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VANDERBILT Technical Data

VANLUBE® 996E

ASHLESS ANTIOXIDANT

US Patent No. 6,743,759 B2

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Petroleum Department

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Typical Properties

Composition:	Methylene bis (dibutyldithiocarbamate) & Tolutriazole derivative
Physical State:	Liquid
Color, ASTM D-1500:	1.5
Density at 15.6°C, Mg/m^3	1.06
Viscosity at 40°C, cSt:	396
Viscosity at 100°C, cSt:	16.4
Flash Point, PMCC, °C:	191
Sulfur Content, %:	26.0
Nitrogen Content, %:	6.5

VANLUBE 996E is a liquid, ashless antioxidant recommended for use in lubricating oils. It is a general-purpose antioxidant for industrial lubricants, including compressor, hydraulic, turbine, natural gas engine and circulating oils.

Turbine Oxidation Stability Test (TOST), ASTM D-943
0.7% mass **VANLUBE 996E** + 0.05% mass **VANLUBE® RI-A** Lubricant Additive[1]

Base Oil Type	Hours to TAN of 2.0 mg KOH/gram
Group I, ISO 32	5,839
Group II, ISO 32	22,192
Group III, ISO 32	22,188

[1]**VANLUBE RI-A** Lubricant Additive is an ashless rust inhibitor.

Copper Corrosion, ASTM D-130
Temperature: 121°C
0.7% mass **VANLUBE 996E** + 0.05% mass **VANLUBE RI-A**

Base Oil Type	Rating at 3 hours	Rating at 24 hours
Group I, ISO 32	1b	1b
Group II, ISO 32	1b	1b
Group III, ISO 32	1b	1b

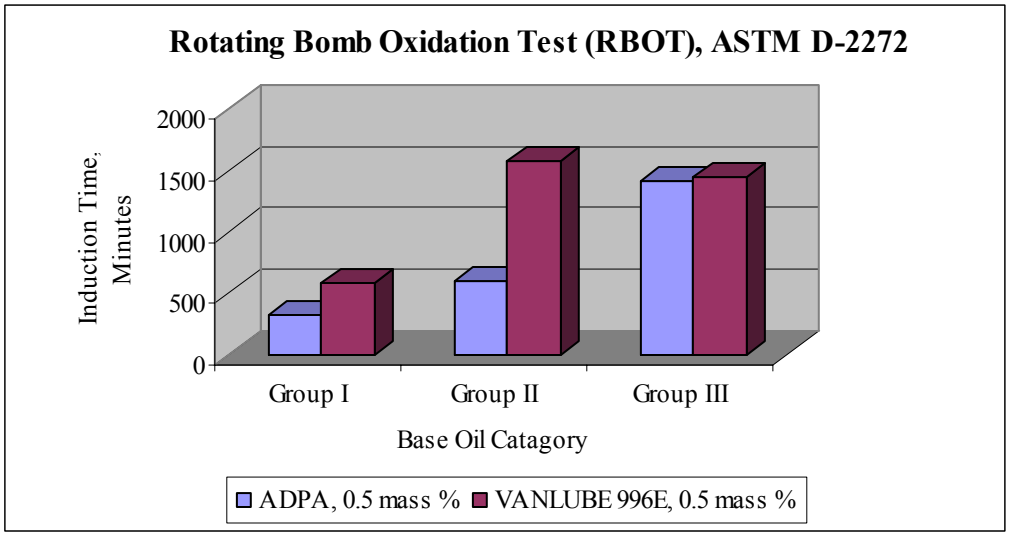

Figure 1. Rust inhibitor (**VANLUBE RI-A** Lubricant Additive, 0.05 mass %) was added to all test oils. ADPA is acronym for alkylated diphenylamine. The ADPA that was used for this study consisted of a mixture of butylated/octylated DPA components.

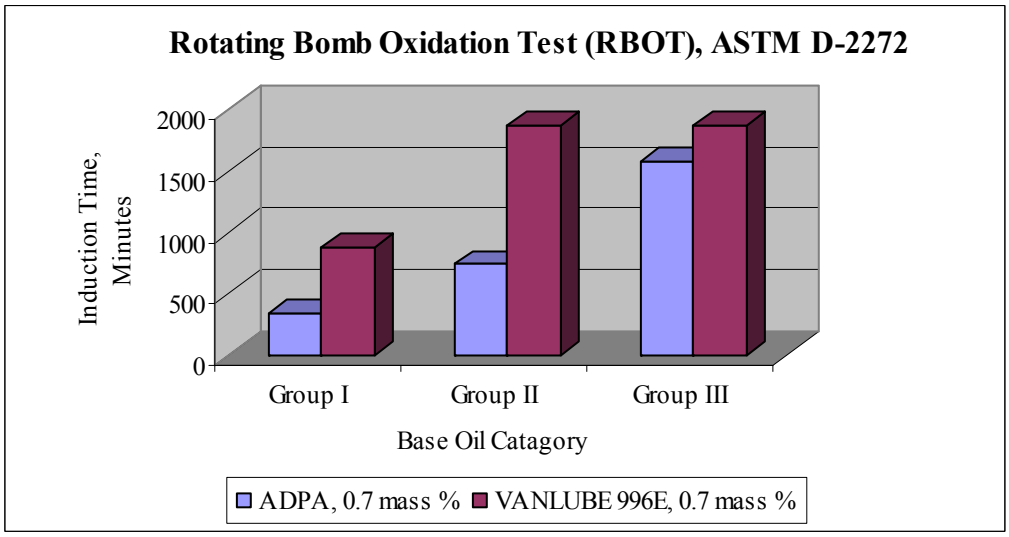

Figure 2. Rust inhibitor (**VANLUBE RI-A** Lubricant Additive, 0.05 mass %) was added to all test oils. ADPA is acronym for alkylated diphenylamine. The ADPA that was used for this study consisted of a mixture of butylated/octylated DPA components.

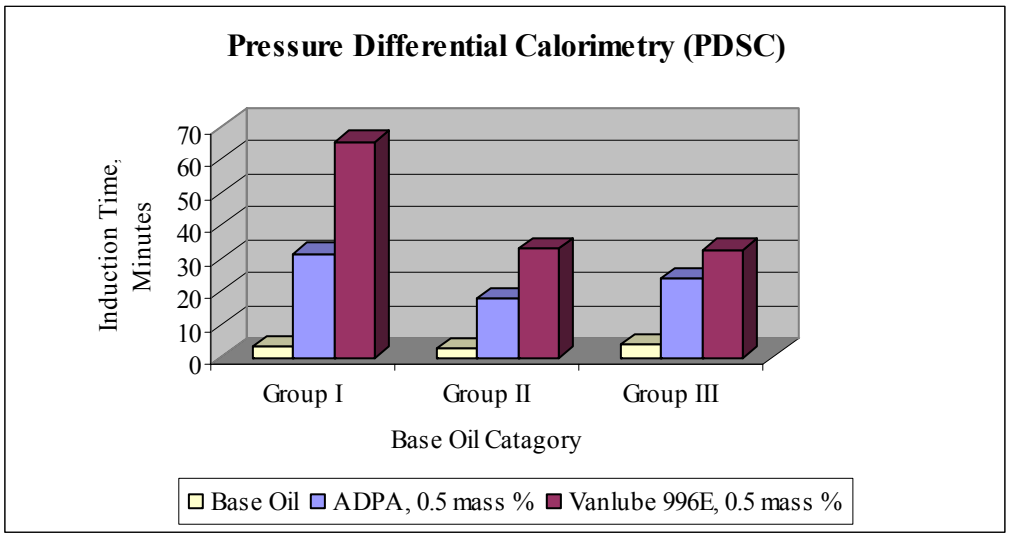

Figure 3. PDSC test conditions are 180°C and 500 psi of oxygen pressure. ADPA is acronym for alkylated diphenylamine. The ADPA that was used for this study consisted of a mixture of butylated/octylated DPA components.

Storage and Handling Suggestions

Unloading pumping temperature:	20°C
Unloading maximum temperature:	60°C
Storage temperature:	Room temperature

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