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"Dutch Boy"
BEN-A-GEL

*New Thickening and Gelling Agent
for Water Systems*



DUTCH BOY CHEMICALS

A Product Development of
NATIONAL LEAD COMPANY

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"Dutch Boy"® **BEN-A-GEL**

"DUTCH BOY" BEN-A-GEL is a highly purified magnesium montmorillonite which swells and gels in water with great efficiency. It is supplied as a soft milky-white powder of very fine particle size. Individual particles of BEN-A-GEL, which have been fully hydrated and separated in aqueous dispersion, attain an ultimate particle size of less than one micron.

Table of Properties

Composition.....	Highly beneficiated hydrous magnesium silicate
Color.....	Milky-white
Form.....	Soft finely divided powder
Specific Gravity.....	2.4
Apparent Density (lbs./gal.).....	5.25
Fineness.....	Less than 5% retained on 200 mesh sieve
Moisture (%).....	8 ± 2

Average Chemical Analysis, dry basis:

%SiO ₂	56.5
Al ₂ O ₃	0.2
Fe ₂ O ₃	0.2
MgO.....	25.8
CaO.....	2.8
Na ₂ O.....	2.5
K ₂ O.....	0.1
Li ₂ O.....	1.1
Cl.....	2.5
F.....	1.0
Ignition Loss.....	7.7

Thickening, Gelling, and Emulsifying Agent for Water Systems

"DUTCH BOY" BEN-A-GEL is recommended for thickening or gelling all water dispersions. In addition, it is useful as a suspending agent and for emulsifying oil in water systems. Unlike organic gelling agents, such as gelatins, gums, etc., BEN-A-GEL is completely inorganic, and is not subject to microbiological degradation.

Thixotropic Thickening and Gelling Efficiency — When properly dispersed, good colloidal suspensions can be obtained with 1% of "DUTCH BOY"

BEN-A-GEL. At concentrations of 2 to 2.5%, a thick thixotropic gel is obtained. Incorporating 5% or more of BEN-A-GEL will yield firm, solid gels. The gels made with BEN-A-GEL do not thin out upon heating.

Particle Suspension — Hard settling of finely divided insoluble solids in aqueous systems is eliminated by the use of about 1% of BEN-A-GEL. The continuous gel structure of the BEN-A-GEL — water system cushions the settling particles and makes reincorporation easy.

Emulsion Systems — Stable emulsions of oils (mineral, vegetable, etc.) in water can be formed by using "DUTCH BOY" BEN-A-GEL in concentrations of 2% or less. Mixtures of water and immiscible organic liquids can also be emulsified. In smaller concentrations, BEN-A-GEL acts as an emulsion stabilizer when other emulsifiers are present. Aqueous systems containing BEN-A-GEL are compatible with a wide range of organic polar liquids.

Methods of Incorporation

Dry BEN-A-GEL should be sprinkled or sifted into the required water system, accompanied by constant high shear agitation. A high shear force is essential for uniform dispersion and maximum gelation. Sufficient shear for proper gelation is obtained with a homogenizer or colloid mill, such as a Waring Blendor or Premier Colloid Mill or their equivalents.

Dilute BEN-A-GEL dispersions are readily prepared by thinning a 2.5-3.0% BEN-A-GEL masterbatch. The use of a roller mill or colloid mill is recommended for making masterbatch gels above 3% concentration, since the gel strength will be too stiff for thorough incorporation by stirring. These masterbatch gels have excellent storage stability and good thinning characteristics.

In thickening oil-in-water emulsions, BEN-A-GEL should be dispersed in the water phase, as indicated, prior to emulsification.

Fields of Application

"DUTCH BOY" BEN-A-GEL as a gellant, suspension agent, and emulsifier in aqueous media lends usefulness in a wide variety of products, including the following:

Creams	Emulsion Paints
Lotions	Cleaners and Polishes
Oil-in-Water Emulsions	Textile Finishes
Shampoos	Ceramics



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