	372.77	37.52	58.61	6	—	—
2	10W30 Engine Oil for Gas Engines	394.24	—	—	—	27.67	12
3	Hydraulic Fluid, AW 68 20W20	340.97	36.98	—	—	—	—
4	Gear Oil, 80W90 API GL-5	474.42	45.83	—	—	—	—
5	Extended Life Antifreeze/Coolant Mixture 50/50 Global Formula Automotive	272.05	—	30.97	6	—	—
6	Universal Tractor Fluid	328.54	33.35	—	—	—	—
7	Extended Life Antifreeze/Coolant Mixture 50/50 Global Formula Heavy Duty	402.14	—	45.17	6	—	—
8	Transmission/Drive Train Oil 30 WT	479.44	47.45	—	—	—	—
9	Transmission/Drive Train Oil 50 WT	528.78	51.94	—	—	—	—
10	Synthetic Transmission Oil HP 50	1202.76	126.34	—	—	—	—
11	5W-20 Synthetic Engine Oil for Gas Engines	473.03	—	—	—	31.79	12
12	Synthetic Blend Mercon V	665.44	—	74.07	6	38.30	12
		PRICE PER CARTRIDGE	PRICE PER CASE	# CARTRIDGE PER CASE			
13	Grease	2.64	26.88	10			
		PRICE PER 55 GALLON DRUMS	PRICE PER 5 GALLON PAIL	PRICE PER 1 GALLON CASE LOT	# GALLONS PER CASE	PRICE PER 1 QUART CASE LOT	# QUARTS PER CASE
14	Synthetic Gear Oil ISO 220	1220.88	122.34	—	—	—	—
15	Anti-wear Hydraulic Fluid ISO 46	359.81	36.98	—	—	—	—
16	TransSynd Transmission Fluid	1496.35	150.35	—	—	—	—

PLEASE MAKE A STATEMENT AS TO YOUR DELIVERY AND HOT SHOT CAPABILITIES.

We can go to your yard, once per day

By signing this form:

- The bidder confirms that he/she has read the entire document and agrees to the terms herein.
- The bidder is acknowledging the Conflict of Interest Clause and agrees to follow necessary requirements

The undersigned, by his/her signature, represents that he/she is authorized to bind the bidder to fully comply with the terms and conditions of the attached Invitation for Bid, Specifications, and Special Provisions for the amount(s) shown on the accompanying bid sheet(s).

John Ranshausen Date of BID: 3-30-09
Signature of Person Authorized to Sign BID

Printed Name and Title of Signer: John Ranshausen

DO NOT SIGN OR SUBMIT WITHOUT READING ENTIRE DOCUMENT

THIS FORM MUST BE COMPLETED, SIGNED, AND RETURNED WITH BID

Listed below are the product descriptions and specification charts. In the column marked bidder limits, state your products maximum and minimum performance capabilities.

1. 15W40 ENGINE OIL FOR DIESEL

Shall be a superior all-season multi-grade formulation suitable for use in all foreign and domestic diesel engines, naturally aspirated or turbocharged Oil shall be formulated with detergents, dispersants, and sufficient alkalinity in order to provide superior performance in diesel engines. The oil shall be effective in maintaining low oil consumption and low concentrations of deposits on the pistons.

This Motor oil must meet or exceed the current Performance Capabilities of:

Caterpillar ECF-2;ECF-3 MTU CATEGORY 2
Cummins CES 20081,20078 MAN 3275
DDC POWER GUARD 93K218 ACEA E7
MACK EO-O PREMIUM PLUS 07 MACJ EO-O
VOLVO VDS-4
RENAULT RLD-3

This Oil must meet or exceed the requirements of API CJ-4;CI-4 PLUS;CI-4;
CH-4; CG-4; CF;SM,SL,SJ

	Properties		Bidder Properties	
Gravity API	29.1		29.1	
Flash Point Degrees C/ F	210 (410)		210 (410)	
Viscosity at 100 degrees C	15.4		15.4	
Viscosity at 40 degrees C	117		117	
Viscosity Index	138		138	
Pour Point Degrees C/ F	-32 (-25)		-32 (-25)	
Sulfated Ash %	.96		.96	
TBN (Total Base No.) ASTM D 2896	8.0		8.0	

2. 10W30 ENGINE OIL FOR GAS ENGINES

Shall be a premium high detergent formulation of select additives and designed to provide exceptional engine protection over a wide range of operating temperatures and driving conditions. Shall be proven to help conserve fuel (Energy Conserving II). Permit easier cold weather start-ups. Provide anti-wear protection, rust and corrosion inhibition, and anti-scoff protection, promotes engine cleanliness and minimizes oil consumption.

This Motor oil must meet or exceed the current Service Categories of:

API SL; also exceed the requirements for API SJ and Obsolete category SH.

This Oil must also meet the requirements of the API Engine Lubrication Certification Mark for ILSAC GF-3.

This Oil must be classified as Energy Conserving.

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Gravity API	29.3	28.5		
Flash Point Degrees F	451	445		
Viscosity cST at 100 degrees C	10.2	9.2		
Viscosity cST at 40 degrees C	68	66		
Viscosity Index	137	135		
Low Temp Cranking ASTM D 5293 (F)	-13	-12		
Low Temp Pumping ASTM D 4684 (F)	-22	-20		

Specifications

Item 2: Motor Oil, SAE 10w30

This Motor oil must meet the current Service Categories of:

API SM; also exceed the requirements for API SL, SJ and Obsolete category SH.

This Oil must also meet the requirements of the API Engine Lubrication Certification Mark for ILSAC GF-4.

This Oil must be classified as Energy Conserving.

Properties	Maximum	Minimum	Bidder Limits
Gravity API	33	30	30.6
Flash Point Degrees F	451	400	401
Viscosity cST at 100 degrees C	10.2	9.2	9.7
Viscosity cST at 40 degrees C	67	64	65.3
Viscosity Index	137	130	134

3. HYDRAULIC FLUID, AW 68 20W20

This lubricant shall be a highly refined, fully inhibited type product for applications demanding full and long-life protection to equipment. This oil will be used in circulation, splash, bath, and ringed oil systems supplying bearings and gears of industrial machinery and as the fluid media in hydraulic systems. This high-quality chemically stable base oil shall include the improvers of anti-oxidants, rust and corrosion inhibitors, anti-foam and anti-wear agents that contain a minimum 1000 parts per million of zinc.

This Hydraulic Fluid must be **approved** against the stringent performance requirements of:

Cincinnati Machine P-69

Denison HF-O

Vickers M-2950-S and I-286-S

Properties:	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Gravity API	29.3	28	29.3	
Flash Point Degrees F	468	450	468	
Viscosity cST at 100 degrees C	8.5	8.5	8.5	
Viscosity cST at 40 degrees C	68	68	68	
Viscosity Index	95	95	95	
Oxidation Test ASTM D 943 Hrs.	unlimited	3500	3500	

4. GEAR OIL, 80W90 API GL-5

This gear oil shall be formulated with high viscosity index, thermally stable lube stocks, and a highly effective sulphur-phosphorus extreme pressure, anti-wear, anti-scuff, anti-weld additive system. This lubricant shall maintain its viscometric properties throughout its useful life.

This Gear Oil must meet or exceed the performance requirements of:

Military Specification MIL-L-2105D and MIL-PRF-2105E.

API GL5 and MT-1

Mack GO-J

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Gravity API	27	26	27	-
Flash Point Degrees F	448	435	448	-
Viscosity cST at 100 degrees C	14.7	14.5	14.5	-
Viscosity cST at 40 degrees C	148	145	146	-
Viscosity Index	98	95	100	-
Pour Point ASTM D 97 Degrees (F)	-27	-25	-25	-
Foam Test ASTM D 892	Pass	Pass	✓	✓
Copper Corrosion ASTM D 130	Pass	Pass	✓	✓

5. EXTENDED LIFE ANTIFREEZE/COOLANT MIXTURE
50/50 GLOBAL FORMULA/AUTOMOTIVE

Must be a pre-diluted 50/50 mixture.
 Must be an advanced organic acid technology.
 Must be able to mix with all other antifreeze colors without harm.
 Must be capable of providing total cooling system protection for 5 years/150,000 miles.

This Antifreeze/Coolant must meet or exceed the Licensing Requirements and Performance Requirements of:

AUTOMOTIVE

ASTM D-3306	FORD WSS-M97B44-D
ASTM D-4340	FORD WSS-M97B51-A1
GM 1825M (Aluminum)	SAE J1034
GM 6277M (Dex-Cool Spec)	JASO M325
CHRYSLER MS7170	JIS K 2234
CHRYSLER MS9769	FVV HEFT R443
FORD ESE-M97B44-A	

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Specific Gravity at 60 degrees F	1.13	1.12	✓	✓
Flash Point, COC	250 F	250 F	✓	✓
Boiling Point, Reflux	325 F+	325 F	✓	✓
Ph, 50% Volume Solution	10.0 Max	7.5 Min.	✓	✓

6. UNIVERSAL TRACTOR FLUID

This lubricant shall be a fully approved transmission/hydraulic oil for farm and industrial tractors and construction equipment. This fluid shall be a blend of highly refined base stocks selected for their inherent thermal stability with a premium additive package and high active rust, corrosion and oxidation inhibitors; all in a balanced performance package to insure lubricity, wear protection, compatibility with seals, O-rings, and packing materials, oxidation stability and water tolerance. Lubricant must provide the correct friction and heat transfer characteristics for chatter free operation of the tractor wet brakes and smooth engagement of the power take off clutch.

This Tractor Hydraulic Fluid must be intended for hydraulic and transmission oil applications for tractors and implements where the following are recommended:

Agco-Allis
 Allis Chalmers PF 821 XL
 Allison C-3
 Belarus
 David Brown
 Case New Holland (CNH) MS-1204;MS-1205;MS-1206; MS-1207 (HY-Tran Plus);MS-1209;MS-1210(TCH)
 B-6,TFD;Hi-Vis
 Caterpillar TO-2
 John Deere Quatrol,J20 A,J20 C;Hy-Gard J14 B/C, Type 303
 Deutz-Allis HTF
 Ford New Holland M2C134-A/B/C/D; M2C86-B/C
 Hesston and Hesston Fiat AF-8T
 International Harvester B-6 (Hy-Tran)
 Kiota
 Komatsu
 Kubota
 Massey Ferguson M1110,M1127 B,M1129 A, M1135, M1141
 Mitsubishi
 Oliver Type 55
 Valmet
 White farm Equipment Q1705,Q1722,Q1766B,(UHTF) Q1802,Q1826

Hydraulic System Mfgs: Denison HF-1, HF-2, Eaton Hydraulics;
Vickers I-2986-S, M-2950-S
Sauer-Sunstrand Hydraulics

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Gravity API	28.4	28	28.4	-
Flash Point Degrees F	450	440	450	-
Viscosity cST at 100 degrees C	9.2	9	9.2	-
Viscosity cST at 40 degrees C	57.2	57	57.2	-
Viscosity, cP at -4 degrees F	5,500	5,500	5500	-
Viscosity, cP at -29 degrees F	70,000	70,000	70,000	-
Viscosity Index	143	140	143	-
Pour Point ASTM D 97 Degrees (F)	-50	-40	-50	-
Foam Test ASTM D 892	Pass	Pass	✓	✓

**7. EXTENDED LIFE ANTIFREEZE/COOLANT MIXTURE
50/50 GLOBAL FORMULA/HEAVY DUTY**

Must be a 50/50 mixture of coolant and deionized water
Must be an advanced organic acid technology
Must be able to mix with conventional antifreeze
Must be silicate, nitrite and phosphate free
Must be a long life formula capable of delivering total cooling system protection for 300,000 miles of on-road use (3 years/6,000 hours off highway) or 600,000 miles of on road use (6 years/12,000 hours off highway use) with use of an extender.

This Antifreeze/Coolant must meet or exceed the Licensing Requirements and Performance Requirements of:

HEAVY DUTY

CAT EC1
ASTM D-6210-98
GM 1899M
CUMMINS 90T8-4
DETROIT DIESEL 7SE298
MACK TRUCK
JOHN DEERE H24A1, H24C1
NAVISTAR B1
INTERNATIONAL

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Specific Gravity at 60 degrees F	1.145	1.11	✓	-
Freezing Point	Minus 36F	Minus 34F	✓	-
Boiling Point, Reflux	338F	300F	✓	-
Ph, 50% Volume Solution	11.0 Max	7.5 Min.	✓	✓
Chloride, PPM	25	20	✓	-

8. TRANSMISSION/DRIVE TRAIN OIL (30WT)

This oil shall meet the stringent performance requirements of power shift transmissions, final drives, and wet-disc brakes typically found in equipment manufactured by Caterpillar and Allison.

This Transmission and Drive Train Fluid must meet the Licensing Requirements and Performance Requirements of:

Cat TO-4

Allison C-4

Komatsu Micro Clutch

This fluid must be formulated to meet the performance requirements of:

Allison C-4 - SAE 30W

Caterpillar TO-4, CD/TO-2

Komatsu Micro-Clutch

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Gravity API	27	26	✓	—
Flash Point Degrees F	495	450	✓	—
Viscosity cST at 100 degrees C	11	10.5	✓	✓
Viscosity cST at 40 degrees C	99	95	✓	✓
Viscosity Index	98	95	✓	✓
Pour Point ASTM D 97 Degrees (F)	-6	0	✓	✓
Sulfated Ash	1.7	1.5	✓	✓
Zinc, m%	0.11	0.1	✓	✓

9. TRANSMISSION/DRIVE TRAIN OIL (50WT)

This Transmission and Drive Train Fluid must meet the Licensing Requirements and Performance Requirements of:

Cat TO-4 OR TO-4M

Allison C-4

	Properties				Bidder Properties	
Gravity API	29.7				✓	
Flash Point Degrees C/F	270/518				✓	
Viscosity cST at 100 degrees C	14.0				✓	
Viscosity cST at 40 degrees C	106				✓	
Viscosity Index	134				✓	
Pour Point C/F	-39 (-38)				✓	

10. **SYNTHETIC TRANSMISSION OIL (HP50)**

This oil shall be a synthetic lubricant for heavy-duty manual transmissions, with or without synchronizers. This oil shall be a SAE 50 that meets API MT-1, GL-3, and Eaton PS-081 specifications. The oil shall be recommended for Classes 6, 7, and 8 manual transmission built by Eaton Corp. (Fuller Division), Dana Corp. (Spicer Division).

This Synthetic Transmission Fluid must meet or exceed the Licensing Requirements and Performance Requirements of:
Meritor (Rockwell) O-81
MIL-L-2104D, MIL-L-46152B
Mack TO-A Plus

This fluid must be formulated to meet or exceed the performance requirements of:
Allison C-4 - SAE 30W
Caterpillar TO-4, CD/TO-2
Komatsu Micro-Clutch

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Flash Point Degrees F	401+	385	✓	✓
Viscosity cST at 100 degrees C	18	17	✓	✓
Viscosity cST at 40 degrees C	135	130	✓	✓
Viscosity Index	149+	140	✓	✓
Pour Point ASTM D 97 Degrees (F)	-40	-35	✓	✓

11. **5W-20 SYNTHETIC BLEND ENGINE OIL FOR GAS ENGINES**

Shall be manufactured with high viscosity index, premium quality, synthetic / hydroprocessed base oils and specially designed performance additives, which help minimize engine deposits and wear, protect against high temperature oxidation, low temperature gelling, rust and corrosion and foaming.

This Motor oil must meet or exceed the current Service Categories of:
API SL; also exceed the requirements for API SJ and Obsolete category SH.

This Oil must also meet or exceed the requirements of the Ford WSS-M2C930-A Specification and ILSAC GF-4.

This Oil must be classified as Energy Conserving.

	Properties				Bidder Limits	
					Maximum	Minimum
Specific Gravity @ 60 Deg.F	0.861				✓	✓
Flash Point Degrees C/F	224/435				✓	✓
Viscosity cST at 100 degrees C	8.7				✓	✓
Viscosity cST at 40 degrees C	50				✓	✓
Viscosity Index	164				✓	✓

12. SYNTHETIC BLEND MERCON V

This oil shall be a premium synthetic blend Automatic Transmission Fluid engineered to meet manufacturer's warranty requirements for General Motors DEXRON III and Ford MERCON AND MERCON V specifications. It shall be formulated to provide better flow properties for smooth shifting performance, superior high and low temperature protection for extreme operating conditions, enhanced anti-shudder protection that makes it superior to the conventional type ATF fluids/specifications. This oil shall meet or exceed General Motors DEXRON III, DEXRON III-G, DEXRON IIE, AND DEXRON, Ford MERCON AND MERCON V

This Transmission Fluid must meet or exceed the Licensing Requirements and Performance Requirements of:

Ford Mercon V
GM Dexron-III
Allison C-4

This Transmission Fluid must meet or exceed the requirements of Dexron-IIE, Dexron-II, Dexron and Type "A" Suffix "A" fluids.

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Gravity API	31.9	31	✓	✓
Flash Point Degrees F	370	365	✓	✓
Viscosity cST at 100 degrees C	7.3	7	✓	✓
Viscosity cST at 40 degrees C	33	32	✓	✓
Viscosity Index	195	190	✓	✓
Brookfield Viscosity at -20C	950	950	✓	✓
Brookfield Viscosity at -40C	12,000	12,000	✓	✓
Color	Red	Red	✓	✓

13. GREASE

Grease must be a EP2 multipurpose lithium complex grease with molybdenum. MPGM is a general purpose lithium complex grease strengthened with a molybdenum disulfide and with a high molecular weight polymer. MPGM shall contain unleaded additives, anti-wear inhibitors, inhibitors for oxidation, and corrosion inhibitors. This product shall meet the NLGI certification of "GC-LB". The grease shall be NLGI grade 2 and shall contain 3% to 5% molybdenum. Timken OK Load, kg 22; 4 Ball Wear Scar, mm 0.65; 4 Ball Weld Load, Kg 250, are minimum requirements. Caterpillar spec AARM-929 69 for 3% molly

This Lithium Complex Grease must have a minimum of 3% Molybdenum Disulfide.

This grease must be an NLGI #2

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Texture	Adhesive	Adhesive		
Penetration, ASTM D 217, 60 strokes	295	265	✓	✓
Four Ball EP Weld, ASTM D 2596. Kgs	400+	400	✓	✓
Load Wear Index, Kgf	64	63	✓	✓
Four-Ball Wear, mm Scar,ASTM D 1743				
40 kgs. Load	0.4	0.4-	✓	✓
Rust Prevention Test ASTM D 1743	Pass	Pass	✓	✓
Water Resistance 175 degrees F				
ASTM D 1264 % Loss	2	2.0 or less	✓	✓
Dropping Point, ASTM D 2265, degrees F	500+	500	✓	✓

14. SYNTHETIC GEAR OIL ISO 220

This oil must be a high performance synthetic lubricant that provides maximum wear protection, oxidation control, thermal stability, maximum deposit control, and outstanding anti wear properties in industrial gear, off highway, and construction applications.

This Synthetic Gear Oil must meet or exceed the Licensing Requirements and Performance Requirements of:

AGMA EP 220

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Gravity API	33	33	—	—
Flash Point Degrees F	442+	430	—	—
Viscosity cST at 100 degrees C	25.6	25	—	—
Viscosity cST at 40 degrees C	220.8	220	—	—
Viscosity Index	148	140	—	—
Pour Point ASTM D 97 Degrees (F)	-32	-29	—	—
Timken OK Load (LBS)	75+	75	✓	✓

15. ANTI-WEAR HYDRAULIC FLUID ISO 46

Fluid must exhibit optimum flow characteristics and resistance to shearing and viscosity loss, provide maximum anti-wear protection for high pressure vane, piston, and gear type pumps, and possess an additive system to help neutralize the formation of corrosive materials.

This Hydraulic Fluid must be approved against the stringent performance requirements of:

Cincinnati Machine P-69

Denison HF-O

Vickers M-2950-S and I-286-S

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Gravity API	30.4	30	—	—
Flash Point Degrees F	468	450	—	—
Viscosity cST at 100 degrees C	7.86	7.2	—	—
Viscosity cST at 40 degrees C	46	46	—	—
Viscosity Index	141	120	—	—
Oxidation Test ASTM D 943 Hrs.	unlimited	2400	—	—
Shear stability	0.5	0.5	✓	✓

16. TRANSSYND TRANSMISSION FLUID

This fluid shall be a premium synthetic universal power shift and automatic transmission fluid that is engineered to provide excellent thermal and oxidation stability to resist deposit formation. Formulated with high viscosity index synthetic base fluids for extreme temperature ranges. Must provide excellent shear stability, corrosion, and foaming resistance. This transmission fluid must be approved by Allison Transmission for warranty use.

This fluid must meet or exceed the Licensing Requirements and Performance Requirements of:

Allison TES 295

Allison C-4

Dexron III

Voith Transmission

ZF Transmission Requirements

Mercon

Properties	Maximum	Minimum	Bidder Limits	
			Maximum	Minimum
Gravity ATM D-287 @ 60F	0.845	0.845	—	—
Flash Point Degrees F	475	455	—	—
Viscosity cST at 100 degrees C	7.35	7.25	—	—
Viscosity cST at 40 degrees C	37.7	37	—	—
Viscosity Index	165	165	—	—
Pour Point ASTM D 97 Degrees (F)	-76	-70	—	✓



CHEVRON URSA[®] SUPER PLUS EC

SAE 15W-40

CUSTOMER BENEFITS

Chevron Ursa Super Plus EC SAE 15W-40 delivers value through:

- **One oil for all services**, both diesel and gasoline, pre- and post-2007 low emission diesel engines, minimizing the chance of misapplication.
- **Reduced inventory investment** — No need to maintain large inventory of oils to satisfy different manufacturers' requirements. Simplified inventory and dispensing systems save money.
- **Vital engine parts are kept clean** as a result of high performance detergent and dispersant additives. Provides excellent deposit and sludge control. Low sulfated ash level minimizes the oils' contribution to combustion chamber deposits, valve deposits, and stuck or broken rings.
- **Long engine life** resulting from additives that protect highly loaded parts from scuffing and wear.
- **Extended filter life** — Chevron Ursa Super Plus EC oils help extend filter life in both modern electronically controlled engines and older model engines by handling the soot that clogs filters and increases valve train wear.

FEATURES

Chevron Ursa Super Plus EC SAE 15W-40 is a quality, mixed fleet motor oil meeting the performance requirements of all four-stroke gasoline engines and all naturally aspirated, turbocharged, and supercharged legacy diesel engines manufactured before 2007 and low emission engines manufactured in and post-2007. This multipurpose engine oil is manufactured using selected high viscosity index base oils and additives that provide maximum protection against sludge, varnish, ash deposits, wear, oxidation, foam, corrosion, and rust.

It reduces deposit buildup resulting from high temperature engine operation (especially in the piston and ring area), combats varnish formation, and keeps vital engine parts clean.

It also protects against corrosion and resists oxidation at high temperatures.

Chevron Ursa Super Plus EC SAE 15W-40 oils utilize technology to provide excellent performance in low emission model engines manufactured in 2007, using normal or low sulfur diesel fuels and equipped with exhaust aftertreatment systems.

APPLICATIONS

Chevron Ursa Super Plus EC SAE 15W-40 is recommended for four-stroke naturally aspirated, turbocharged, and supercharged diesel engines.

It is ideal for mixed commercial fleets, farm machinery, construction equipment, marine, and other off-highway applications.

It may also be used in four-stroke gasoline engines.

Chevron Ursa Super Plus EC SAE 15W-40 meets all specifications for Caterpillar's ACERT™ engine technology, ECF-2 and ECF-3.

Chevron Ursa Super Plus EC SAE 15W-40 meets the Mack EO-O Premium Plus 07 specification which is based on soot dispersancy and shear performance.

Chevron Ursa Super Plus EC SAE 15W-40 meets:

- **API Service Categories**
 - CJ-4, CI-4 PLUS, CI-4, CH-4, CG-4
 - CF
 - SM, SL, SJ
- **major diesel engine manufacturers' requirements**
 - **Caterpillar** ECF-2, ECF-3
 - **Cummins** CES 20081, 20078
 - **DDC** Power Guard 93K218
 - **Mack** EO-O Premium Plus 07
 - **Volvo** VDS-4



CHEVRON SUPREME MOTOR OILS (API SM)

SAE 5W-20, 5W-30, 10W-30, 10W-40, 20W-50, 30, 40

CUSTOMER BENEFITS

Chevron Supreme Motor Oils (API SM) deliver value through:

- **Excellent antiwear protection**
- **Protection against thermal breakdown**
- **Clean engines** and clean positive crankcase ventilation systems resulting from minimal deposit formation under heavy load and stop-and-go driving conditions.
- **Meets or exceeds warranty requirements** of car and light truck manufacturers relying on an API SM motor oil.
- **Better high temperature control**

FEATURES

Chevron Supreme Motor Oils are premium quality automotive engine oils.

All grades are formulated with high quality base stocks, a shear-stable viscosity index improver, and contain detergent, dispersant, wear control, antioxidant, corrosion inhibitor, and foam suppressant additives.

Their antiwear additives provide excellent wear protection of critical engine parts.

A high level of dispersancy in Chevron Supreme Motor Oils protects against deposit and sludge formation in stop-and-go driving and sustained high temperature operation, and protects against corrosion.

Their excellent high temperature oxidation stability prevents viscosity increase and oil gelling in the crankcase. They keep PCV systems clean to maintain smooth engine performance.

APPLICATIONS

Chevron Supreme Motor Oils are recommended for all four-stroke gasoline engines used in passenger cars, light trucks, powerboats, motorcycles, and other mobile and stationary equipment. They are excellent for high-revving engines in small cars and light trucks. All grades are specially formulated for use in turbocharged engines.

SAE 5W-20 provides optimum fuel economy and durability performance. It is recommended for Ford and Honda vehicles specified for this viscosity grade.

SAE 5W-30 is recommended by the majority of auto manufacturers for most of their late model North American vehicles, under all weather conditions. It also is recommended for use at very low temperatures involving cold starting, and for high fuel economy.

SAE 10W-30 is recommended for many older vehicles and a few late model cars and trucks, often those with larger 6-cylinder and V-8 and/or high performance engines. SAE 10W-30 provides improved fuel economy relative to heavier viscosity grades.

SAE 10W-40 is still a very popular viscosity grade in warmer climates, though it is not recommended by most auto manufacturers for their late model North American vehicles. It is often recommended for older model cars that see regular high temperature operation.

SAE 20W-50 is recommended primarily for older engines for use in high temperature and heavy duty operations such as towing heavy trailers at highway speeds or up inclines for long periods of time. It is also recommended for some high performance engines used in racing and rallying.

Chevron Supreme Motor Oils **SAE 30** and **SAE 40** can be used in any engine application where an SAE 30 or SAE 40 passenger car motor oil of API SM or any previous "S" category is recommended. They perform exceptionally well in small four-stroke engines found in lawn mowers, garden tractors, and snow blowers, and in refrigeration or air-conditioning engines on trucks and buses.

Note: Always consult your owner's manual regarding viscosity grade.

TYPICAL TEST DATA

SAE Grade	5W-20	5W-30	10W-30	10W-40	20W-50	30	40
Product Number	220135	220013	220155	220059	220060	220002	220011
MSDS Number	17483	17483	17483	6717	6717	6717	6717
API Gravity	32.9	32.6	30.6	30.9	29.0	29.5	28.9
Viscosity, Kinematic St at 40°C cSt at 100°C	47.5 8.0	59.4 9.7	65.3 9.7	109.7 14.0	175.2 18.5	80.8 10.3	128.0 14.0
Viscosity, Cold Crank, °C/Poise	-30/47	-30/54	-25/54	-25/64	-15/80	—	—
Viscosity Index	146	151	134	146	124	107	107
Flash Point, °C(°F)	>200(392)	>200(392)	>205(401)	>205(401)	>205(401)	>205(401)	>205(401)
Pour Point, °C(°F)	-37(-35)	-36(-33)	-37(-35)	-30(-22)	-24(-11)	-33(-27)	-30(-22)
Sulfated Ash, wt %	0.8	0.8	0.8	0.9	0.9	0.9	0.9
Base Number, ASTM D 2896	7.8	7.8	7.8	8.0	8.0	8.0	8.0
Phosphorus, wt %	0.078	0.078	0.078	0.099	0.099	0.099	0.099
Zinc, wt %	0.086	0.086	0.086	0.110	0.110	0.110	0.110

Typical test data are average values only. Minor variations which do not affect product performance are to be expected in normal manufacturing.

CITGO A/W HYDRAULIC OILS

Date 1/09



DESCRIPTION: A/W Hydraulic Oils are superior antiwear hydraulic and circulating fluids specially formulated with high quality base stocks and improved thermally stable additives. These oils offer outstanding resistance to sludge formation, are chemically stable, and exhibit excellent antiwear protection.

QUALITIES: A/W Hydraulic Oils are made from top quality base stocks and contain all the necessary additive components to offer trouble-free service in high-pressure, high-output industrial hydraulic circuits. A/W Hydraulic Oils have these outstanding properties:

Hydraulic Oils utilize the latest in thermally stable zinc-type additives. This virtually eliminates the formation of heat-related sludging in sensitive electro-hydraulic servos associated with conventional zinc-type oils. These oils are wholly suitable for N/C machine tools and other high-output equipment where sustained heat is prevalent.

These oils exhibit superior hydrolytic stability and will not contribute to either the formation of metal-etching acids or corrosive reactants.

A/W Hydraulic Oils are inhibited against rusting in both fresh and sea water and pass both A and B Sequences of the ASTM D 665 Turbine Oil Rust Test.

These oils offer optimum antiwear protection to pumps, motors, valves, and other hydraulic circuit components. They are approved against stringent performance requirements including Cincinnati Lamb (formerly Cincinnati Milacron) P-68, P-69 and P-70, Denison HF-O, and Eaton M-2950-S and I-286-S.

A/W Hydraulic Oils resist foaming and will not foster abnormal air entrainment in properly designed hydraulic circuits. The oils also readily separate water permitting contaminating water to be drained from the sump.

APPLICATIONS: A/W Hydraulic Oils are recommended for service in vane, piston, and gear pumps when used in accordance with the manufacturers' recommendations. The oils are designed to provide maximum service life to these pumps as well as to other circuit components such as motors and servos.

A/W Hydraulic Oils are also recommended for use as gear and bearing lubricant in industrial applications where rust and oxidation inhibited oils are required.

A/W All-Temp and All-Temp 46 Hydraulic Oils are special multigrade antiwear oils for use in mobile equipment where wide temperature ranges are encountered. Their features include excellent pour point depression, high viscosity index, resistance to oxidation, foaming and corrosion, as well as protection against pump component wear. The CITGO A/W All-Temp Hydraulic Oils are highly recommended for use in mobile and other hydraulic equipment in heavy-duty all-weather service. A/W All Temp meets FMC Hi-Performance, Hydraulic Oil, Grade 32 requirements.

A/W Hydraulic Oils meet the general physical and performance requirements of the European classifications as follows:

AFNOR NF E 48-603 HM

(Continued)

CITGO A/W HYDRAULIC OILS



Date 1/09 - (Continued)

TYPICAL PROPERTIES:

CITGO A/W HYDRAULIC OILS

GRADE	All Temp ⁽¹⁾	All Temp 46	22	32	46	68	100	150
Material Code	633932001	633946001	633410001	633415001	633420001	633430001	633440001	633450001
Gravity, ASTM D 4052, °API	32.1	30.8	31.7	30.8	29.9	29.1	28.6	27.8
Density, lb/gal	7.20	7.26	7.22	7.26	7.30	7.33	7.36	7.39
Flash Point, ASTM D 92, °C	388 (198)	403 (206)	399 (204)	414 (212)	428 (220)	468 (242)	471 (244)	471 (244)
Viscosity, cP at -35°C ⁽²⁾	12,600	—	—	—	—	—	—	—
cP at -20°C ⁽²⁾	—	3,200	—	—	—	—	—	—
cSt at 40°C	30	46	22.3	31.6	45.8	69	98	142
cSt at 100°C	6.1	7.9	4.4	5.4	6.9	8.9	11.1	14.2
SUS at 100°F	155	234	117	151	236	358	511	744
SUS at 210°F	46	53	40.9	45	49	56	64	77
Viscosity Index	154	144	103	107	105	101	98	98
Pour Point, ASTM D 97, °F	-40 (-40)	-33 (-36)	-39.5 (-39.1)	-30 (-34)	-22 (-30)	-11 (-24)	-9 (-22)	-2 (-19)
Color, ASTM D 1500	L1.5	L1.5	L1.0	L1.0	L1.0	L1.5	L3.0	L4.0
Emulsion Test, ASTM D 1401 ⁽³⁾	40-40-0	40-40-0	40-40-0	40-40-0	40-40-0	40-40-0	40-40-0	40-40-0
Oxidation Test, ASTM D 943, Hrs.	4800	4800	4800	4800	4800	4800	3500	2600
Rust Test, ASTM D 665 A, B ⁽⁴⁾	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Meets Eaton Requirements M-2950-S ⁽⁵⁾	Yes	Yes	Yes	Yes	Yes	Yes	—	—
Meets Eaton Requirements I-286-S ⁽⁶⁾	Yes	Yes	Yes	Yes	Yes	Yes	—	—
Meets Denison HF-O Requirement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Meets Cincinnati Lamb Requirement	—	—	—	P-68	P-70	P-69	—	—
ASTM Grade	150	215	105	150	215	315	465	700
AFNOR NF E 48-603	—	—	HM22	HM32	HM46	HM68	HM100	HM150
ISO VG No.	32 ⁽⁷⁾	46 ⁽⁸⁾	22	32	46	68	100	150

Notes: (1) Meets FMC Hi-Performance, Hydraulic Oil, Grade 32 requirements.

(2) ASTM D 2893 Brookfield Viscosity.

(3) 30 minutes max. separation time.

(4) Pass - No Rust.

(5) This requirement utilizes Eaton 35VQ25A vane pump test and is for mobile equipment.

(6) This requirement utilizes Eaton 104c or 105c vane pump test, ASTM D 2882, and is for industrial, stationary systems.

(7) A multigrade, high VI type which may be used in most applications requiring a multiviscosity range of ISO-VG 22, 32, 46.

(8) A multigrade, high VI type which may be used in most applications requiring a multiviscosity range of ISO-VG 32, 46.



CHEVRON 1000 THF

CUSTOMER BENEFITS

Chevron 1000 THF delivers value through:

- **Lower operating costs** — By delivering or exceeding the performance of fluids supplied by equipment manufacturers, helps in avoiding the cost of generally more expensive fluids and thereby lowers overall operating costs.
- **Longer equipment life** — Special additives protect metal surfaces against scuffing and wear even under severe operating conditions leading to increased equipment life.
- **Lower inventory cost** — One fluid does the job of a full range of mobile hydraulic systems. Can replace multiple products and free up shelf space too!
- **Minimizing weather and storage concerns** — Protects against rust and corrosion of highly finished precision parts when operating in humid conditions and during seasonal shutdown periods.
- **Reduced downtime** — Good compatibility with seals, O-rings, and packing materials maintains their good condition and keeps leakage at a minimum.
- **Smoother operation** — By eliminating brake "chatter" and transmission "slip" it assures quiet and efficient action of brakes and transmission.
- **More reliable operation** — Formulation keeps metal parts clean and free of varnish and sludge deposits that could result in premature breakdown.
- **Faster service time** — The orange color helps identify origin point of incidental leaks for easy detection and quick remedy.

FEATURES



Chevron 1000 THF is a high quality, multifunctional fluid, specially formulated for use in transmissions, final drives, wet brakes, and hydraulic systems of tractors and other equipment employing a common fluid reservoir.

It is formulated with ISO SYN® base stocks, a viscosity index improver, oxidation and corrosion inhibitors, antiwear and film strength additives, an antifoaming agent, and a pour point depressant.

Its distinctive orange color allows for easy product identification and leak detection.

Chevron 1000 THF meets the needs of modern tractors for a combination lubricant. It performs many functions, such as lubrication of the transmission and final drive, and serves as a hydraulic fluid to operate power steering units, brakes, implements, and attachments.

Chevron 1000 THF eliminates brake "chatter" and excessive brake facing wear, assures smooth operation of clutch packs and wet brakes, provides excellent shifting action, provides superior rust and corrosion protection for vital parts, minimizes leakage because of good compatibility with seals, O-rings, and packing materials.

It prevents sludge and varnish formation, protects metal surfaces against scuffing and wear, and provides outstanding lubrication for spur, helical, and spiral bevel final drive gears.

Chevron 1000 THF is compatible with equipment manufacturer's proprietary fluids and other fluids of this type.



Warren TO-4 Drive Train Oils

Warren Oil Company

Product Data Sheet

WARREN TO-4 DRIVE TRAIN OILS are formulated to meet the stringent performance requirements of the Caterpillar TO-4 specification. These fluids are recommended for equipment where specified TO-4 qualified oils are required in order to maintain the Caterpillar equipment warranty. **WARREN TO-4 DRIVE TRAIN OILS** are blended to provide superior gear wear protection and excellent thermal stability while maintaining a delicate balance of static and dynamic frictional characteristics with a variety of materials to give smooth transmission power transfer under high horsepower conditions. The balanced additive package provides substantially improved load carrying capacities and durability and reduces brake chatter.

WARREN TO-4 DRIVE TRAIN OILS are recommended for the lubrication of heavy-duty equipment in both highway and off-highway service that require a lubricant meeting Caterpillar TO-4, Allison C-4 or API GL-3 specifications. **WARREN TO-4 DRIVE TRAIN OILS** are API GL-3 gear oils that are formulated to exceed the performance requirements of the Komatsu Micro-Clutch test.

WARREN TO-4 DRIVE TRAIN OILS provides excellent service in all Caterpillar powershift transmissions, final drives, hydrostatic transmissions, torque converters, hydraulics or any system which specify TO-4 qualified oils. The SAE 10-W and SAE 30-W grades can be used in all applications requiring and Allison C-4 qualified oils.

Benefits

- Extends component life
- Excellent gear protection
- Oxidation and thermal stability for long life
- Excellent rust and corrosion protection
- Compatible with crankcase engine oils
- Improved friction and anti-wear performance compared to TO-2 fluids

Warren Oil Company, Inc.

Dunn, NC 28334: Benton, AL 36758: San Antonio, TX 78210:
Marion, IL 62959: Johnstown, PA 15909: West Memphis, AR 72301



Warren TO-4 Drive Train Oils

Warren Oil Company

Product Data Sheet

WARREN TO-4 DRIVE TRAIN OILS do not contain friction modifiers or viscosity index improvers and CANNOT be used in farm tractors, and are not designed to be used in the engine crankcase.

Typical Characteristics

Warren TO-4 Drive Train Oil	10	30	50
Gravity	29.6	27.6	25.5
Viscosity			
@ 40 Deg. C, cSt	41	101	248.5
@ 100 Deg. C, cSt	6.34	11.5	20
@ 100 Deg. F, SUS	191.3	468	1151
@ 210 Deg F, SUS	47	64.6	98.5
Viscosity Index	102	101	93
Flash Point Deg. F	435	460	500
Copper Strip Corrosion	Pass	Pass	Pass
Foam Test	Pass	Pass	Pass

Warren Oil Company, Inc.

Dunn, NC 28334; Benton, AL 36758; San Antonio, TX 78210;
Marion, IL 62959; Johnstown, PA 15909; West Memphis, AR 72301

CITGO PREMIUM GEAR OILS (MP)

Date 1/09

DESCRIPTION: CITGO Premium Gear Oils (MP) are multipurpose gear lubricants whose high performance level is obtained by using a sulfur-phosphorus additive system. The selected additives impart extreme pressure properties to protect automotive gears which may be operated under the most severe service conditions encountered in passenger cars, trucks, farm tractors, earth moving, construction and other heavy-duty equipment. These additives specifically impart antiweld, antiscuff and antiwear properties necessary in heavy-duty service gear lubricants.

API Service Classification: GL-5 and MT-1.

QUALITIES: CITGO Premium Gear Oils (MP) are blended to meet the multigrade viscosity requirements described in SAE J306 Recommended Practice. These gear lubricants are formulated with naturally high VI, solvent-refined base oils and thus do not require viscosity index improvers to meet multigrade viscometric properties. Because these lubricants do not contain VI improvers, they will maintain their viscometric properties throughout their useful life and will not lose viscosity through shear.

Viscosity Grades Available:

SAE 80W-90 grade for use at ambient temperatures down to -15°F.

SAE 85W-140 grade for use at ambient temperatures down to +10°F.

Equipment manufacturers' recommendations should be followed when the gear lubricant is subject to high ambient temperatures. While some gear sets are designed for year-round operation using an SAE 80W-90, others may require SAE 85W-140 for high ambient temperature operations during the hot weather months.

CITGO Premium Gear Oils (MP) meet performance requirements of Military Specifications MIL-L-2105D and MIL-PRF-2105E. They are designated for the highest severity gear service, API Service Classification GL-5.

Premium Gear Oils (MP) meet Mack Trucks GO-J Specification.

APPLICATIONS: Premium Gear Oils (MP) are recommended for the following applications:

- Where a "multipurpose" gear oil or one meeting the requirements of API Service GL-5 and/or MT-1 is required.
- In transmissions, differentials, final drives and other gear cases of trucks, buses and farm equipment where extreme pressure (E.P.), hypoid or multipurpose gear oils are specified by the manufacturer.

(Continued)



CITGO PREMIUM GEAR OILS (MP)

Date 1/09 - (Continued)

TYPICAL PROPERTIES:

CITGO PREMIUM GEAR OILS (MP)		
SAE Grade	80W-90	85W-140
Material Code	631310001	631320001
Gravity, ASTM D 4052, °API	27	26
Density, lb/gal at 60°F	7.4	7.5
Flash Point, ASTM D 92, °F (°C)	448 (231)	478 (248)
Viscosity, ASTM D 445, cSt at 40°C	139	365
cSt at 100°C	14.7	26.9
ASTM D 2161, SUS at 100°F	788	2010
SUS at 210°F	78.4	133
Brookfield Viscosity, ASTM D 2983		
cP at -26.1°C	120,000	—
cP at -12°C	—	65,000
Viscosity Index, ASTM D 2270	99	97
Pour Point, ASTM D 97, °F (°C)	-27 (-33)	0 (-18)
Channel Point, °F (°C), Max.	-31 (-35)	-4 (-20)
Foam Test, ASTM D 892	Pass	Pass
Copper Corrosion, ASTM D 130	Pass	Pass



CASTROL ISOLUBE EP LUBRICANTS

CASTROL ISOLUBE EP LUBRICANTS are a series of ISO graded technically advanced chemistries that exceed the performance levels historically attributed to the traditional synthetic products that are available today. **CASTROL ISOLUBE EP LUBRICANTS** have been formulated with carefully chosen synthetic components for optimum performance in applications requiring AGMA (American Gear Manufacturers Association) EP gear oils. The product has coupled multiple components in a formulation that provides maximum wear protection in industrial gear sets, off-highway construction, and mining applications where consistent performance is critical. **CASTROL ISOLUBE EP LUBRICANTS** provide exceptional oxidative and thermal stability in selected applications. **CASTROL ISOLUBE EP LUBRICANTS** offer a unique approach to gear and system component lubrication through a focused formulation that will provide the end user with maximum confidence in the selected application.

TYPICAL ANALYSIS

Part Number	3460	3560	3660	3760	3770	3960	3980
AGMA Viscosity Grade	2 EP	3 EP	4 EP	5 EP	6 EP	7 EP	8 EP
ISO Viscosity Grade	68	100	150	220	320	460	680
Viscosity @ 40° C, cSt	67.8	99.6	149.2	220.8	319.4	458.2	704
Viscosity @ 100° C, cSt	10.38	13.8	18.9	25.6	32.3	41.2	62.2
Viscosity @ 100° F., SUS	315	462	691.0	1,021	1,480	2,122	3,260
Viscosity @ 210° F., SUS	60.6	73.2	93.8	122.8	152.9	193.5	29
Viscosity Index	140	140	143	148	141	139	156
Timken OK Load (lbs)	75	75	75	75	75	75	75
FZG Gear Test, min. stages	>12	>12	>12	>12	>12	>12	>12
Pour Point, °C (°F.)	-45 (-49)	-42 (-44)	-36 (-32)	-36 (-32)	-36 (-32)	-23 (-9)	-27 (-17)
Flash Point, °C (°F.)	227 (440)	227 (440)	228 (442)	228 (442)	229 (445)	229 (445)	226 (439)
Gravity, °API	35.4	34.2	33.4	33.0	32.4	31.0	35.0
Specific Gravity @ 60° F.	0.848	0.854	0.858	0.860	0.863	0.871	0.85
Pounds per Gallon	7.06	7.11	7.14	7.16	7.18	7.25	7.07

Form No 3460 cam 3/01/01

**conoco**

Megaplex® XD3

Megaplex XD3 is a high-performance, multipurpose, extreme-pressure (EP) lithium complex grease developed to satisfy the severe lubrication requirements of construction and off-road equipment manufactured by Caterpillar, Komatsu Dresser, Case New Holland, John Deere and others. It is particularly recommended for use in off-highway trucks and heavy equipment, such as bulldozers, motor graders, pipe layers, scrapers, skidders, wheel loaders and soil compactors, operating under heavy or shock load conditions.

Megaplex XD3 is manufactured with high-quality, heavy paraffinic base oils thickened with lithium complex soap. It contains an effective extreme-pressure additive, 3% molybdenum disulfide (moly), a tackifier, and rust and oxidation inhibitors to provide excellent wear protection, as well as excellent corrosion protection and resistance to water washout in equipment operating under wet conditions and/or high temperatures and subject to heavy or shock loading.

Megaplex XD3 Grade No. 1 is NLGI GC-LB certified for use as a multipurpose automotive wheel bearing and chassis lubricant.

Applications

- Chassis parts and wheel bearings of construction, mining and other heavy mobile equipment
- Universal joints, constant velocity joints, brake self-adjusting screws and clutch release bearings on off-highway trucks and other heavy equipment
- Tractor-trailer fifth wheels
- Heavily loaded plain and rolling-element bearings in industrial equipment where the manufacturer specifies a high-temperature, extreme-pressure grease with 3% moly

Megaplex XD3 meets the performance requirements of:

- Caterpillar Multipurpose Molybdenum Grease (MPGM)

Features/Benefits

- Meets Caterpillar requirements for 3% moly grease (MPGM)
- High dropping point (>500°F)
- High load-carrying capacity
- Excellent wear protection
- Excellent resistance to water washout
- Excellent resistance to separation

**Extreme-Pressure
Lithium Complex
Grease With
3% Moly For
Construction And
Off-Road Equipment**

Contact Information

**U.S. Customer
Service:
1-800-822-6457**

**U.S. Technical
Services Hot Line:
1-800-766-0050**

**International:
+1-832-486-3363**

**E-mail address:
lubricants@
conocophillips.com**

<http://lubricants.conocophillips.com>

600 N. Dairy Ashford • 2W9000 • Houston, TX 77059

**conoco**

Triton® Synthetic Transoil 50

Triton Synthetic Transoil 50 is a full-synthetic SAE 50 transmission lubricant designed for use in heavy-duty truck and bus manual transmissions operating in extreme temperatures and/or extended service intervals. It combines improved low-temperature properties with outstanding oxidation resistance and thermal stability at high temperatures to provide excellent all-climate, year-round performance. It has excellent shear stability and antiwear properties to protect synchronizers, reduce component wear and promote longer transmission life. It is particularly recommended for use in newer, higher-torque manual transmissions coupled with increased horsepower engines. It is fully approved for extended drain service in Eaton Roadranger® transmissions.

Applications

Triton Synthetic Transoil 50 is recommended for use in ArvinMeritor, Dana Spicer, Eaton Fuller, International, Mack and other heavy-duty manual transmissions that require a non-EP gear oil (API GL-1/MT-1) or a MIL-L-2104D (API CD) quality engine oil. It is approved for 500,000-mile drain intervals in Eaton transmissions under the Eaton Roadranger® PS-164 Rev 7 specification.

Triton Synthetic Transoil 50 meets or exceeds the requirements of:

- API Service GL-1, MT-1
- ArvinMeritor O-81
- Dana Spicer transmissions
- Eaton Fuller transmissions
- Eaton Roadranger® E500™ (PS-164 Rev 7)
- International TMS 6816
- Mack TO-A Plus
- MIL-L-2104D
- ZF Freedomline transmissions

Features/Benefits

- Extended drain, all-season performance
- Outstanding oxidation resistance and thermal stability to minimize sludge and varnish formation
- Excellent low-temperature properties for easier shifting in cold weather
- High shear stability
- High load-carrying capacity
- Protects against component wear and gear micropitting

Premium

Full-Synthetic

SAE 50 Manual

Transmission Fluid,

API GL-1/MT-1

Contact Information

U.S. Customer

Service:

1-800-822-6457

U.S. Technical

Services Hot Line:

1-888-766-0050

International:

+1-832-486-3363

E-mail address:

**lubricants@
conocophillips.com**

<http://lubricants.conocophillips.com>

800 N. Dairy Ashford • 2413000 • Houston, TX 77059



- Protects against rust and corrosion
- Good foam resistance
- Excellent seal compatibility
- Potential fuel economy benefits compared with non-synthetic transmission fluids

Triton[®] Synthetic Transoil 50

Typical Properties

SAE Grade	50
Density, g/cm ³ @ 15.5°C (60°F)	0.860
Color, Visual	Amber
Flash Point (COC), °C (°F)	221 (430)
Pour Point, °C (°F)	-45 (-49)
Viscosity	
cP @ -40°C (Brookfield)	104,000
cSt @ 40°C	132
cSt @ 100°C	17.5
SUS @ 100°F	579
SUS @ 210°F	99.0
Viscosity Index	145

Health and Safety Information

For recommendations on safe handling and use of this product, please refer to the Material Safety Data Sheet via <http://r3.conocophillips.com/NetMSDS>.

Due to continual product research and development, the information contained herein is subject to change without notification.

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CSB-07-4045207
12/07



TranSynd™

Product Data Sheet

DESCRIPTION

TranSynd™ is a premium, synthetic, universal powershift and automatic transmission fluid.

TranSynd™ is engineered to remain stable under the most severe conditions.

FEATURES AND BENEFITS

- Excellent thermal and oxidation stability resists deposit formation
- High viscosity index synthetic base fluids provide superior high/low temperature performance
- Excellent shear stability
- Excellent corrosion and foaming resistance
- Reduced used oil disposal costs
- Extended drain intervals
- Extended filter change intervals
- Compatible with most other automotive transmission fluids and seals
- One fluid for year-round use in all geographic locations
- Recommended for use in all 1997 and prior GM automatic transmissions.

APPLICATION

The unique formulation of TranSynd™ can be used in a variety of applications:

- Inter/intracity buses
- Vans, school buses
- Refuse fleets
- Emergency vehicles
- Commercial vehicles and trucks
- Motorhomes
- On/Off-highway vehicles

In addition, TranSynd™ meets or exceeds the performance requirements set forth by OEMs and listed or approved under the following specifications:

- Allison TES-295 (AN-011001)
- Allison C-4 (27403598)
- Voith Transmission
- ZF Transmissions (TE-ML 14C approved for the following Transmissions: Ecomat: HP500, HP590, HP600, HP502C, HP552C, & HP602C)

HEALTH & SAFETY

Material Safety Data Sheets are available. These can be obtained from the address on this document.

CUSTOMER SERVICE AND SALES SUPPORT

Place order, order inquiry, Data sheets, MSDS, pricing Phone (888) ATF-LUBE or (888) 283-5823

TYPICAL PROPERTIES

Viscosity, ASTM D-445, cSt	
@40°C (104°F)	38.9
@100°C (212°F)	7.3
Brookfield Viscosity, ASTM D-2983, cP@-40°C (-40°F)	8,400
Viscosity Index, ASTM D-2270	168
Specific Gravity, ASTM D-287, @ 16°C (60°F)	0.85
Flash Point, ASTM D-92, °C/°F	235/455
Fire Point, ASTM D-92, °C/°F	274/525
Pour Point, ASTM D-97, °C/°F	-55/-67
Total Acid Number, ASTM D-664, mg KOH/gm	1
4-Ball Wear, ASTM D-2266, 40kg, 1200 rpm, 1hr and 75°C (167°F), scar dia. Mm	0.44
NOACK Evaporative Loss, DIN 51581 1 hr, 150°C (302°F), wt%	0.62
Cold Cranking Simulator Viscosity, ASTM D-5293, cP @ -30°C (-22°F)	2,900

Revised: 3/7/08

WILLIAMSON COUNTY BID FORM
FLUIDS AND GREASE
BID NUMBER: 09WCA012 (Private Label Bid)

NAME OF BIDDER: _____ Arnold Oil Company of Austin

Mailing Address: _1617 E. 6th Street

City: Austin

State: TX

Zip: 78702

Email Address: jronshausen@arnoldoil.com

Telephone: (512) 476-7468

Fax (512) 476-7711

ITEM #	DESCRIPTION	PRICE PER 55 GALLON DRUMS	PRICE PER 5 GALLON PAIL	PRICE PER 1 GALLON CASE LOT	# GALLONS PER CASE	PRICE PER 1 QUART CASE LOT	# QUARTS PER CASE	
1	15W40 CJ4 Engine Oil for Diesel	\$375.05	\$37.96	\$33.09	3	N/A	N/A	
2	10W30 Engine Oil for Gas Engines	\$302.84	N/A	N/A	N/A	N/A	N/A	
3	Hydraulic Fluid, AW 68 20W20	\$335.73	\$27.30	N/A	N/A	N/A	N/A	
4	Gear Oil, 80W90 API GL-5	\$317.14	\$44.77	\$53.16	6	\$34.85	12	
5	Extended Life Antifreeze/Coolant Mixture 50/50 Global Formula Automotive	\$314.87 \$314.87				\$30.97	6	
6	Universal Tractor Fluid	\$382.92	\$24.44	\$46.57	6	N/A	N/A	
7	Extended Life Antifreeze/Coolant Mixture 50/50 Global Formula Heavy Duty	402.14				\$45.17	6	
8	Transmission/Drive Train Oil 30 WT	\$479.44	\$47.45	N/A	N/A	N/A	N/A	
9	Transmission/Drive Train Oil 50 WT	\$528.78	\$51.94	N/A	N/A	N/A	N/A	
10	Synthetic Transmission Oil HP 50	\$1,202.76	\$126.34					
11	5W-20 Synthetic Engine Oil for Gas Engines	\$309.99	N/A	N/A	N/A	N/A	N/A	

12	Synthetic Blend Mercon V	\$495.89	N/A	N/A	N/A	N/A	N/A	
		PRICE PER CARTRIDGE	PRICE PER CASE	# CARTRIDGE PER CASE				
13	Grease	\$2.69	\$26.88	10				
		PRICE PER 55 GALLON DRUMS	PRICE PER 5 GALLON PAIL	PRICE PER 1 GALLON CASE LOT	# GALLONS PER CASE	PRICE PER 1 QUART CASE LOT	# QUARTS PER CASE	
14	Synthetic Gear Oil ISO 220	\$1,220.88	\$122.34					
15	Anti-wear Hydraulic Fluid ISO 46	\$309.08	\$27.30	N/A	N/A	N/A	N/A	
16	TransSynd Transmission Fluid	\$1,496.35	\$145.35					



Lubriguard 15W40 CJ-4

Warren Oil Company

Product Data Sheet

LUBRIGUARD 15W40 CJ-4 Engine Oil – CJ-4 represents the highest level of engine protection and performance ever built into a new lubricant specification. It was designed for all diesel engine applications, including today's emission controlled engines with EGR and diesel particulate filters using Ultra-Low Sulfur Diesel fuel (<15 PPM Sulfur) (ULSD) and Low Sulfur Diesel (LSD). It is formulated to provide improved wear protection, deposit and oil consumption control, soot-related viscosity control, prevention of viscosity loss from shearing, used oil low-temperature pumpability and protection from thermal and oxidative breakdown. It also contains a sophisticated additive system that is specifically designed to improve the protection of advanced emission control systems such as diesel particulate filters. It is suitable for use in almost all foreign and domestic diesel engines for both the latest 2007 emission compliant and older engines. Always consult your owner's manual for proper application.

LUBRIGUARD 15W40 CJ-4 Engine Oil meets API Service Classification CJ-4, CI-4 PLUS, CI-4, CH-4, CG-4, CF-4, CF/SM, SL, SJ, SH. It has received OEM Approvals for Mack EO-O Premium Plus 07, Volvo VDS-4, DDC Power Guard Oil Specification 93K218, Cummins CES 20081, Renault RLD-3, ACEA E7-04. It is recommended for Caterpillar ECF-1, ECF-2, ECF-3, 20077, 20076, Mack EO-N Premium Plus 03, Mack EO-N Premium Plus, EO-M Plus, EO-M, Mercedes Benz 228.3, Man 3275, DDC/MTU Series 2000/4000 category 1 and 2 engine performance, Volvo VDS-3, DHD-1, ACEA E5 and E3, JASO DH-2.. It can also be used in applications recommending Allison C-4 and Caterpillar TO-2 specifications.

Benefits

- Excellent soot-viscosity control
- Minimizes valve train wear
- Outstanding oxidation stability
- Excellent low temperature properties helps speed cold starts
- Universal product for mixed fleet operations

Warren Oil Company, Inc.

Dunn, NC 28334; Benton, AL 36758; San Antonio, TX 78210;
Marion, IL 62959; Johnstown, PA 15909; West Memphis, AR 72301



Lubriguard 15W40 CJ-4

Warren Oil Company

Product Data Sheet

Typical Characteristics

Lubriguard 15W40 CJ-4		15W-40
API CJ-4, CI-4 PLUS, CH-4, CG-4, CF-4, CF/SM, SL, SJ, SH		X
Caterpillar ECF-1, ECF-2, ECF-3		X
Cummins CES 20081, 20077, 20076		X
Mack EO-O Premium Plus 07, Mack EO-N Premium Plus 03, EO-N Premium Plus, EO-M Plus, EO-M		X
Mercedes Benz 228.3		X
MAN 3275		X
DHD-1, ACEA E7 and E5		X
Volvo VDS-4, VDS-3		X
DDC Power Guard 93 K218		X
DDC/MTU Series 2000/4000 1 and 2 engine performance		X
Allison C-4		X
Global DHD-1		X
JASO DH-2		X
Renault RLD-3		X
Product Data	Test Method	Typical
@ 40° C, cST	D445	118.2
@ 100°C, cST	D445	15.4
Viscosity Index	D2270	130
Pour Point °C (°F)	D97	-36 (-33)
Flash Point °C (°F)	D92	238 (460)
Neutralization No., TBN-E	D2896	10
Sulfated Ash, wt. %	D874	1.0
Cold Crank Simulator, cP	D5293	6620/-20°C
Mini-Rotary Viscometer TP1, cP	D4684	23700/-25°C

Warren Oil Company, Inc.

Dunn, NC 28334; Benton, AL 36758; San Antonio, TX 78210;
Marion, IL 62959; Johnstown, PA 15909; West Memphis, AR 72301



April 16, 2007

Gary Whiteside
Warren Oil Company, Inc.
P.O. Box 2048
West Memphis, AR 72303-2048
gwhiteside@warrenoil.com

Dear Gary,

CONFORMANCE TO CES 20081 ENGINE OIL SPECIFICATION

Results from tests according to CES 20081 have been presented to Cummins. In view of the results I would like to give the following comments.

The results have been found to be within the CES 20081 limits and hence oils formulated as stated in your request can be labeled as conforming to CES 20081.

The oils shall be used per the ambient temperature and SAE grade guidelines in the engine specific Operation and Maintenance (O & M) manual as well as in any Cummins service documents.

Please notify Cummins Inc. if the formulation of this product changes.

Brand Name: LUBRIGUARD 15W-40 CJ-4
SAE Grade: 15W-40

I hope this information will be of assistance to you.

Sincerely,

A handwritten signature in black ink, appearing to read 'Shawn D. Whitacre'.

Shawn D. Whitacre
Chemical Technology

DISCLAIMER: Product registration means the manufacturer or marketer has faithfully collected information pertinent to the requirements of the specification, and with the full intention to conform to the specification. However, it is still the responsibility of the manufacturer or marketer to ensure satisfactory performance of its products in all aspects at all times. Registration for CES 20081 does not waive product liability of the manufacturer or marketer. Cummins does not warrant the performance of non-Cummins products, registered or not.



Volvo Powertrain Corporation

STD 417-0001 approval request

Data supplied by requesting company

Brand name:	LUBRIGUARD 15W-40 CJ
Oil code:	Infineum IM0606013-A
Viscosity grade:	15W-40
Marketing company:	Warren Oil Company, INC.
Marketing area:	North America
Core DI (%):	
Booster 1 (%):	
PPD (%):	
Viscosity modifier:	
Base oil 1	
Base oil 2	
Base oil 3	
Other approvals:	ACEA E7-04
	API CJ-4, SM
	OEM DD93K218, CES 20081

Date 09-okt-06

Submitted by

Name: Gary Whiteside
Company: Warren Oil Company, INC

Return approval to:

Name: Gary Whiteside
e-mail: gwhiteside@warrenoil.com

Volvo response

Decision:	Volvo VDS-4 approval	Yes
	Mack EO-O Premium Plus approval	Yes
	Renault VI RLD-3 compliance	Yes

Comments:

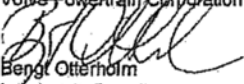
Approval date: 20-Apr-07

Approval #: 417-0001-07-078

Validity:

Approval expires two years after the approval date
For approval extension, a complete and updated approval form must be submitted at the expiry date \pm two months

Signed:

Volvo Powertrain Corporation

Bengt Otterholm
Lubricants Coordinator

Valvoline	Premium Blue	15W-40
Valvoline	All-Fleet Plus	15W-40
Volvo Trucks North America	Volvo Premium Motor Oil	15W-40
Warren Oil Company	LUBRIGUARD FULL SYNTHETIC 5W-40	5W-40
Warren Oil Company, Inc.	WARREN 15W-40 CJ-4	15W-40
Warren Oil Company, Inc.	LUBRIGUARD 15W-40 CJ-4	15W-40
Warren-Unilube	AutoZone 15W-40 CJ-4	15W-40
Warren-Unilube	Coastal 15W-40 CJ-4	15W-40
Windward Petroleum, Inc.	Naviguard Premium Plus	15W-40

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COASTAL SYNTHETIC BLEND MOTOR OILS

Warren Oil Company

Product Data Sheet

Typical Characteristics

Coastal Synthetic Blend Motor Oils

	5W20	5W30	10W30
Viscosity			
@40 Deg. C, cSt	50.42	60.1	73.0
@100 Deg. C, cSt	8.67	10.0	11.2
Viscosity Index	150	145	145
API Gravity	33.2	33.7	33.0
Sp. Gravity	0.8582	0.8554	0.8602
Flash, COC, °F	400	405	405
Pour Pt., °F	-42	-40	-35
TBN	7.0	7.0	7.0
Zinc, Wt. %	0.0845	0.0845	0.0845
Phosphorus, Wt. %	0.0768	0.0768	0.0768
API Performance	SM	SM	SM

Warren Oil Company, Inc.

*Dunn, NC 28334: Benton, AL 36758: San Antonio, TX 78210:
Marion, IL 62959: Johnstown, PA 15909: West Memphis, AR 72301*

GM Approved Engine Oils

GM6094M Approvals (08 August 2007)

Product Name	SAE Viscosity Grades	ILSAC Grade
Formula Shell	5W-30, 10W-30	GF-4
Formula Shell Synthetic Blend	5W-30, 10W-30	GF-4
GM Goodwrench	5W-20, 5W-30, 10W-30	GF-4
GM Goodwrench High Mileage	5W-30, 10W-30	GF-4
GM Goodwrench Synthetic Blend	5W-30, 10W-30	GF-4
Gulfpriide Advanced Fuel Efficient	5W-20, 5W-30, 10W-30	GF-4
GulfTEC Synthetic Blend	10W-30	GF-4
Kendall GT-1 Full Synthetic	5W-30, 10W-30	GF-4
Kendall GT-1 High Performance Synthetic Blend	5W-20, 5W-30, 10W-30	GF-4
Lordco Semi-Synthetic Multigrade Motor Oil	5W-20, 5W-30, 10W-30	GF-4
Lubriguard	5W-20, 5W-30, 10W-30	GF-4
Mobil 1	0W-30, 5W-30, 10W-30	GF-4
Mobil 1 Truck & SUV	5W-30	GF-4
Mobil Clean	5W-20, 5W-30, 10W-30	GF-4
Mobil Clean 5000	5W-20, 5W-30, 10W-30	GF-4
Mobil Clean 7500	5W-20, 5W-30, 10W-30	GF-4
Mobil Clean High Mileage	5W-30, 10W-30	GF-4
Mohawk Multigrade Motor Oil	5W-20, 5W-30, 10W-30	GF-4
Navigaurd	5W-30	GF-4
Northland MW Select	5W-20, 5W-30, 10W-30	GF-4
Northland, Synergy Synthetic	5W-30	GF-4
Pennzoil Motor Oil	5W-30, 10W-30	GF-4
Pennzoil Platinum Full Synthetic	5W-30, 10W-30	GF-4
Pennzoil SUV, Truck and Minivan Synthetic Blend	5W-20, 5W-30, 10W-30	GF-4
PepBoys Proline	5W-30, 10W-30	GF-4
Petro-Canada Arctic Synthetic	0W-30	GF-4



Materials Engineering

LUBRIGUARD

Premium Anti-Wear HYDRAULIC FLUID

AW-32, AW-46, and AW-68

Premium AW Hydraulic Oils are premium-quality anti-wear hydraulic oils with excellent stability, designed to meet the most stringent requirements of most all the major manufacturers and users of hydraulic equipment. These oils are characterized by outstanding rust protection, low deposit formation, good demulsibility, rapid release of entrained air, oxidation resistance, low pour points, and good anti-foam properties. They also contain an effective anti-wear agent that helps reduce wear in high-speed, high-pressure vane and gear pumps.



Recommended for vane, gear, and piston type pumps operated above 3000 psi. These anti-wear hydraulic oils are very effective in reducing vane and gear pump wear and greatly extend the life of systems operating at high loads, speeds, and temperatures. Recommended Applications: Cincinnati-Milacron, Hagglunds-Denison HF-0 and HF-2, Vickers M-2950-S and I-286-S, passes Vickers 35VQ25 and V104C (ASTM D2882) vane pump tests, passes Denison P-46 piston pump and T-6C vane pump tests, and USDA H-2 approved.

Typical Characteristics

	32	46	68
Viscosity, cSt @ 40°C	32.0	46.0	68.0
Viscosity, cSt @ 100°C	5.4	6.9	8.9
Viscosity Index	100	100	100
Flash Point, (COC) Deg F	405	410	410
Pour Point, Deg F	-27	-27	-20
Gravity, API @ 60°F	31.5	30.0	28.5
Rust Test, ASTM D665	no rust	no rust	no rust
Oxidation Life, ASTM D943 Hrs	2000+	2000+	2000+
Hydraulic Pump Test,ASTMD2882 2000PSI, 100hrs., 175°F	25	25	28

Part#	Package Size	Part#	Package Size	Part#	Package Size
Premium 32		Premium 46		Premium 68	
705233	5 gal	705243	5 gal	705253	5 gal
702685	55gal	705244	55gal	702700	55gal
Bulk		Bulk		Bulk	

Warren Industrial Lubricants, Ltd.
 434 Riverside Drive
 San Antonio, Texas, 78210
 1-210-533-1264

HYDRAULIC FLUID



LUBRIGUARD

80w90

Gear Oil

A multi-purpose sulfur/phosphorus type gear lubricant designed for API Service Classification "GL-5" and MT-1 capabilities for non-synchronized manual transmissions in heavy duty systems. Compounded with highly refined paraffinic base stocks and additives to ensure extreme pressure characteristics, anti-wear, "limited slip", corrosion inhibition, rust prevention, low pour point, and anti-foaming tendencies. Meets the requirements of U. S. Military Specification MIL-L-2105D, MIL-L-2105E and Mack GO-G, GO-H and GO-J. Primarily recommended for passenger cars and light trucks.

Typical Characteristics

SAE Grade	80W-90	Gravity, API @ 60°F	24.5
Gear		Flash Point, (COC) Deg F	420
Viscosity, cSt@ 40° C	136	Viscosity Index	100
@ 100° C	14.0	Pour Point, Deg F	-15
Viscosity, SUS@ 100° F	716	Deg C	-26
@ 210° F	75.6		

Part#

Package Size

702630	12/1 qt
702753	6/1 gal
702629	35# pail
702841	120#keg
702606	55 gal
Bulk	

Warren Industrial Lubricants, Ltd.
434 Riverside Drive
San Antonio, Texas, 78210
1-210-533-1264

GEAR LUBRICANT

SERVICE PRO®

SERVICE PRO® COMPLETE™ 50/50 PREDILUTED ANTIFREEZE/ COOLANT

DESCRIPTION: Service Pro® Complete™ 50/50 Prediluted Antifreeze/Coolant protects against corrosion and is compatible with any antifreeze/coolant used in all domestic and foreign car and truck cooling systems, including those with aluminum components. May be used for diesel automotive and heavy-duty application when combined with supplemental coolant additives (for topping off conventional coolants) and/or extenders (for use with other Extended Life Heavy Duty coolants) based on treat rates recommended by engine manufacturers. Do not overcharge antifreeze/coolant with SCA or extenders. Designed to blend with any color antifreeze, Service Pro® Complete™ 50/50 Prediluted Antifreeze/Coolant formula offers long-lasting protection for your cooling system while keeping the year and mileage protection or change over intervals of your original antifreeze.

PRODUCT When used as directed, Service Pro® 50/50 Complete™ PREDILUTED Antifreeze/Coolant:

- SPECIFICATIONS:**
- Meets ASTM D3306, D4985
 - May be added to the antifreeze/coolant of ANY make or model of automobile and light duty truck on the road, foreign or domestic
 - Prevents freeze-ups, overheating, and boilovers
 - May be added to ANY color antifreeze/coolant
 - Protects aluminum and other engine metals
 - Premixed with deionized, demineralized water that meets or exceeds the recommended requirements of ASTM D3306 and D4985

Composition by Weight		Typical Values
Custom Brand Concentrate		51%
Total Water		49%
Dyes (Green)		Trace
Properties		
Color		Light Green
Odor		Characteristic
Ash Content	ASTM D 1119	0.58% by weight
pH	ASTM D 1287	
33% by Volume Solution		8.6
50% by Volume Solution		8.7
Reserve Alkalinity	ASTM D 1121	6.4
Specific Gravity at 20/20°C	ASTM D 1122	
33% by Volume Solution		1.0468
50% by Volume Solution		1.0687
Freezing Point	ASTM D 1177	
50% by Volume Solution		-34.0°F (-37.0°C)
Boiling Point†	ASTM D 1120	
50% by Volume Solution		226°F (108°C)
Flash Point (Tag Open Cup)		
50% by Volume Solution		None
Foam Test	ASTM D 1881	50 ml max, .1 second max break time
Average Net Weight/Gallon at 68°F (20°C)		8.9 lbs.

† Under standard pressure



AIOD
ASSOCIATION OF INDEPENDENT OIL DISTRIBUTORS

SERVICE PRO®

SERVICE PRO® COMPLETE™ ANTIFREEZE/COOLANT

DESCRIPTION: Service Pro® Complete™ Antifreeze/Coolant protects against corrosion and is compatible with any antifreeze/coolant used in all domestic and foreign car and truck cooling systems, including those with aluminum components. May be used for diesel automotive and heavy-duty application when combined with supplemental coolant additives (for topping off conventional coolants) and/or extenders (for use with other Extended Life Heavy Duty coolants) based on treat rates recommended by engine manufacturers. Do not overcharge antifreeze/coolant with SCA or extenders. Designed to blend with any color antifreeze, Service Pro® Complete™ Antifreeze/Coolant formula offers long-lasting protection for your cooling system while keeping the year and mileage protection or change over intervals of your original antifreeze.

- PRODUCT SPECIFICATIONS:** When used as directed, Service Pro® Complete™ Antifreeze/Coolant:
- Meets ASTM D3306, D4985
 - May be added to the antifreeze/ coolant of ANY make or model of automobile and light duty truck on the road, foreign or domestic
 - Prevents freeze-ups overheating, and boilovers
 - May be added to ANY color antifreeze/coolant
 - Protects aluminum and other engine metals

Composition by Weight		Typical Values
Ethylene Glycol		93.8%
Soluble Inhibitors (Anhydrous)		4.2%
Total Water		2.0%
Dyes (Green)		Trace
Properties		
Color		Light Green
Odor		Characteristic
Ash Content	ASTM D 1119	1.20% by weight
pH	ASTM D 1287	
33% by Volume Solution		8.6
50% by Volume Solution		8.7
Reserve Alkalinity	ASTM D 1121	11.0
Specific Gravity at 20/20°C	ASTM D 1122	
33% by Volume Solution		1.0468
50% by Volume Solution		1.0687
Freezing Point	ASTM D 1177	
50% by Volume Solution		-34.0°F (-37.0°C)
Boiling Point†	ASTM D 1120	
50% by Volume Solution		226°F (108°C)
Flash Point (Tag Open Cup)		
70% by Volume Solution		None
Foam Test	ASTM D 1881	15 ml max, .1 second max break time
Average Net Weight/Gallon at 68°F (20°C)		9.3 lbs.

† Under standard pressure



AIOD
ASSOCIATION OF INDEPENDENT OIL DISTRIBUTORS

LUBRIGUARD

Premium Tractor Transmission & Hydraulic Fluid



A high quality, specially designed lubricant containing anti-rust, anti-foam and oxidation inhibitors; plus other additives necessary for the wide range of applications recommended by various tractor manufacturers. The product is an "all seasonal" type of oil that resists thickening in cold weather and thinning in the heat of the summer. It is compounded with detergents to keep transmissions clean and maintain hydraulic control circuits in perfect working condition; and provides excellent protection against seal and pump deterioration. Operators, especially farmers, will appreciate the multi-purpose application of Premium Tractor Transmission & Hydraulic Fluid for transmissions, final drives, and hydraulic systems of tractors thereby eliminating the requirement to stock a variety of oil products. Premium Tractor Transmission & Hydraulic Fluid is currently being used in a variety of mechanical systems world-wide.

Typical Characteristics

SAE Grade, Automotive	10w-20
SAE Grade, Gear	75
Viscosity, cSt @ 40° C	55
Viscosity, cSt @ 100° C	9.2
Viscosity, SUS @ 100° F	220
Viscosity, SUS @ 210° F	58
Viscosity Index	140 (min)
Flash Point, Deg F	400
Pour Point, Deg F	-40
Gravity, Deg API @ 60° F	28.2
Density, lbs/gallon	7.38

The listing below suggests those applications where Premium Tractor Transmission Hydraulic Fluid may be used with confidence:

Allison - Hydraulic Trans Fluid; GMC, Type C, C-1, C-2, C-3.
 Allis-Chalmers - #272843, Part#924282 (Power Fluid No. 821), Part#246634
 Caterpillar - Anti-wear Hydraulic Oil above -10°F; TO-2, TO-4
 Clark Transmissions
 Deutz-Allis - 272843 (Power Fluid 821XL)
 J.I. Case - Hi-Lo CH Fluid JIC 145, Case-O-Matic Type A, JIC 143, JIC 144, JIC-C-185 (TFD) MS-1205 (TFD-II), MS-1206 (PTF), MS-1207 (Hy-Trans-Plus), MS-1210
 Ford New Holland- M-2C41 Selecto-Speed Fluid, ESN M-2-C41A, M-2C41-B, M-4864A, M-2C65A, M-2C77A, M-4864B, M-2C65B, M-2C78A, M2C86A, M-2C134B, M-2C134C, M-2C134D, FNHA-2-C-200 & 201.
 Hesston Fiat AF-87
 International Harvester - Hy-Trans Fluid, (B-5, B-6, B-7)
 John Deere - Fluid Type 303 (J-14C), Part #AR-284254, Part #AR-269444, J-14B, J-20A, J-20B (Hy-Guard), J-20C, Quatrol Requirements, J21A
 Kubota UDT Fluid
 Landini
 Massey Ferguson - M-1103A, M-1103B, M-1110, M-1129A, M-1127, M-1135, Permatron III, M-1141
 Oliver - Where Additive Part# 102082A is mixed with 10W, 5W-20, 10W-30 Oil; in 1 part to 16 parts oil, Type 55 and Renk 874 A/B Transmission
 White Universal Fluid
 Stieger - Hydraulic Trans Fluid. Gear, Hydraulic and Wet Brake Oil
 Sunstrand Pumps
 Versatile - Specs. 23M or 24M
 White Farm - Hydraulic Oil Type 55 Fluid, White Universal Fluid, White Farm Q-1760, Q-17668, White UTHF, Q-1826

Part#

Package Size

702560	5 gal
702569	55 gal
Bulk	

Warren Industrial Lubricants, Ltd.
 434 Riverside Drive
 San Antonio, Texas, 78210
 1-210-533-1264

HYDRAULIC FLUID



Warren TO-4 Drive Train Oils

Warren Oil Company

Product Data Sheet

WARREN TO-4 DRIVE TRAIN OILS are formulated to meet the stringent performance requirements of the Caterpillar TO-4 specification. These fluids are recommended for equipment where specified TO-4 qualified oils are required in order to maintain the Caterpillar equipment warranty. **WARREN TO-4 DRIVE TRAIN OILS** are blended to provide superior gear wear protection and excellent thermal stability while maintaining a delicate balance of static and dynamic frictional characteristics with a variety of materials to give smooth transmission power transfer under high horsepower conditions. The balanced additive package provides substantially improved load carrying capacities and durability and reduces brake chatter.

WARREN TO-4 DRIVE TRAIN OILS are recommended for the lubrication of heavy-duty equipment in both highway and off-highway service that require a lubricant meeting Caterpillar TO-4, Allison C-4 or API GL-3 specifications. **WARREN TO-4 DRIVE TRAIN OILS** are API GL-3 gear oils that are formulated to exceed the performance requirements of the Komatsu Micro-Clutch test.

WARREN TO-4 DRIVE TRAIN OILS provides excellent service in all Caterpillar powershift transmissions, final drives, hydrostatic transmissions, torque converters, hydraulics or any system which specify TO-4 qualified oils. The SAE 10-W and SAE 30-W grades can be used in all applications requiring and Allison C-4 qualified oils.

Benefits

- Extends component life
- Excellent gear protection
- Oxidation and thermal stability for long life
- Excellent rust and corrosion protection
- Compatible with crankcase engine oils
- Improved friction and anti-wear performance compared to TO-2 fluids

Warren Oil Company, Inc.

Dunn, NC 28334: Benton, AL 36758: San Antonio, TX 78210:
Marion, IL 62959: Johnstown, PA 15909: West Memphis, AR 72301



Warren TO-4 Drive Train Oils

Warren Oil Company

Product Data Sheet

WARREN TO-4 DRIVE TRAIN OILS do not contain friction modifiers or viscosity index improvers and CANNOT be used in farm tractors, and are not designed to be used in the engine crankcase.

Typical Characteristics

Warren TO-4 Drive Train Oil	10	30	50
Gravity	29.6	27.6	25.5
Viscosity			
@ 40 Deg. C, cSt	41	101	248.5
@ 100 Deg. C, cSt	6.34	11.5	20
@ 100 Deg. F, SUS	191.3	468	1151
@ 210 Deg F, SUS	47	64.6	98.5
Viscosity Index	102	101	93
Flash Point Deg. F	435	460	500
Copper Strip Corrosion	Pass	Pass	Pass
Foam Test	Pass	Pass	Pass

Warren Oil Company, Inc.

Dunn, NC 28334: Benton, AL 36758: San Antonio, TX 78210:
Marion, IL 62959: Johnstown, PA 15909: West Memphis, AR 72301

Coastal Multi-Vehicle Synthetic Blend Automatic Transmission Fluid



ONE Advanced Solution For Multiple ATF Requirements

ATF Market Shifts Toward New Performance Requirements

The desire for fuel economy is rapidly driving changes in the automatic transmission designs for a growing number of late model vehicles being sold in the U.S.

Asian, European and North American OEMs are increasing the number of gears in newer transmissions from four or five, to six or as many as eight.

Many of these newer model transmissions are designed to engage the torque converter clutch in a slipping mode at lower speeds to improve fuel efficiency.

This "aggressive slipping" operation causes newer transmissions to be more prone to shudder (vibration) with the use of an improper ATF. Standard DIIIH/M fluids do not provide the friction control required by these new transmissions. These hardware designs also put increased demands on the heat resistance, shearing and oxidation control properties of ATFs.

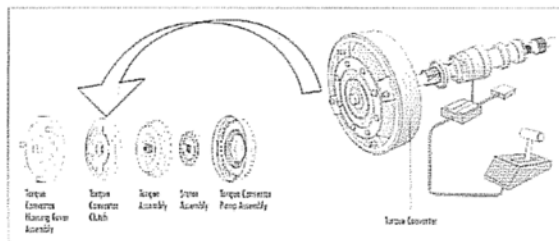
To ensure optimum transmission performance, OEMs are demanding more specialized fluids. Today, there are literally dozens of ATF types specified for the North American service fill market, creating confusion, increased inventory costs, and opportunities for error and misapplication.

Coastal Multi-Vehicle Synthetic Blend Automatic Transmission Fluid—Formulated for the Changing ATF Market

Coastal Multi-Vehicle Synthetic Blend Automatic Transmission Fluid is specially formulated to exceed the performance and protection requirements of these new transmissions.

Installers can rely on this single fluid to conveniently and accurately meet a wide array of global OEM requirements in North America.

- Exceeds the most demanding JASO 1A performance standard
- Covers OEM specialty requirements
- Delivers superior wear protection
- Provides extended anti-shudder performance for smooth driving
- Reduces risk of installer error



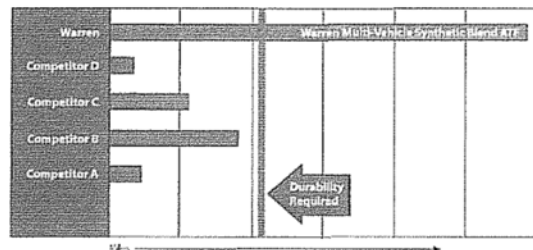
New fuel-efficient transmissions partially engage the torque converter clutch at lower speeds and put increased demands on ATFs.

Coastal Multi-Vehicle Synthetic Blend Automatic Transmission Fluid

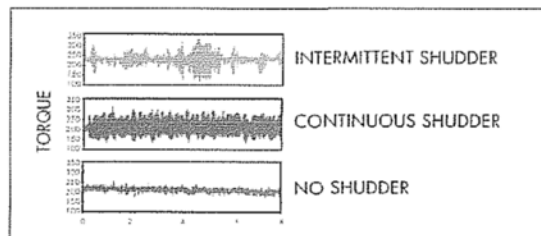


Extended Anti-Shudder Protection

Newer transmission designs require transmission fluid with specialized frictional performance for proper operation. It is estimated that the number of transmissions requiring anti-shudder durability has doubled in the past four years.



Coastal Multi-Vehicle Synthetic Blend ATF offers extended friction control protection that lasts over the life of the fluid—long after the anti-shudder protection found in many competitive brands has broken down.



Shudder is disturbing to drivers, who expect comfort and smooth driving. Coastal Multi-Vehicle Synthetic Blend ATF reduces transmission shudder, and improves operability and fuel efficiency.

Significant Operational Benefits

- Meets Multiple Performance Requirements
- Extended Anti-Shudder Durability
- Superior Lubrication and Antiwear Protection
- Exceptional Frictional Performance
- Resists Oxidation and Thermal Degradation
- Extends Drain Intervals
- Delivers Smooth, Consistent Shifting
- Improves Transmission Protection
- Outstanding Low Temperature Protection
- Simplifies Inventory Requirements
- Reduces Risk of Service Fill Error

Applications

This multi-vehicle product technology is suitable for use in most vehicle applications, including:

Acura	GMC Trucks	Nissan
AM General	Honda	Oldsmobile
Audi	Hyundai	Plymouth
BMW	Infiniti	Pontiac
Buick	Isuzu	Porsche
Cadillac	Jaguar	Saab
Chevrolet	Jeep	Saturn
Chrysler	Kia	Scion
Daewoo	Land Rover	Subaru
Dodge	Lexus	Suzuki
Dodge Trucks	Lincoln	Toyota
Eagle	Mazda	Volkswagen
Ford	Mercedes-Benz	Volvo
Ford Trucks	Mercury	
GEO	Mitsubishi	

Where the following ATF types are specified:

Allison C-4	Shell ATF M-1375.4
Audi part number G 052 025-A2	Shell LA2634
Chrysler	Texaco 7045-E
DIIIIH/M	Texaco ETL-8072 B
Esso Type LT 71141 ATF	Texaco N402
Honda ATF-Z1	Toyota JWS 3309
Idemitsu K17	Toyota Type WS
MERCON® V	Toyota Type-T
Mitsubishi SP-II/III	Volvo Part #1161540-8
Nissan Matic J	
Nissan Matic K	

Note: Not recommended for use in Continuously Variable Transmissions (CVTs), newer DEXRON®-VI applications, and older model Type F applications. See owner's manual for complete recommendations.





COASTAL[®] FULL SYNTHETIC GF-4 MOTOR OILS

Warren Oil Company

Product Data Sheet

COASTAL[®] FULL SYNTHETIC GF-4 MOTOR OIL'S are superior-quality, high detergent automotive engine oils specially formulated to meet the stringent lubrication requirements of today's engines. Synthetic base oils combine with a carefully selected additive package to provide maximum protection against wear, rust, corrosion, oxidative thickening, acid formation, sludge and varnish deposits.

COASTAL[®] PREMIUM GF-4 PASSENGER CAR MOTOR OILS (PCMO) Meets or exceeds the requirements of MIL-1-46152E, Ford WSS-M2C153-H and WSS-M2C930-A (SAE 5W-20) and WSS-M2C929-A (SAE 5W-30)

Meets DaimlerChrysler DC MS10797 (SAE 5W-20), DC MS10796 (SAE 5W-30) and DC MS10798 (SAE 10W-30) specifications.

Meets Honda Service Fill Specifications.

Meets GM 6094M specification (SAE 5W-20, SAE 5W30 and SAE 10W30)

Meets Toyota Specifications.

Meets API Service Category SM, SL, SJ, SH complies with ILSAC GF-4 requirements.

Benefits

- ❶ Our highest level of protection providing thermal and oxidation stability
- ❷ Helps protect emissions system
- ❸ Minimized rust and corrosion
- ❹ Outstanding low temperature pour point
- ❺ ILSAC GF-4 Energy Conserving

Warren Oil Company, Inc.

Dunn, NC 28334; Benton, AL 36758; San Antonio, TX 78210;
Marion, IL 62959; Johnstown, PA 15909; West Memphis, AR 72301



COASTAL[®] FULL SYNTHETIC GF-4 MOTOR OILS

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Product Data Sheet

Typical Characteristics

Coastal[®] Full Synthetic Motor Oils

	5W20	5W30	10W30
Viscosity			
@40 Deg. C, cSt	50.0	60.1	73.0
@100 Deg. C, cSt	8.0	10.0	11.2
Viscosity Index	145	145	145
API Gravity	34.8	33.7	33.0
Sp. Gravity	0.8629	0.8554	0.8602
Flash, COC, °F	405	405	405
Pour Pt., °F	-40	-40	-35
API Performance	SM	SM	SM

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