

Proposed Product Category for Biobased Categorization

The following biobased product information has been collected to support product category designation by USDA for the BioPreferred Program. This summary reflects data available as of May 18, 2009.

Title: Pneumatic Equipment Lubricants

Description: Lubricants designed specifically for pneumatic equipment, including air compressors, vacuum pumps, in-line lubricators, rock drills, jackhammers, etc.

Companies Supplying Product Category: 11 companies supplying Pneumatic Equipment Lubricants 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 Pneumatic Equipment Lubricants:

- National Corn Growers Association
- United Soybean Board Association
- Canadian Association of Mining Equipment and Services for Export

Commercially Available Products Identified: Of the companies identified, 25 Pneumatic Equipment Lubricants 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 12 Pneumatic Equipment Lubricants.

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

- ASTM D130
- ASTM D2266
- ASTM D2270
- ASTM D2272
- ASTM D2619
- ASTM D287
- ASTM D2982
- ASTM D2983
- ASTM D445
- ASTM D5864
- ASTM D5985
- ASTM D6400
- ASTM D665
- ASTM D892

- ASTM D92
- ASTM D93
- ASTM D97
- ISO 32
- ISO 46
- SAE 30

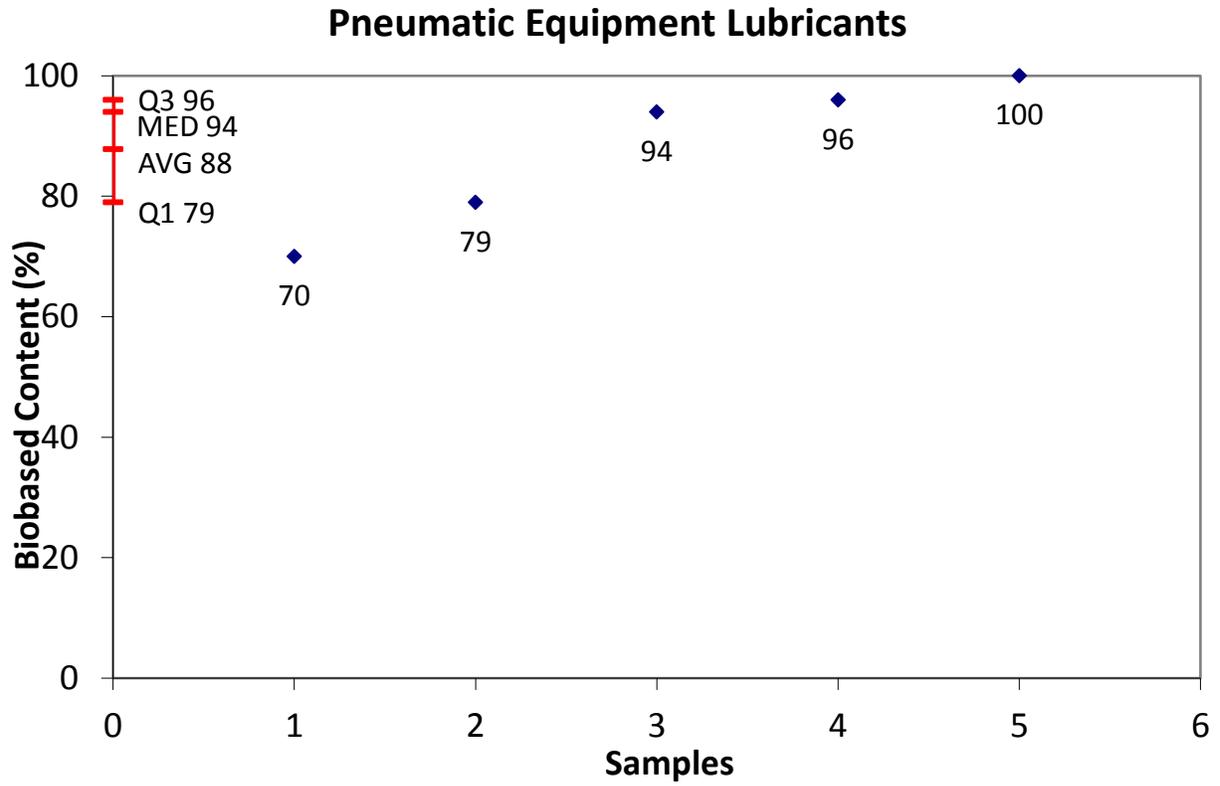
Samples Tested for Biobased Content: 5 samples of Pneumatic Equipment Lubricants have been submitted to independent laboratories for biobased content testing as specified by ASTM standard D6866.

Biobased Content Data: Results from biobased content testing of Pneumatic Equipment Lubricants indicate a range of content percentages from 70 minimum to 100 maximum biobased content as defined by ASTM D6866. 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 Pneumatic Equipment Lubricants have been submitted to NIST for BEES analysis.

BEES Analysis: The life-cycle costs of the submitted Pneumatic Equipment Lubricants range from \$12.99 minimum to \$15.64 maximum per usage unit. The environmental scores range from 0.0673 minimum to 0.0674 maximum. A detailed summary of the BEES results is included as Appendix B.

Appendix A - Biobased Content Data

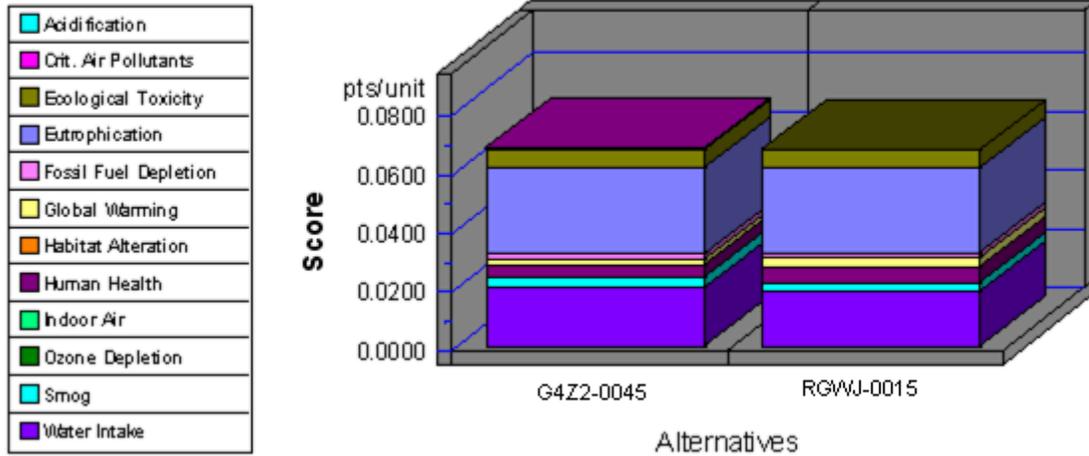


	Company	Product	C14	BEES
1	G4Z2	G4Z2-0038	70	
2	G4Z2	G4Z2-0039	79	
3	RGWJ	RGWJ-0015	94	Yes
4	G4Z2	G4Z2-0045	96	
5	VL67	VL67-0001	100	

Appendix B - BEES Analysis Results

Functional Unit: 1 gallon

Environmental Performance



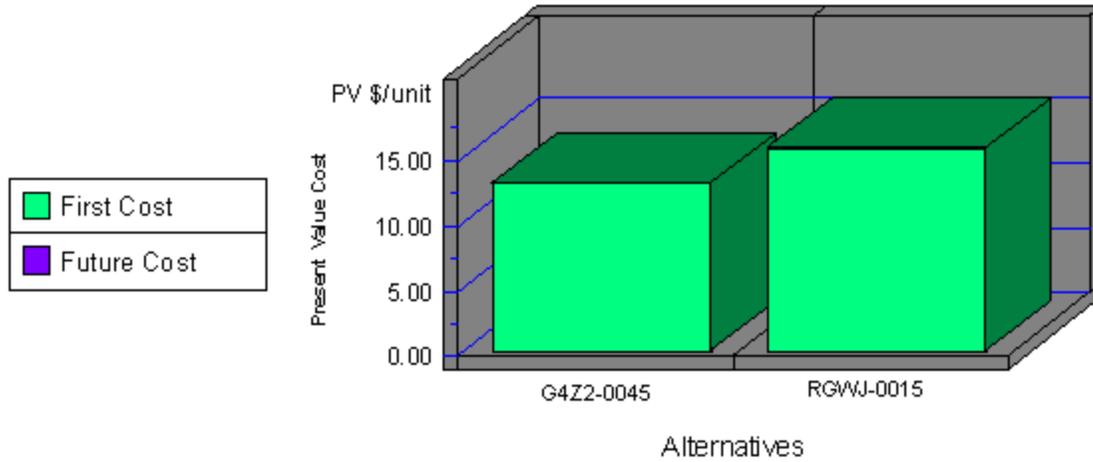
Note: Lower values are better

Category	G4Z2-0045	RGWJ-0015
Acidification--3%	0.0000	0.00000
Crit. Air Pollutants--9%	0.0003	0.00030
Ecolog. Toxicity--7%	0.0063	0.00610
Eutrophication--6%	0.0293	0.02850
Fossil Fuel Depl.--10%	0.0016	0.00200
Global Warming--29%	0.0018	0.00320
Habitat Alteration--6%	0.0000	0.00000
Human Health--13%	0.0046	0.00530
Indoor Air--3%	0.0000	0.00000
Ozone Depletion--2%	0.0000	0.00000
Smog--4%	0.0031	0.00300
Water Intake--8%	0.0204	0.01890
Sum	0.0674	0.0673

Pneumatic Equipment Lubricants			
Impacts	Units	G4Z2-0045	RGWJ-0015
Acidification	millimoles H ⁺ equivalents	6.82E+03	6.61E+03
Criteria Air Pollutants	microDALYs	5.50E-01	5.67E-01
Ecotoxicity	g 2,4-D equivalents	7.36E+01	7.09E+01
Eutrophication	g N equivalents	9.39E+01	9.13E+01
Fossil Fuel Depletion	MJ surplus energy	5.79E+00	7.00E+00
Global Warming	g CO ₂ equivalents	1.60E+03	2.84E+03
Habitat Alteration	T&E count	0.00E+00	0.00E+00
Human Health--Cancer	g C ₆ H ₆ equivalents	2.98E+00	3.42E+00
Human Health--NonCancer	g C ₇ H ₈ equivalents	2.35E+03	3.06E+03
Indoor Air Quality	g TVOCs	0.00E+00	0.00E+00
Ozone Depletion	g CFC-11 equivalents	1.34E-07	1.14E-07
Smog	g NO _x equivalents	1.17E+02	1.12E+02
Water Intake	liters of water	1.35E+03	1.25E+03
Functional Unit	-----	1 gallon	

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 chloroflourocarbon-11 equivalents; Smog: grams of nitrogen oxide equivalents; and Water Intake: liters of water.

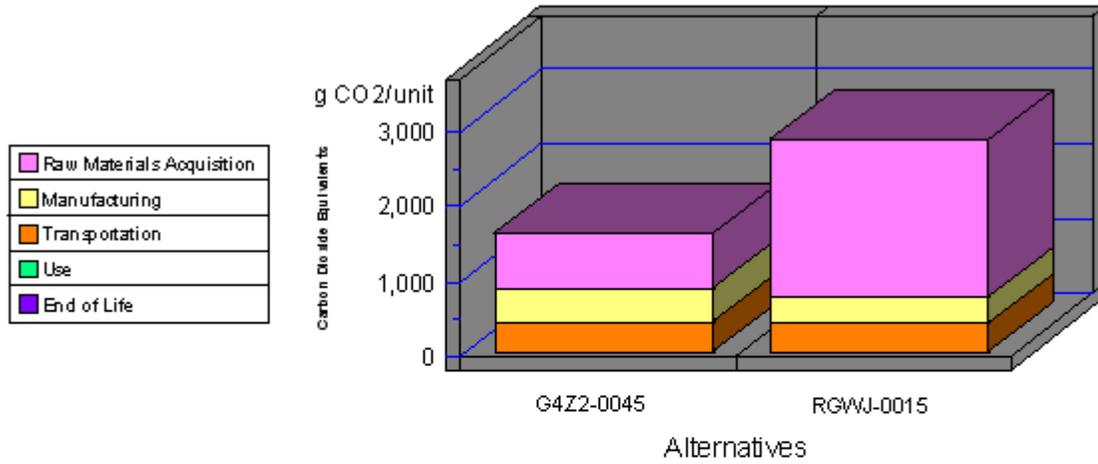
Economic Performance



Category	G4Z2-0045	RGWJ-0015
First Cost	12.99	15.64
Future Cost- 3.0%	0.00	0.00
Sum	12.99	15.64

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

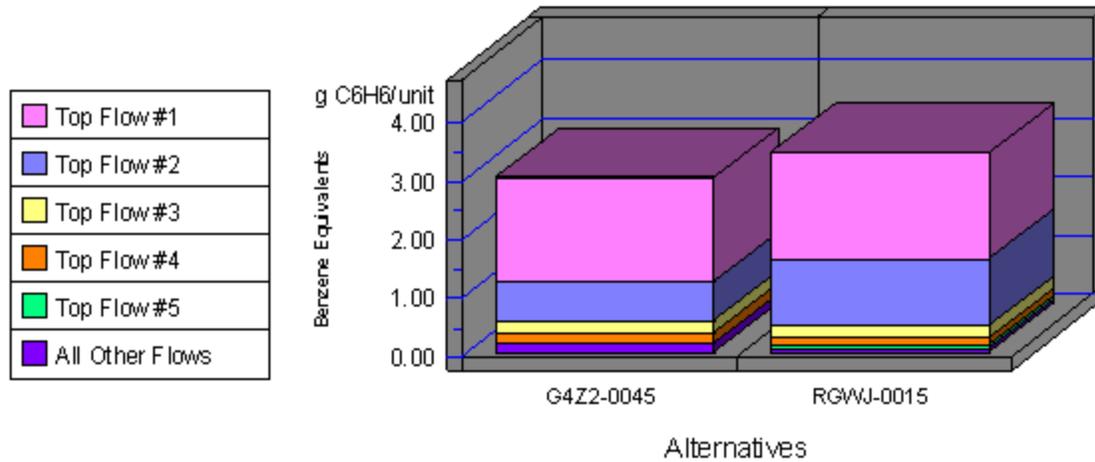
Global Warming by Life-Cycle Stage



Note: Lower values are better

Category	G4Z2-0045	RGWJ-0015
1. Raw Materials	734	2111
2. Manufacturing	463	340
3. Transportation	400	390
4. Use	0	0
5. End of Life	0	0
Sum	1598	2840

Human Health Cancer by Sorted Flows*

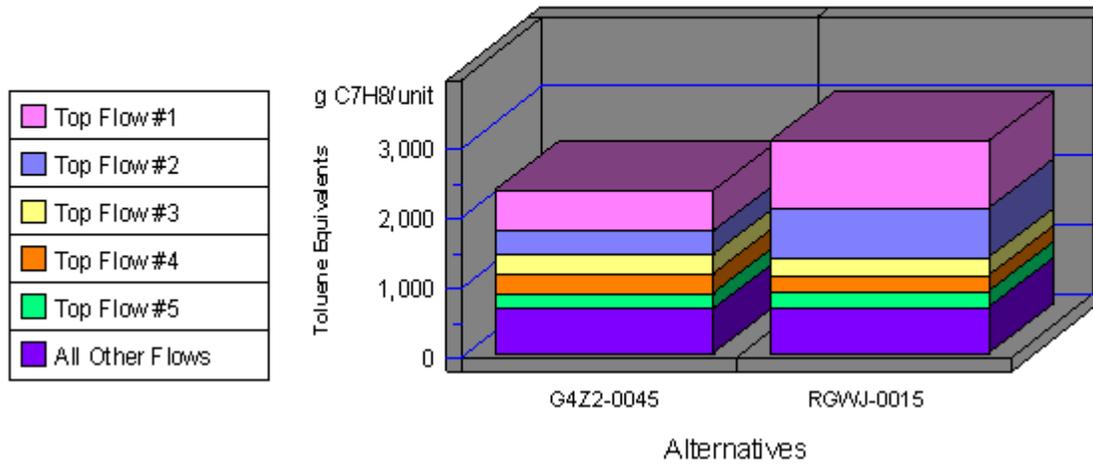


Note: Lower values are better

Category	G4Z2-0045	RGWJ-0015
Cancer--(w) Arsenic (As3+)	1.76	1.80
Cancer--(w) Phenol (C6H5OH)	0.66	1.16
Cancer--(a) Dioxins (unspecifie	0.22	0.18
Cancer--(a) Arsenic (As)	0.16	0.12
Cancer--(a) Benzo(a)pyrene	0.00	0.08
All Others	0.17	0.07
Sum	2.98	3.42

*Sorted by five topmost flows for worst-scoring product

Human Health Noncancer by Sorted Flows*



Note: Lower values are better

Category	G4Z2-0045	RGWJ-0015
Noncancer-(w) Mercury (Hg+),	578.11	980.26
Noncancer-(a) Mercury (Hg)	344.73	689.15
Noncancer-(w) Barium (Ba++)	266.06	271.68
Noncancer-(a) Dioxins (unspeci	283.45	231.97
Noncancer-(w) Lead (Pb++),	217.81	220.93
All Others	655.14	665.56
Sum	2,345.31	3,059.54

*Sorted by five topmost flows for worst-scoring product