

DURATRAN™ SYNTHETIC TRACTOR HYDRAULIC FLUID (THF) UNIVERSAL TRACTOR TRANSMISSION OIL (UTTO)

Introduction

Petro-Canada Lubricants' DURATRAN™ Synthetic is a full synthetic heavy duty tractor hydraulic fluid (THF) or sometimes referred to as a Universal Tractor Transmission Oil (UTTO) is an all season fluid designed for farm tractors, agricultural machinery, off-highway mining, forestry and construction equipment, with a common oil reservoir for transmission, differential, final drives, hydraulic system, wet brake and power steering mechanisms. DURATRAN Synthetic is formulated with 99.9% pure crystal clear HT processed base oils in combination with an advanced additive package eliminating the need for seasonal fluid changes to accommodate cold or hot temperature extremes. This formulation offers exceptional performance surpassing equipment manufacturer's specifications.

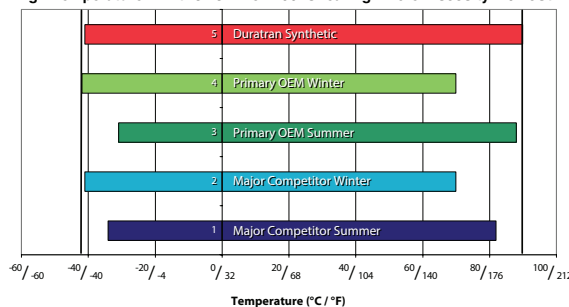
Features and Benefits

- **Superior Wear Protection**
 - Minimizes and reduces wear on transmission, differential, and final drive gears at elevated temperatures reducing the need for replacement parts
 - Superior gear and bearing wear protection even in the presence of water contamination
 - Less internal component wear reduces maintenance costs allowing increase in operating up time and reliability
- **Exceptional Performance at High and Low Temperatures**
 - Surpasses John Deere OEM viscosity specifications JDM J20C (summer) and JDM J20D (winter)

- Reliable hot and cold weather operation providing a wide operating temperature range of -41°C/-42°F to 90°C/194°F.
- **Superior Frictional Properties**
 - Exceptional frictional performance offering less brake chatter, and effective braking to avoid slip-skip problems

Summer/Winter Grade Tractor Hydraulic Fluids System Oil Operating Temperature Range

Low Temperature Limit: Brookfield Viscosity ASTM D2983 at 20,000 CP
High Temperature Limit: CEC L-45-A-99. Shearing where Viscosity = 9.1cSt *



Minimum viscosity is 9.1cSt @ 100°C. The after-shear temperature at 9.1cSt shows the stability of the fluid (higher is better).

- Allows superior clutch & transmission performance for smoother equipment operation

What is the HT difference?

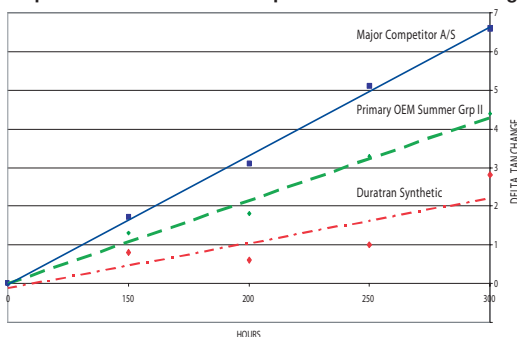
Petro-Canada Lubricants starts with the HT purity process to produce water-white, 99.9% pure base oils. The result is a range of lubricants, specialty fluids and greases that deliver maximum performance for our customers.



- **Long Life Protection**

- Superior resistance to high temperature fluid break down
- Superior oxidation stability resulting in resistance to viscosity increase and acid formation at elevated temperatures
- Superior resistance to build up of sludge and varnish on transmission & hydraulic components for extended drain intervals
- Surpasses the Allison C-4 (obsolete) oxidation test as well as the more demanding ABOT oxidation test used in Automatic Transmission Fluid validations

Oxidation Test - ABOT (Delta TAN)
Duratran Synthetic vs Primary JDM J20C OEM Utilizing Group II Base Stocks and Competitor All Season Offering



*Note: Results are after 300 hr ABOT Oxidation Test which is more severe than JD requirement Allison C-4 (obsolete). (GM 6137M) Oxidation Test.

Applications

DURATRAN™ Synthetic is recommended for use in farm tractors, agricultural machinery, off highway mining, forestry and construction equipment that has a common oil reservoir for the transmission, final drive, hydraulic system, power take off, wet brake and power steering mechanisms. In addition, DURATRAN Synthetic is suitable for use in transmissions specifying an Allison C-4 (obsolete), Caterpillar TO-2 (obsolete) and Caterpillar Axle oil L180D.

DURATRAN Synthetic is approved against Volvo Std 1273,03 -97303 (WB 101).

DURATRAN Synthetic THF was awarded the OEMmie Product Innovation Award back in 2003. The award recognizes products that advance the state-of-the-art, provide unique solutions for the off highway industry and/or increase equipment performance.

DURATRAN Synthetic formulation surpasses the field performance requirements of a wide range of equipment manufacturers including major North American tractor manufacturers.

DURATRAN Synthetic offers the trouble-free operation that should be expected from a synthetic formulation in the widest range of climate & temperature extremes.

DURATRAN Synthetic lubricates and protects bearings and gears, transmits hydraulic power and provides the correct frictional and heat transfer medium for trouble-free wet brake, clutch and transmission performance.

In this new age of efficiency, farm tractor OEM's such as AGCO, CNH and John Deere are designing new hardware such as farm tractor (FT) continuously/infinitely variable transmission (CVT/IVT). Note that these CVT/IVT transmission are different than the passenger car CVT designs in the field today.

AGCO group implemented a FT CVT designed by Fendt and the same design in Massey, Valtra, and Challenger tractors recommends their M1145 fluid as service fill for these transmissions.

Case New Holland offers a FT CVT. They recommend the latest specification MAT 3540 type fluid. In some CNH owners manuals if the owner does not have access to MAT 3540 they can use MAT 3525 fluid.

John Deere also offers a FT CVT designed by ZF (John Deere markets it as an IVT). The fluid recommended must meet the latest specification JDM 20C.

Check with your OEM as to the correct fluid specification required to lubricate your newest FT CVT/IVT systems.

Farm Tractor Fluids

MANUFACTURER	CURRENT SPECIFICATION	MEETS OLDER SPECIFICATIONS (Obsolete)
JOHN DEERE	JDM J20C (Summer) JDM J20D (Winter)	JDM J20A/B, JDM J14B/C JD 303 Fluid
MASSEY-FERGUSON	M-1135, M-1141, M-1143, M-1145* *Note: For UTTO applications only. Do not use in STOU engine applications.	M-1129-A, M-1127-A/B, M-1110
CNH (CASE I.H., J.I. CASE NEW HOLLAND GROUP)	MS-1209/MAT 3505, MS-1210/JIC145/ MAT 3506, MS-1230/CNH MAT 3509, ESN-M2C134-D/MAT 3525	MS-1207, MS-1206, MS-1205, MS-1204/JIC-185, B-6, B-5, JIC-144, JIC-143, FNHA-2-C-201.00, FNHA-2-C-201.00A (134-D), FNHA-2-C-200.00 ESN-M2C134-A/B/C, ESN-M2C86-B/C ESN-M2C53-A, ESN-M2C48-B
GIMA	MF CMS 1141 MF CMS 1145	—
KUBOTA	Kubota UDT Fluid and Kubota UDT ₂ (Approved)	—
WHITE FARM (OLIVER)	Q-1826, Hydraulic Transmission Fluid (HTF)	Q-1802, Q-1766B, Q-1722, Q-1705
AGCO Deutz ALLIS ALLIS	Power Fluid 821XL 272843	257541 246634
STEIGER	Hydraulic/Transmission Fluid, SEMS 1701	—
VERSATILE	ESN-M2C134-D	Hydraulic/Gear Fluid Spec 24M, Spec 23M
VALTRA/VALMET	—	G2-98
LANDINI	Tractor II Hydraulic Fluid	—
HESSTON FIAT	Oliofiat Tutela Multi-F	AF-87
VOLVO	Std 1273,03 -97303 WB 101 (Approved)	—
KOMATSU	KES 07.866	—
ZF TRANSMISSIONS	TE-ML, -03E, -05F, -21F (axles)	—

Transmissions, Differentials and Hydraulics

MANUFACTURER	MEETS CURRENT SPECIFICATION	MEETS OLDER SPECIFICATIONS (Obsolete)
SUNDSTRAND	—	Hydrostatic Transmission Fluid
ALLISON	—	Type C-4 and C-3 Fluids
CATERPILLAR	—	TO-2
DRESSER CONSTRUCTION EQUIPMENT DIVISION	—	Transmission/Hydraulic Fluid
PARKER/ABEX/DENISON	—	Hydraulic Fluid-HF-1 and Hydraulic Fluid-HF-2
EATON/VICKERS	—	M-2950-S, 1-286-S
PLESSEY-SUNDSTRAND	—	Hydraulic Fluid
CLARK	Lift Truck Transmission Fluid TA12, TA18	HR 500, HR 600

Typical Performance Data

PROPERTY	TEST METHOD	DURATRAN™ SYNTHETIC
Flash Point, COC, °C / °F	ASTM D92	213 / 415
Kinematic Viscosity cSt @ 40°C / SUS @ 100°F cSt @ 100°C / SUS @ 210°F	ASTM D445	39.33 / 196 10.0 / 60.0
High Temp / High Shear Viscosity cP @ 150°C / 302°F	ASTM D4682	3.23
Viscosity Index	ASTM D2270	255
Brookfield Viscosity, cP @ -20°C / -4°F	ASTM D2983	1310
Brookfield Viscosity, cP @ -40°C / -40°F	ASTM D2983	14,430
Pour Point, °C / °F	ASTM D5950	-48/-54
Vickers Pump Wear	ASTM D2882	Pass
Total Base Number (TBN)	ASTM D2896	10.3
Copper Corrosion, 3 h, 149°C / 300°F	ASTM D130M	1B
KRL Shear Testing, 20hr Viscosity cSt @ 100°C / 212°F After KRL Testing	CEC-L-45-T-99 ASTM D455	7.15
John Deere Tests		
Shear Stability Test; sheared oil cSt 100°C / 212°F	JDQ 102	7.8
Rust Test - Humidity Cabinet; (49°C / 120°F), 100% R.H.	JDMJ20C	Pass
Oxidation Stability Test	JDQ 23	Pass
Oil Compatibility Test	JDQ23	Pass
Compatibility Sensitivity Test	JDQ19	Pass
Foam Test	JDQ33	Pass

The values quoted above are typical of normal production. They do not constitute a specification.

Note: Many Tractor OEM's have since been consolidated to one Brand. Specifications have been noted to be the last known specification published for specific Tractor brand names.

Check with your OEM supplier for the latest lubricant specification required for your equipment or your OEM Manual

Note: For UTTO applications only. Do not use in engine application where Super Tractor Oil Universal (STOU) are recommended

To order product or to learn more about how Petro-Canada Lubricants
can help your business visit: lubricants.petro-canada.com
or contact us at: lubecsr@petrocanadalsp.com



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