



# EnBio

## EnBio TCS<sup>®</sup>

The "NO BURN" Hydraulic Fluid

## Product Description

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EnBio TCS hydraulic fluid has been specifically formulated to meet the needs of your course and your equipment. Our patented synthetic will last longer, improve hydraulic system efficiency, and reduce equipment wear and overall maintenance costs; combining high-performance and environmental safety. EnBio TCS's superior performance characteristics allow it to be used across all types of mobile equipment. Welcome to the next generation of high-performance hydraulic fluids.

## Product Features & Benefits

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- **High Viscosity Index (VI)** - A high VI means EnBio can be used over a wide temperature range with minimal impact on fluid viscosity. This eliminates the need to use two different grades of hydraulic fluid for summer and winter. High VI also allows the equipment to operate at a lower temperature.
- **Anti-Wear** - Outstanding anti-wear performance leads to a longer, more reliable service and equipment life through lower friction and higher gear efficiencies. These factors result in lower maintenance and energy costs, and less machine downtime.
- **Long Fluid Life** - A unique additive package provides unsurpassed thermal and oxidative stability. This means EnBio remains clean, **will not sludge or varnish**, and can last over 2 times longer than mineral oils and 3 to 4 times longer than bio-based fluids. Longer fluid life means even greater maintenance cost savings and equipment downtime.
- **No Shearing** - Will not shear (change viscosity) even when operating in high-temperature and pressure environments. This means consistent performance throughout the fluid lifecycle.
- **Increased System Performance** - When a system is converted to EnBio TCS from a bio-based or mineral oil, EnBio TCS will dissolve residual sludge and varnish buildup, which leads to a cleaner system.
- **Fire Resistant** - An anhydrous water-soluble fluid with high flash and fire points that make the fluid fire resistant and well suited for high-temperature applications.
- **No Burn** - Extensive testing on golf courses has proven that a spill of EnBio TCS does not kill grass, which has led to superintendents naming it the "No Burn" hydraulic fluid. When washed in accordance to spill management procedures, there is no evidence of a spill and no decrease in turf density.
- **Readily Biodegradable** - Classified as readily biodegradable (by OECD 301B/301F test method) and is dyed blue for ease of detection when a spill occurs. Once cleaned with a simple soap and water solution, EnBio will not leave stains on concrete or asphalt.
- **Non-Toxic** - Classified ecologically harmless, as it has no significant hazard to mammals, plant life or aquatic life. Under OECD guideline 420 for acute oral toxicity testing, EnBio is classified as a "compound" that does not present a significant acute toxic risk if swallowed.
- **No Sheen** - Should EnBio accidentally spill into waterways it will not form a streak on water (sheen), nor will it form an emulsion or sludge. This prevents contamination related issues for plants and animal habitats that exist on the surface or in contact with the water. These factors make EnBio ideally suited for environmentally sensitive applications.
- **No Odor** - No odor will be emitted from the fluid at any temperature range.
- **EPA EAL** - Meets the Environmental Protection Agency's 2013 Vessel General Permit (VGP) guidelines as an Environmentally Acceptable Lubricant (EAL).
- **OEM Specs** - Meets or exceeds many pump manufacturer specifications including Bosch-Rexroth, Danfoss, Eaton and Parker.



## Typical Physical & Chemical Properties

Test	Method	Typical Results
Appearance		Blue fluid
ISO Viscosity Grade		46
Viscosity @ 40°C (Cst)	ASTM D445	47.8
Viscosity @ 100°C (Cst)	ASTM D445	9.79
Viscosity @ 0 °C (Cst)	ASTM D445	481.6
Specific Gravity @ 20°C	ASTM D1298	1.06
Viscosity Index	ASTM D2270	197
Flash Point (open cup) (°F)	ASTM D92	436
Flash Point (Closed cup) (°F)	ASTM D93	429
Fire Point (°F)	ASTM D92	454
Pour Point (°F)	ASTM D97	-49
Foam Test — seq.1,11,111	ASTM D892	0/0:30/0:0/0
Corrosion Protection	ASTM D665A & B	Pass
Copper Strip Corrosion	ASTM D130	1B
Turbine Oxidation	ASTM D934	>7000 Hours
Fourball Anti-Wear (mm wear scar)	ASTM D4172	0.35
Fourball EP (mm wear scar)	ASTM D2783	0.32
Sonic Shear Stability		
- initial viscosity @ 40°C (Cst)	ASTM D5621	47.82
- irradiated viscosity @ 40°C (Cst)		47.79
- initial viscosity @ 100°C (Cst)	ASTM D5621	9,79
- irradiated viscosity @ 100°C (Cst)		9.75
Fuel Injection Shear Stability Test	ASTM D 3945	NO Viscosity Loss
V104 Vane Pump Test (mg/hr)	DIN 51,389 M	0.018
35 VQ Vickers Vane Pump Test	2950-S	Pass
FZG Visual Gear Test	ASTM D5182	Passes 12 stages
Modified Sturm Biodegradability Test (28 days)	OECD 301B	Readily Biodegradable
<b>Sea Water</b>		
96 Hour Sheephead Minnow LC50 (mg/l)		>1,000
96 Hour Mysid Shrimp LC50 (mg/l)		>1,000
<b>Fresh Water</b>		
96 Hour Fathead Minnow LC50 (mg/l)	OECD 203	>50,000
16 Hour Bacterial Inhibition IC50 (mg/l)		22,000
48 Hour Daphina Magna EC50 (mg/l)	OECD 202	>40,000