

Proposed Item for Biobased Designation

The following biobased product information has been collected to support item designation by USDA for the Federal Biobased Product Preferred Procurement Program (FB4P). This summary reflects data available as of July 26, 2006. Additional biobased content information added on March 30, 2007.

Title: Hydraulic Fluids (fixed equipment)

Description: Fluids serving as the power transmission medium in the hydraulic systems of fixed or stationary equipment.

Manufacturers Identified: 20 manufacturers producing Hydraulic Fluids (fixed equipment) have been identified through internet searches, manufacturer's directories, trade associations, and company submissions.

Industry Associations Investigated: The following industry associations have been investigated for member companies producing Hydraulic Fluids (fixed equipment):

- Association for Manufacturing Technology
- Material Handling Industry of America
- National Fluid Power Association
- Biobased Manufacturers Association
- United Soybean Board
- Consolidated Fluid Power Institute
- Fluid Power Society

Commercially Available Products Identified: Of the manufacturers identified, 67 Hydraulic Fluids (fixed equipment) are commercially available on the market.

Product Information Collected: Specific product information including company contact, intended use, biobased content, and performance characteristics have been collected on 28 Hydraulic Fluids (fixed equipment).

Industry Performance Standards: Product information submitted by biobased manufacturers indicate that have typically been tested to the following industry standards:

- American Society for Testing and Materials #D1122-97a(2002) Standard Test Method for Density or Relative Density of Engine Coolant Concentrates and Engine Coolants By The Hydrometer
- American Society for Testing and Materials #D1298-99e2 Standard Test Method for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
- American Society for Testing and Materials #D130-04 Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test
- American Society for Testing and Materials #D1401-02 Standard Test Method for Water Separability of Petroleum Oils and Synthetic Fluids
- American Society for Testing and Materials #D1500-04a Standard Test Method for ASTM Color of Petroleum Products (ASTM Color Scale)

- American Society for Testing and Materials #D2266-01 Standard Test Method for Wear Preventive Characteristics of Lubricating Grease (Four-Ball Method)
- American Society for Testing and Materials #D2270-04 Standard Practice for Calculating Viscosity Index From Kinematic Viscosity at 40 and 100°C
- American Society for Testing and Materials #D2272-02 Standard Test Method for Oxidation Stability of Steam Turbine Oils by Rotating Pressure Vessel
- American Society for Testing and Materials #D2532-03 Standard Test Method for Viscosity and Viscosity Change After Standing at Low Temperature of Aircraft Turbine Lubricants
- American Society for Testing and Materials #D2619-95(2002)e1 Standard Test Method for Hydrolytic Stability of Hydraulic Fluids (Beverage Bottle Method)
- American Society for Testing and Materials #D287-92(2000)e1 Standard Test Method for API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method)
- American Society for Testing and Materials #D2983-04a Standard Test Method for Low-Temperature Viscosity of Lubricants Measured by Brookfield Viscometer
- American Society for Testing and Materials #D4052-96(2002)e1 Standard Test Method for Density and Relative Density of Liquids by Digital Density Meter
- American Society for Testing and Materials #D4172-94(2004) Standard Test Method for Wear Preventive Characteristics of Lubricating Fluid (Four-Ball Method)
- American Society for Testing and Materials #D445-04e2 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)
- American Society for Testing and Materials #D567-53(1955) Method for Calculating Viscosity Index (Withdrawn 1966)
- American Society for Testing and Materials #D5864-00 Standard Test Method for Determining Aerobic Aquatic Biodegradation of Lubricants or Their Components
- American Society for Testing and Materials #D665-03 Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water

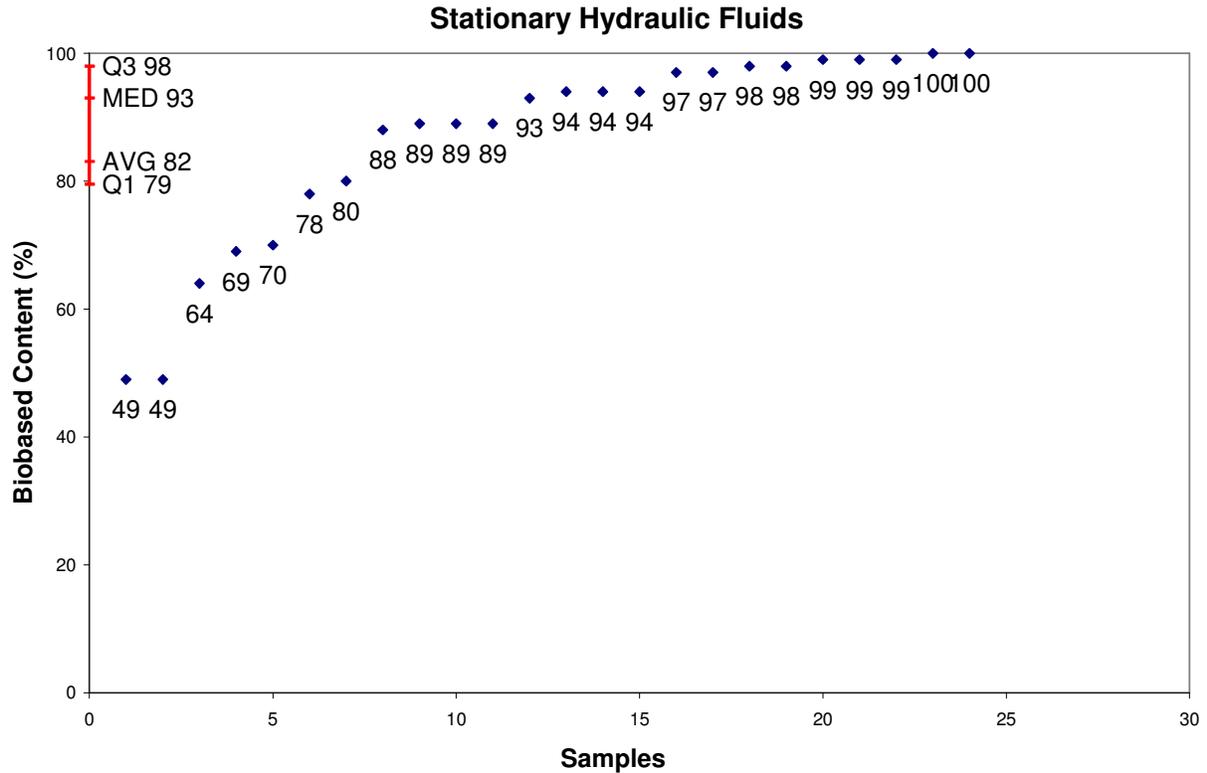
Samples Tested for Biobased Content: 24 samples of Hydraulic Fluids (fixed equipment) have been submitted to independent laboratories for biobased content testing as specified by ASTM standard D6866-04.

Biobased Content Data: Results from biobased content testing of Hydraulic Fluids (fixed equipment) indicate a range of content percentages from 49% minimum to 100% maximum biobased content as defined by ASTM D 6866-04. A detailed distribution of biobased content levels is included as Appendix A.

Products Submitted for BEES Analysis: Life-cycle cost and environmental effect data for 2 Hydraulic Fluids (fixed equipment) have been submitted to NIST for BEES analysis.

BEES Analysis: The life-cycle costs of the submitted Hydraulic Fluids (fixed equipment) range from \$8.75 minimum to \$10.45 maximum per usage unit. The environmental scores range from 0.0042 minimum to 0.0524 maximum. A detailed summary of the BEES results is included as Appendix B.

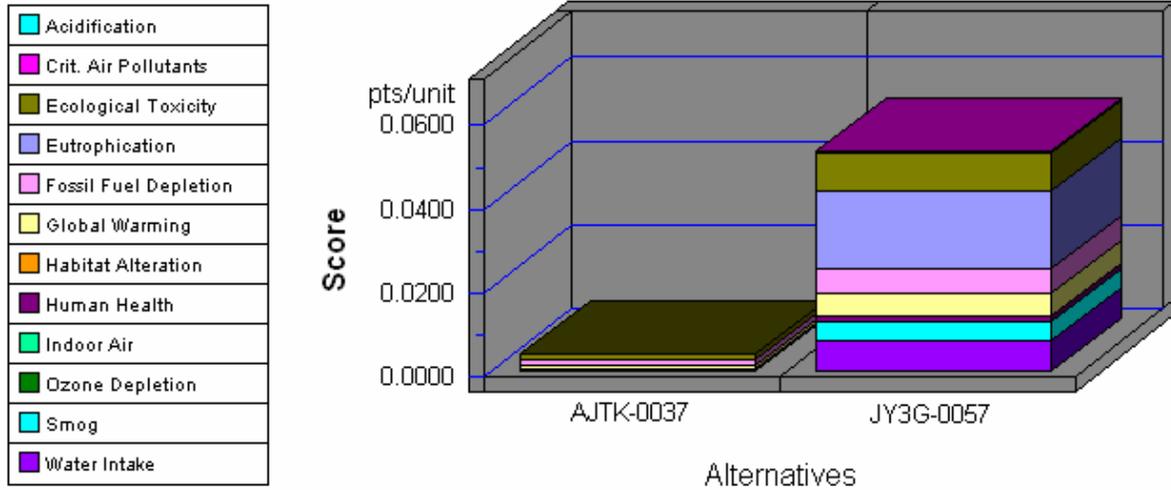
Appendix A - Biobased Content Data



	Manufacturers Identified	Products Identified	C14	BEES
1	RGWJ	RGWJ-0031	49	
2	RGWJ	RGWJ-0035	49	
3	RGWJ	RGWJ-0056	64	
4	J3TP	J3TP-0027	69	
5	AJTK	AJTK-0030	70	
6	RGWJ	RGWJ-0034	78	
7	G4Z2	G4Z2-0004	80	
8	KM73	KM73-0004	88	
9	JY3G	JY3G-0057	89	yes
10	KM73	KM73-0002	89	
11	KM73	KM73-0006	89	
12	B62S	B62S-0002	93	
13	AT1L	AT1L-0006	94	
14	JY3G	JY3G-0049	94	
15	AJ46	AJ46-0001	94	
16	AJTK	AJTK-0041	97	
17	J7A5	J7A3-0017	97	
18	AJTK	AJTK-0037	98	yes
19	AJTK	AJTK-0038	98	
20	RDO8	RDO8-0003	99	
21	AT1L	AT1L-0001	99	
22	G4Z2	G4Z2-0005	99	
23	RGWJ	RGWJ-0055	100	
24	AJTK	AJTK-0017	100	

Appendix B - BEES Analysis Results

Environmental Performance

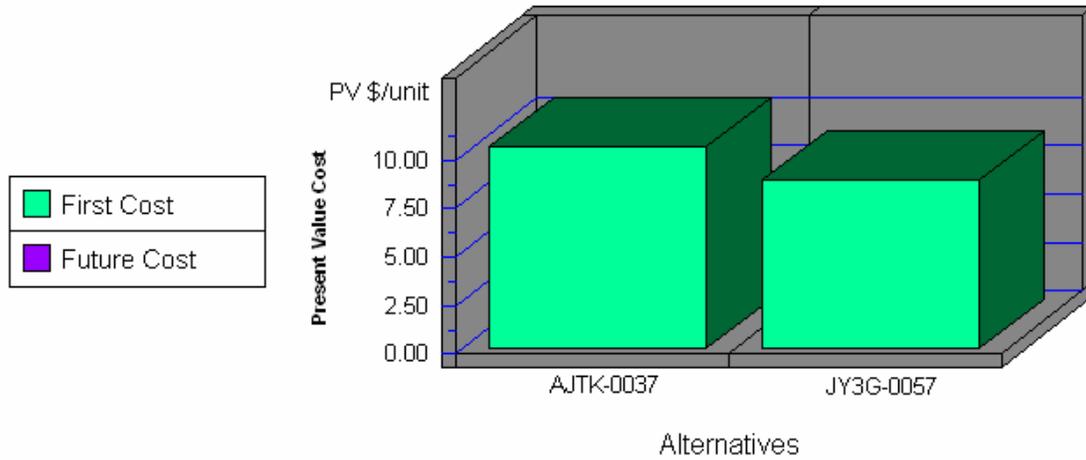


Note: Lower values are better

Category	AJTK-0037	JY3G-0057
Acidification--5%	0.0000	0.0000
Crit. Air Pollutants--6%	0.0000	0.0002
Ecolog. Toxicity--11%	0.0012	0.0093
Eutrophication--5%	0.0002	0.0181
Fossil Fuel Depl.--5%	0.0012	0.0063
Global Warming--16%	0.0008	0.0054
Habitat Alteration--16%	0.0000	0.0000
Human Health--11%	0.0004	0.0012
Indoor Air--11%	0.0000	0.0000
Ozone Depletion--5%	0.0000	0.0000
Smog--6%	0.0002	0.0045
Water Intake--3%	0.0002	0.0074
Sum	0.0042	0.0524

Appendix B - BEES Analysis Results (continued)

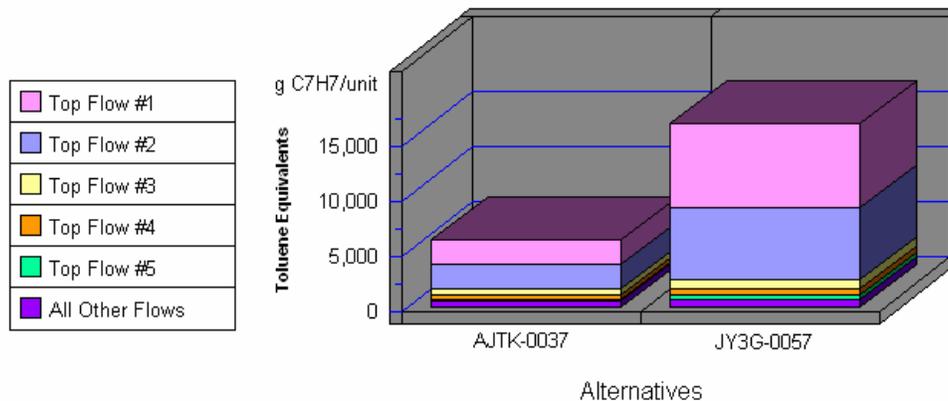
Economic Performance



Category	AJTK-0037	JY3G-0057
First Cost	10.45	8.75
Future Cost-- 3.9%	0.00	0.00
Sum	10.45	8.75

*No significant/quantifiable durability differences were identified among competing alternatives. Therefore, future costs were not calculated.

Human Health by Sorted Flows*



Note: Lower values are better

Category	AJTK-0037	JY3G-0057
Cancer--(w) Arsenic (As3+, As5+	2,288.99	7,675.86
Cancer--(w) Phenol (C6H5OH)	2,220.99	6,462.51
Cancer--(a) Dioxins (unspecifie	513.12	896.05
Cancer--(a) Arsenic (As)	414.80	473.55
Cancer--(a) Benzene (C6H6)	126.81	396.68
All Others	606.90	797.62
Sum	6,171.60	16,702.27

*Sorted by five topmost flows for worst-scoring product