

BARAGEL® 20

Rheological Additive for Lubricating Grease Manufacture

GENERAL INFORMATION

BARAGEL 20 rheological additive is an organic derivative of a smectite clay and is designed for medium to low polarity systems.

PHYSICAL PROPERTIES

Composition	organic derivative of a smectite mineral
Color / Form	light cream, finely divided powder
Density	1.6 g/cm ³
Moisture	max. 3%

APPLICATIONS

A thickening and rheological control agent for medium to high V.I. mineral oils, synthetic hydrocarbon fluids, such as poly-alpha-olefins, and vegetable oils.

KEY PROPERTIES

BARAGEL 20 rheological additive

- can be incorporated easily
- produces non-melting high temperature greases
- provides pumpable grease systems at low temperatures
- is bleed resistant
- is compatible with a wide variety of grease additives
- is cost-effective at low use level
- provides shear stability and reproducibility under working conditions

INCORPORATION

High Shear Manufacturing Equipment

Clay-based greases are different from soap greases because they require high shear forces during production in order to properly delaminate the organoclay platelets and thicken the base stock.

The shear forces required for proper dispersion must be produced by the equipment itself. Therefore, careful attention must be paid to equipment choice.

Colloid mills and homogenizers are good choices for producing the high shear rate needed. In this type of equipment the high shear rate is provided by processing the grease at high velocity through a narrow orifice or by passage between a stator and high-speed rotor.

Chemical Activators

A chemical activator is needed to ensure complete delamination and full activation of BARAGEL 20 additive. The correct level of chemical activator varies from system to system and must be optimized by the grease formulator.

Typical suggested use range of chemical activators based on weight of BARAGEL 20

Acetone/Water (95/5)	25–40%
Methanol/Water (95/5)	7–20%
Ethanol/Water (95/5)	12–28%
Propylene Carbonate/ Water (95/5)	8–25%

Optimum level varies with the system and must be determined by experimentation.

An excess of chemical activator will interfere with the hydrogen bonding bridging mechanism of the water molecules. This leads to reduced gel strength and poor mechanical stability.

3. Heated Concentrate

This method is used when maximum gel strength

NOTE: The information herein is currently believed to be accurate. We do not guarantee its accuracy. Purchasers shall not rely on statements herein when purchasing any products. Purchasers should make their own investigations to determine if such products are suitable for a particular use. The products discussed are sold without warranty, express or implied, including a warranty of merchantability and fitness for use. Purchasers will be subject to a separate agreement which will not incorporate this document.

© Copyright 2006, Elementis Specialties, Inc. All rights reserved. Copying and/or downloading of this document or information therein for republication is not allowed unless prior written agreement is obtained from Elementis Specialties, Inc.

® Trademark of Elementis Specialties, Inc.

www.elementisspecialties.com

v 1.2 Feb 07

Manufacturing Processes

The following major procedures are used in the preparation of a BARAGEL 20 grease:

1. Simple Mix

In a mixing kettle of suitable size, add in the order listed:

- a) All the base fluid – begin mixing
- b) BARAGEL 20 – mix until wetted (5 to 10 minutes)
- c) Chemical activator – mix 30 minutes minimum
- d) Remaining additives
- e) Mill (Colloid mill or homogenizer)

Although somewhat softer greases are obtained, the advantages of the simple mix process are that they are more easily mixed and pumped before the milling step.

2. Cold Concentrate

This process is particularly effective, when somewhat poorer wetting base oils, such as polyesters and diesters, are being used.

In a mixing kettle of suitable size, add in the order listed:

- a) 1/3 to 1/2 the base fluid – begin mixing
- b) BARAGEL 20 – mix until wetted (5 to 10 minutes)
- c) Chemical activator – mix 30 minutes minimum
- d) Remainder of base fluid (remaining additives are usually blended in with this oil addition) – mix until fully blended
- e) Mill (Colloid mill or homogenizer)

The cold concentrate process provides the highest grease yield per unit weight of BARAGEL 20. The use of only part of the base fluid in the initial mixing stage produces higher shear, because of the higher concentration of the BARAGEL 20 present, thus improving wetting and dispersion.

is required, together with ultimate elimination of the chemical activator, and/or when additives are being used which are difficult to dissolve.

In a mixing kettle of suitable size, add in the order listed:

- a) 1/3 to 1/2 the base fluid – begin mixing
- b) BARAGEL 20 – mix until wetted (5 to 10 minutes)
- c) Chemical activator – mix 30 minutes minimum
- d) Heat to 65°C for 20 to 30 minutes
- e) Remaining additives – introduce while mixing and cooling
- f) Remainder of base fluid
- g) Mill (Colloid mill or homogenizer)

If processing temperatures exceed 87°C, lost water must be replaced before milling. Usually 0.1% water by weight based on the entire batch of grease will be sufficient. If the water is not replaced, very poor gel development will result, because water is an essential part of the hydrogen bonding mechanism.

See «RHEOX Grease Handbook» for further details (PB 150 10/95 MU).

LEVELS OF USE

For an NLGI Grade 2 grease, 4–8% BARAGEL 20 organoclay is generally required.

REGULATORY

For the most current regulatory status, please refer to the MSDS for BARAGEL 20. It may be viewed and downloaded from our website at:

www.elementisspecialties.com

HANDLING AND SAFETY

More detailed information on handling and safety for each product is included in the relevant material safety data sheet, available for each product.

STORAGE RECOMMENDATIONS

Store in a cool, dry location.

P.O. Box 700

De Kleetlaan 12A, P.O. Box 3

120 Jalan Kapar 27/89

15-14 Minamimiseba 1-Chome

329 Wyckoffs Mill Road
Hightstown, NJ 08520 USA
Tel.: +1 609 443 2500
Fax: +1 609 443 2422

1931 Diegem, Belgium
Tel.: +32 2 790 76 00
Fax: +32 2 790 76 60

40400 Shah Alam
Malaysia

Chou-Ku, Osaka
542-0081 Japan

Tel.: +60 3 5192 2887 Tel.: +81 6 6267 6211 Fax: +60 3
5192 3887 Fax: +81 6 6267 6215

PACKAGING

BARAGEL 20 rheological additive is available in multiply paper bags. Please contact your local Elementis Specialties representative for the packaging available in your region.

SHELF LIFE

BARAGEL 20 has a shelf life of 2 (two) years from date of manufacture.

PRODUCT NUMBER

10821

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.

ELEMENTIS

SPECIALTIES

USA Head Office

Elementis Specialties, Inc.
P.O. Box 700
329 Wyckoffs Mill Road
Hightstown, NJ 08520 USA
Tel.: +1 609 443 2500
Fax: +1 609 443 2422

Europe

Elementis Service Centre NV
De Kleetlaan 12A, P.O. Box 3
1931 Diegem, Belgium
Tel.: +32 2 790 76 00
Fax: +32 2 790 76 60

Asia

Elementis Specialties, Inc.
120 Jalan Kapar 27/89
40400 Shah Alam
Malaysia
Tel.: +60 3 5192 2887
Fax: +60 3 5192 3887

Japan

Elementis Japan KK
15-14 Minamisemba 1-Chome
Chou-Ku, Osaka
542-0081 Japan
Tel.: +81 6 6267 6211 Fax: +81
6 6267 6215