

BARAGEL® 10

Rheological Additive For Vegetable Oil And Ester Biodegradable Greases

GENERAL INFORMATION

BARAGEL 10 rheological additive is a novel, environmentally friendly organoclay gallant designed specifically for the vegetable oil based grease and lubricant markets.

BARAGEL 10 works effectively in a wide variety of vegetable oils in addition to synthetic esters and some conventional petroleum based oils.

Produced from refined and processed naturally occurring organic and inorganic materials,

BARAGEL 10 is an environmentally friendly material.

CHEMICAL AND PHYSICAL DATA

Composition	Organic derivative of a bentonite clay
Color	Very light cream
Form	Finely divided powder
Density	1.70 g/cm ³
Moisture	Max. 3%

These are typical properties not to be used for specification purposes.

APPLICATIONS

BARAGEL 10 is recommended for thickening the following base oils:

- Soybean
- Rapeseed
- Sunflower
- Jojoba
- Castor
- Synthetic Esters
- Other vegetable oils

DROPPING POINT

An NLGI No. 2 grease produced from rapeseed oil and a 12% loading of **BARAGEL 10** was very resistant to high temperature. This particular grease had a dropping point greater than > 290°C when tested under ASTM D566.

KEY PROPERTIES

- Environmentally friendly
- Has a very high efficiency in most vegetable oils and esters

- Can be incorporated easily
- Provides pumpable grease systems at low temperatures
- Reduces bleeding
- Imparts melting resistance

BIODEGRADABILITY

A rapeseed oil grease, made with **BARAGEL 10**, proved to be readily biodegradable according to OECD Method 301 B "Ready Biodegradability: Modified Sturm Test". The test included placing the NLGI No. 2 grease samples in temperature controlled (23.5 °C to 25°C), closed chambers along with an activated sludge culture.

Carbon dioxide generated as the by-product of aerobic respiration was trapped in a barium hydroxide solution and converted to barium carbonate. The amount of carbon dioxide generated was determined by titration and used to calculate the percent biodegradability; i.e. the ratio of generated carbon dioxide to theoretical carbon dioxide that could have been produced from the available carbon in the grease. Sodium benzoate, a known, degradable reference material was included as a standard.

Days	BARAGEL 10 Grease % biodegradable	Sodium Benzoate Standard % biodegradable
0	0.0	0.0
3	1.0	4.3
4	3.1	6.7
7	5.6	10.6
10	6.9	12.6
14	8.0	14.4
25	37.6	45.5
28	72.1	63.7

Conclusions

1. The test is considered valid with the known (sodium benzoate) expressing at least 60 biodegradation within 28 days.
2. The **BARAGEL 10** grease sample is considered readily biodegradable based on CO₂ evolution greater than 60 % within 28 days.

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INCORPORATION

Equipment

BARAGEL 10 rheological additive can be readily blended into oils, esters and fluids using normal grease equipment. The product produced must be sheared through a colloid mill, homogenizer or recirculating pump to obtain maximum efficiency and product uniformity.

1. Add the total amount of **BARAGEL 10** to the total amount of oil. Stir at moderate speed until the **BARAGEL 10** has been completely wetted (dispersed) by the oil and an increase in viscosity is observed. The time of stirring is dependent upon the degree of agitation and size of the batch. Usually 5 to 30 minutes of stirring is adequate. Dispersion of the **BARAGEL 10** can be accelerated by recirculating the batch through a pump while stirring and or applying low heat (50°C).
2. Add a polar activator and continue stirring (with recirculation if a pump is available) for 30 minutes to 2 hours, depending on the size of the batch and the degree of agitation. Propylene carbonate is an effective polar activator at a concentration of 15% by weight of the **BARAGEL 10**. Other polar activator can be used as well (e.g., ketones, alcohols, etc.).
3. Pass the grease pregel through a suitable mill or homogenizer. The consistency of the finished grease and efficiency of the **BARAGEL 10** will depend on the shearing capability of the specific piece of equipment that is used.

LEVEL OF USE

Typically a 10 -13 % loading of **BARAGEL 10** into commonly used vegetable oils will develop consistencies in the NLGI No. 1 to No. 2 range. A concentration loading study is recommended to optimize the level of addition in any specific formulation.

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HEALTH AND SAFETY DATA

Before using this product please consult our Safety Data Sheet (SDS) for information on safe handling and storage. The SDS can be found on the company website.

QUALITY ASSURANCE

Since 1992 the company is a holder of the ISO 9001 / ISO 9002 certificates, which guarantees that all operations are conducted according to the stipulated standards.