



DATA SHEET NYACOL® MagMin

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Nyacol MagMin is a colloidal dispersion of magnesium oxide in a C₁₁-C₁₃ hydrocarbon. The product is non-settling and has a high surface area and small particle size to enable high performance as a vanadium passivator.

Vanadium is found in many fuels such as crude oil, residual oil, PET Coke, and others. Vanadium pentoxide and other vanadium compounds are formed in combustion of these fuels. The compounds formed will have melting points ranging from 500°C to 700°C, depending on the composition. These compounds can deposit on sections of the combustion system such as blades, vanes, and heat transfer surfaces leading to problems of corrosion and poor heat transfer. This problem can be controlled by modifying the compounds being formed to materials with higher melting points.

When magnesium is introduced into the fuel, the magnesium will react with the vanadium to form magnesium vanadate. There are a series of potential magnesium vanadates that can form, but Mg₃V₂O₈ or Mg₂V₂O₆ can be formed by feeding magnesium into the fuel and then the Mg₃V₂O₈ or Mg₂V₂O₆ is formed in combustion. The magnesium vanadates will have melting points ranging from approximately 1000°C up to 1150°C, well above the temperature of the combustion system parts, thereby eliminating the potential for deposits.

Nyacol MagMin has been designed for excellent effectiveness and ease of use. The effectiveness of the magnesium additive is related to the surface area and dispersed particle size. Nyacol MagMin has a surface area of 150 – 180 m²/g, making the ultimate particle size 15 – 18 nm or 150 – 180 angstroms. This high surface area leads to effective reactivity with vanadium.

MagMin is supplied as a low viscosity, high flash point product. The flash point is greater than 65°C, making transport and use practical and safe. The viscosity is <100 cps, making storage and handling straight forward.

The dose rate of Nyacol MagMin should be based on a mol ratio of 1 MgO/1 V₂O₅. We will require the vanadium content of the fuel and fuel use rate in order to suggest a starting point for the addition rate. Nyacol MagMin contains 35-38% MgO on a weight basis.

TYPICAL PROPERTIES

MgO, weight %:	35 – 38
Carrier:	C ₁₁ -C ₁₃ Isoparaffin
Water, %:	1.0 max
Surface area:	150 – 200 m ² /g
Dispersed Particle Size:	100 nm
Viscosity:	<100 cps
Appearance:	Light colored fluid dispersion



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Nyacol offers a range of colloidal materials in hydrocarbon carriers for metal passivation and combustion applications. Nyacol ceria is an oxidation catalyst based on CeO_2 and Nyacol YMin is a vanadium passivator for ultra-high temperature turbine applications. Contact Nyacol for further details.

FOR ADDITIONAL INFORMATION OR TO PLACE AN ORDER

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