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"Dutch Boy"®

PROVINITE®

Clear Heat and Light Stabilizer
for Vinyl Film, Sheeting, and
Dispersion Resin Systems

DUTCH BOY CHEMICALS

A Product Development of
NATIONAL LEAD COMPANY

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"Dutch Boy"®
PROVINITE®

"DUTCH BOY" PROVINITE is a barium-cadmium organic complex especially useful in the stabilization of clear vinyl film and sheeting, and dispersion resin systems. It is provided in two parts. PROVINITE A is a soft white powder which is easily dispersible in a plastic mix. PROVINITE B is a clear liquid, miscible with most of the vinyl plasticizers in common usage. PROVINITE will give best results in vinyl plastics when the two components are used in the recommended proportions.

Table of Properties

PROVINITE A

Color and Form	Soft white powder
Specific Gravity (20°C.)	1.32
Refractive Index (25°C.)	1.56

PROVINITE B

Color and Form	Clear straw-colored liquid
Specific Gravity (25°C.)	0.880
Refractive Index (25°C/25°C.)	1.482

General Characteristics

(1) *Heat Stability*—PROVINITE has remarkably good heat stabilizing action with all commonly used vinyl resins. It is especially recommended for high temperature calendering of vinyl film and sheeting where it maintains very good clarity without yellowing. Because of its strong reserve heat stability, PROVINITE helps to preserve original colors in both calendering and extrusion operations.

(2) *Light Stability*—The light stability of PROVINITE is of the highest order available in the barium-cadmium type of stabilizer. PROVINITE is outstanding for the many and varied vinyl products which are subjected to outdoor exposure during service. Included among these applications are calendered vinyl coated fabrics and dispersion resin coatings, extruded garden hose, sheeting and film for automotive and garden furniture upholstery, and other exterior protective vinyl coverings. Recommended for both clear and highly translucent vinyls, PROVINITE provides strong resistance to the effects of sunlight during the life of the product.

(3) *Resistance to Plate-out*—PROVINITE has exceptional barium-cadmium stabilizer resistance to spew or plate-out, either in calendering or extrusion resin systems it does not affect clarity or stability.

(4) *Use with Plasticizers*—PROVINITE is compatible with a wide variety of plasticizers, including phthalates and sebacates, PROVINITE is also effective with polymeric and oil type plasticizers. It is a versatile stabilizer for clear compounds requiring outstanding low temperature flexibility, low

Rec

The recommended ratio of ing to the particular end usage product.

In general, maximum resu VINITE A and 1% of PROVIN plasticizers, used in small amou barium-cadmium stabilizers.

Lower levels of PROVINI less stringent, and more emphasi In such cases, the concentration 1.5%, together with 1% PROVI gained by using from 0.1% to 0 also stabilizers.

Shown below are specific products.

1. Calendered Film and Sh
   a. Clear Film
   b. High Temperatur
2. Non-Electrical Extrusion
   a. Tubing
   b. Garden Hose
3. Dispersion Resin System Organosols)

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"Dutch Boy" ®

PROVINITE®

PROVINITE is a barium-cadmium organic complex especially recommended for the production of clear vinyl film and sheeting, and dispersion systems. It is supplied in two parts. PROVINITE A is a soft white powder which is readily incorporated in a plastic mix. PROVINITE B is a clear liquid, miscible with vinyl plasticizers in common usage. PROVINITE will give optimum results when the two components are used in the recommended ratios.

Table of Properties

Appearance	Soft white powder
Density (20°C.)	1.33
Specific Gravity (25°C.)	1.36
Appearance	Clear straw-colored liquid
Density (25°C.)	0.880
Specific Gravity (25°C./25°C.)	1.002

General Characteristics

PROVINITE has remarkably good heat stabilizing action in vinyl resins. It is especially recommended for high transparency film and sheeting where it maintains very good clarity. Because of its strong reserve heat stability, PROVINITE is also effective in both calendering and extrusion operations.

The light stability of PROVINITE is of the highest order for this type of stabilizer. PROVINITE is outstanding in vinyl products which are subjected to outdoor exposure. Among these applications are calendered vinyl coated fabric coatings, extruded garden hose, sheeting and film for furniture upholstery, and other exterior protective uses. Recommended for both clear and highly translucent vinyls, PROVINITE has resistance to the effects of sunlight during the life of the product.

(3) *Resistance to Plate-out and Viscosity Build-Up*—Compared with conventional barium-cadmium stabilizers, PROVINITE has surprisingly good resistance to spew or plate-out, either on calender rolls or on mold surfaces. In dispersion resin systems it does not cause objectionable bodying or impair viscosity stability.

(4) *Use with Plasticizers*—PROVINITE is used in vinyl compounds containing a wide variety of plasticizers. In addition to the standard phthalates, adipates and sebacates, PROVINITE is especially effective with the phosphates, polymerics and oil type plasticizers. Thus, PROVINITE is a particularly valuable stabilizer for clear compounds requiring special properties such as flame resistance, low temperature flexibility, low volatility or non-migration.

Recommendations

The recommended ratio of PROVINITE A to PROVINITE B varies according to the particular end usage and stability requirements of the vinyl plastic product.

In general, maximum reserve heat stability is obtained with 2% of PROVINITE A and 1% of PROVINITE B, based on the resin content. Epoxy ester plasticizers, used in small amounts, usually increase the heat stabilizing action of barium-cadmium stabilizers.

Lower levels of PROVINITE are desirable where heat requirements are less stringent, and more emphasis is placed on clarity and resistance to plate-out. In such cases, the concentration of PROVINITE A should be between 0.75% and 1.5%, together with 1% PROVINITE B. Maximum resistance to sulfur staining is gained by using from 0.1% to 0.5% (resin basis) of a supplementary organic tin stabilizer.

Shown below are specific recommendations for several classes of vinyl products.

	PROVINITE Concentration (Resin Basis) A	B
1. Calendered Film and Sheeting		
a. Clear Film	.25-1.5%	1%
b. High Temperature Sheeting	2	1
2. Non-Electrical Extrusions		
a. Tubing	1	1
b. Garden Hose	1.5%	1
3. Dispersion Resin Systems (Plastisols and Organosols)	1	1

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