



Naugard[®] PANA

phenyl-alpha-naphthylamine

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DESCRIPTION

Naugard PANA, phenyl-alpha-naphthylamine, is an excellent antioxidant for synthetic fluids and mineral oils. It is particularly useful in high temperature applications, such as aviation turbine engine oils, and in the formulation of high performance industrial oils and greases.

Naugard PANA is used in the manufacture of aviation turbine engine oils meeting MIL-1-23699 and MIL-L-7808. These specifications use the FTMS 791C 5308.7 procedure as a measure of oxidation and corrosivity protection. The table below compares Naugard PANA to a competitive phenyl-alpha-naphthylamine antioxidant. These results show the superior performance of Naugard PANA over the octylated phenyl-alpha-naphthylamine antioxidant. This performance, along with its lower cost, makes Naugard PANA a preferable product.

NAUGARD PANA in Aviation Turbine Oils (using the FTMS 791C 5803.7 test procedure)

Conditions: 425°F, 72 hours, Air @ 5 L/hr.¹

<u>Additive²</u> <u>(1.0 wt%)</u>	<u>Insolubles</u> <u>(mg/100 mL)</u>	<u>Viscosity</u> <u>@ 40°C (%)</u>	<u>Acid Number</u>
Naugard PANA	0.4	41.2	9.85
Octylated PANA	0.2	62.2	12.34

¹ Metals used were Steel, Silver, Aluminum and two Titaniums. Weight loss of the metals was within specification limits.

² Formulation also contained 1.0 wt% Dioctyl DPA in a polyol ester base.

TYPICAL DATA

<u>Properties</u>	<u>Typical</u>
Physical Form	Light Brown to Purple Granules
Specific Gravity, (25/25°C)	1.23
Melting Point, °C	58
Ash, %	0.05
Flash Point, (PM) °C	2 14

HANDLING INFORMATION

Naugard PANA is a solid at room temperature that can be readily solublized in synthetic and mineral oils. This material should be stored in a cool, dark and dry area.

SAFETY INFORMATION

For more extensive information on the safe handling and use of this product, see the Material Safety Data Sheet.

SHIPPING INFORMATION

Naugard PANA comes in 25 kg bags (55.115 lbs.). 36 Bags/pallet.

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