

Proposed Item for Biobased Designation

The following biobased product information has been collected to support item designation by USDA for the BioPreferred Program. This summary reflects data available as of October 3, 2008.

Title: Turbine Drip Oils

Description: Lubricants for use in drip lubrication systems for water well line shaft bearings, water turbine bearings for irrigation pumps, and other turbine bearing applications.

Companies Supplying Item: 4 companies supplying Turbine Drip Oils 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 supplying Turbine Drip Oils:

- United Soybean Board Association
- Independent Lubricant Manufacturers Association
- American Soybean Association
- National Association of Wheat Growers
- National Corn Growers Association

Commercially Available Products Identified: Of the companies identified, 4 Turbine Drip Oils 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 3 Turbine Drip Oils.

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

- ASTM International D2619 Standard Test Method for Hydrolytic Stability of Hydraulic Fluids (Beverage Bottle Method)
- ASTM International D2983 Standard Test Method for Low-Temperature Viscosity of Lubricants Measured by Brookfield Viscometer
- ASTM International D5864 Standard Test Method for Determining Aerobic Aquatic Biodegradation of Lubricants or Their Components
- ASTM International D665 Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the presence of Water
- ASTM International D892 Standard Test Method for Foaming Characteristics of Lubricating Oils
- International Organization for Standardization ISO 32 Oil Viscosity Grade
- International Organization for Standardization ISO 46 Oil Viscosity Grade
- Society of Automotive Engineers SAE 10W20 J300 Engine Oil Viscosity Classification
- Society of Automotive Engineers SAE 10W30 J300 Engine Oil Viscosity Classification

Samples Tested for Biobased Content: 3 samples of Turbine Drip Oils have been submitted to independent laboratories for biobased content testing as specified by ASTM standard D6866-04.

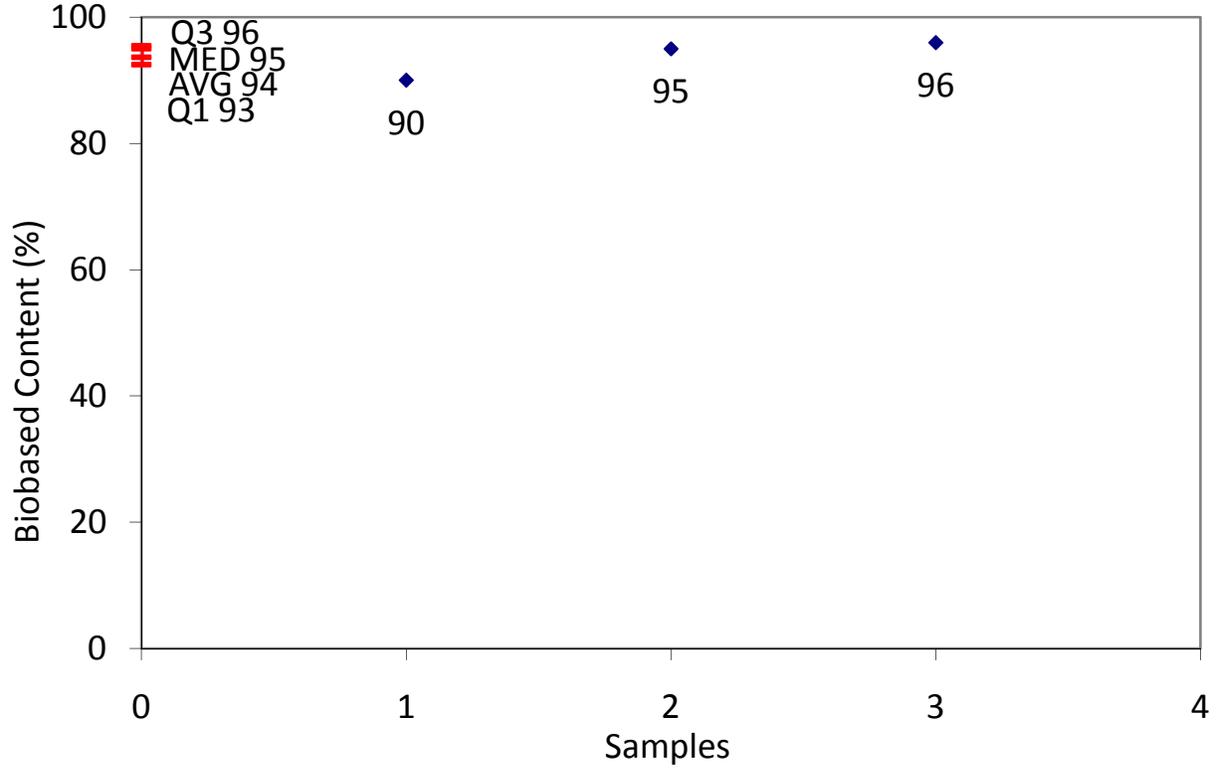
Biobased Content Data: Results from biobased content testing of Turbine Drip Oils indicate a range of content percentages from 90% minimum to 96% maximum biobased content as defined by ASTM D 6866-04. A detailed distribution of biobased content levels is included as Appendix A.

Products Submitted for BEES Analysis: Life-cycle cost and environmental effect data for 1 Turbine Drip Oil has been submitted to NIST for BEES analysis.

BEES Analysis: The life-cycle cost of the submitted Erosion Control Product is \$20.38 per usage unit. The environmental score is 0.0682. A detailed summary of the BEES results is included as Appendix B.

Appendix A - Biobased Content Data

Turbine Drip Oils

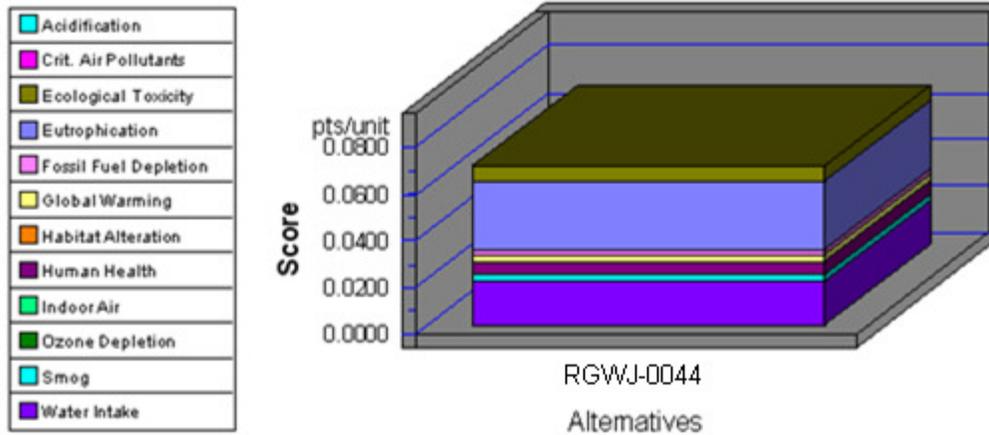


	Company	Product	C14	BEES
1	DRL2	DRL2-0005	90	
2	JCX4	JCX4-0001	95	
3	RGWJ	RGWJ-0044	96	Yes

Appendix B - BEES Analysis Results

Functional Unit: 1 gallon of product

Environmental Performance

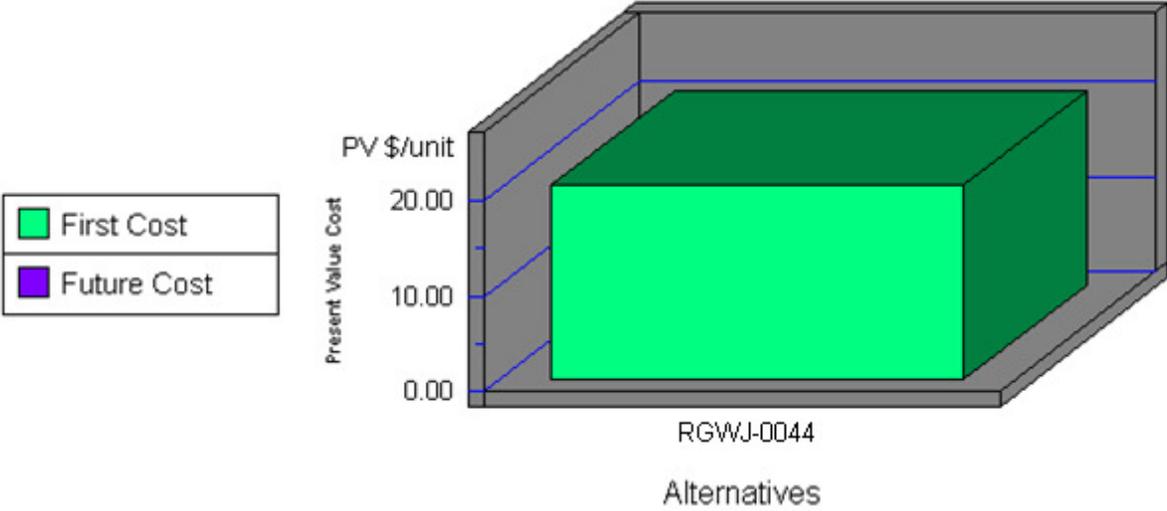


Note: Lower values are better

Category	RGWJ-0044
Acidification--3%	0.0000
Crit. Air Pollutants--9%	0.0003
Ecolog. Toxicity--7%	0.0063
Eutrophication--6%	0.0289
Fossil Fuel Depl.--10%	0.0020
Global Warming--29%	0.0032
Habitat Alteration--6%	0.0000
Human Health--13%	0.0054
Indoor Air--3%	0.0000
Ozone Depletion--2%	0.0000
Smog--4%	0.0030
Water Intake--8%	0.0191
Sum	0.0682

Turbine Drip Oil		
Impacts	Units	RGWJ-0044
Acidification	millimoles H ⁺ equivalents	6.64E+03
Criteria Air Polutants	microDALYs	5.61E-01
Ecotoxicity	g 2,4-D equivalents	7.30E+01
Eutrophication	g N equivalents	9.26E+01
Fossil Fuel Depletion	MJ surplus energy	6.91E+00
Global Warming	g CO ₂ equivalents	2.86E+03
Habitat Alteration	T&E count	0.00E+00
Human Health--Cancer	g C ₆ H ₆ equivalents	3.48E+00
Human Health--NonCancer	g C ₇ H ₈ equivalents	3.28E+03
Indoor Air Quality	g TVOCs	0.00E+00
Ozone Depletion	g CFC-11 equivalents	1.57E-07
Smog	g NO _x equivalents	1.12E+02
Water Intake	liters of water	1.27E+03
Functional Unit	-----	1 gallon of product
<p>1 Following are more complete descriptions of units: Acidification: millimoles of hydrogen ion equivalents; Criteria Air Pollutants: micro Disability-Adjusted Life Years; Ecological Toxicity: grams of 2,4-dichlorophenoxy-acetic acid equivalents; Eutrophication: grams of nitrogen equivalents; Fossil Fuel Depletion: megajoules of surplus energy; Global Warming: grams of carbon dioxide equivalents; Habitat Alteration: threatened and endangered species count; Human Health-Cancer: grams of benzene equivalents; Human Health-NonCancer: grams of toluene equivalents; Indoor Air Quality: grams of Total Volatile Organic Compounds; Ozone Depletion: grams of chloroflouorocarbon-11 equivalents; Smog: grams of nitrogen oxide equivalents; and Water Intake: liters of water.</p>		

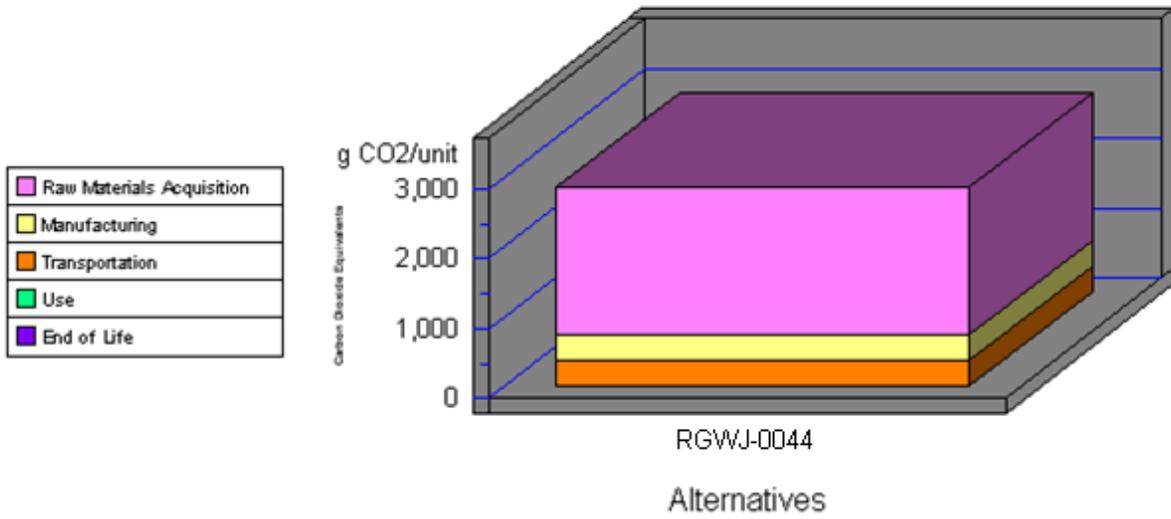
Economic Performance*



Category	RGWJ-0044
First Cost	20.38
Future Cost-- 3.0%	0.00
Sum	20.38

*This is a consumable product. Therefore, future costs are not calculated.

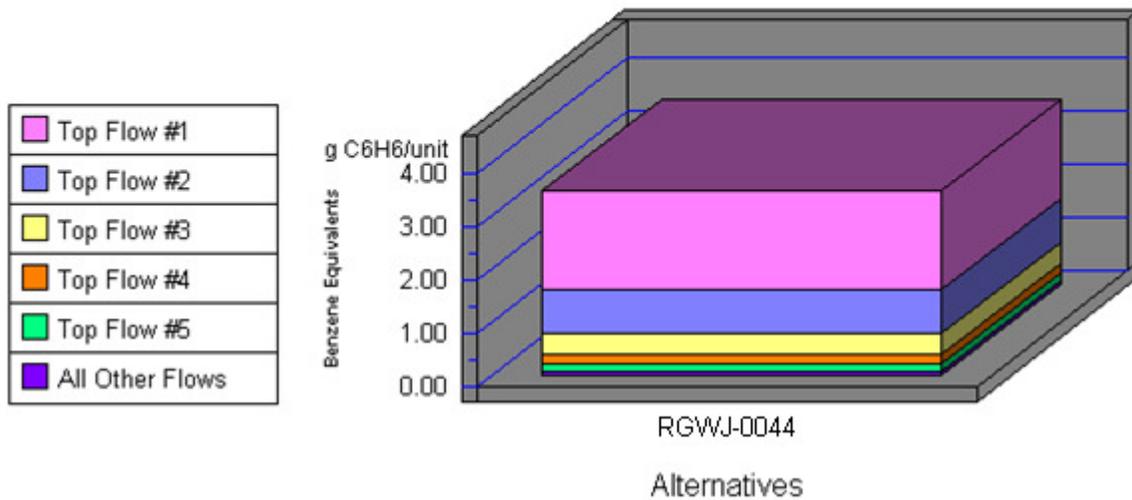
Global Warming by Life-Cycle Stage



Note: Lower values are better

Category	RGWJ-0044
1. Raw Materials	2131
2. Manufacturing	347
3. Transportation	387
4. Use	0
5. End of Life	0
Sum	2865

Human Health Cancer by Sorted Flows*

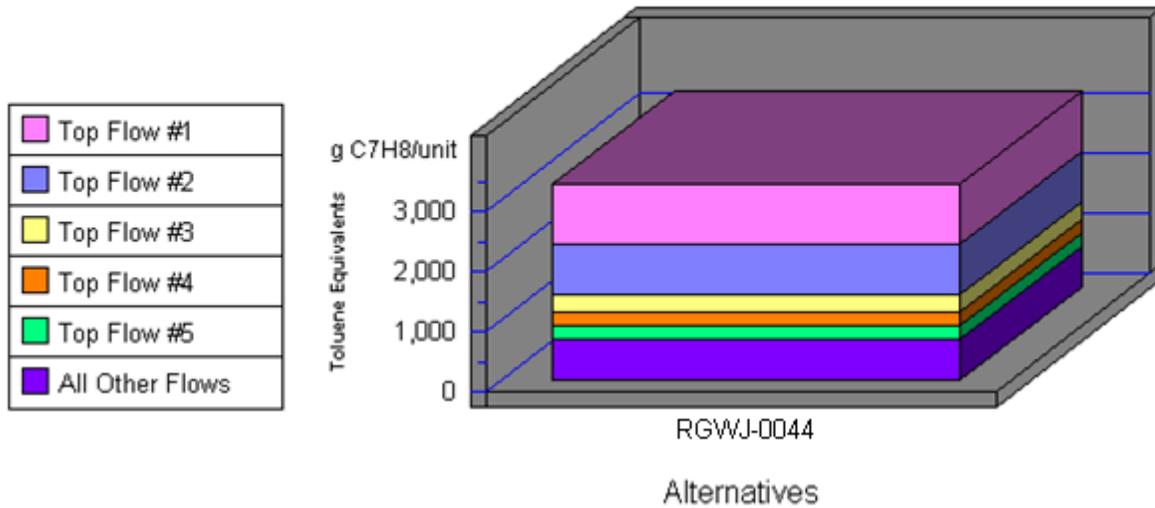


Note: Lower values are better

Category	RGWJ-0044
Cancer--(w) Arsenic (As3+, As5+	1.84
Cancer--(w) Phenol (C6H5OH)	0.83
Cancer--(a) Benzo(a)pyrene (C20	0.40
Cancer--(a) Dioxins (unspecife	0.19
Cancer--(a) Arsenic (As)	0.13
All Others	0.09
Sum	3.48

*Sorted by five topmost flows for worst-scoring product

Human Health Noncancer by Sorted Flows*



Note: Lower values are better

Category	RGWJ-0044
Noncancer--(w) Mercury (Hg+, Hg)	1,019.64
Noncancer--(a) Mercury (Hg)	838.46
Noncancer--(w) Barium (Ba++)	272.06
Noncancer--(a) Dioxins (unspeci)	239.90
Noncancer--(w) Lead (Pb++, Pb4+)	223.89
All Others	685.02
Sum	3,278.97

*Sorted by five topmost flows for worst-scoring product