

"Dutch Boy"

Normal lead salt of
salicylic acid—a new
product for the
improvement of paint,
plastics and rubber.



A Product Development of
NATIONAL LEAD COMPANY

"Dutch Boy" NORMASAL

NORMASAL, the normal lead salt of salicylic acid, is a soft, creamy white, crystalline powder which is of interest in the improvement of light, heat, and moisture resistant characteristics of a variety of organic products.

NORMASAL combines the stabilizing characteristics of both lead oxide and salicylic acid from which it is made. It has a high degree of ultra-violet light absorption in combination with some organic media. It imparts exceptional light fastness to organic films, and hence, NORMASAL is particularly well adapted as a stabilizer in the plastic and protective coating industries.

NORMASAL is insoluble in the common hydrocarbon solvents and just slightly soluble in water. Its solubility in glycols and their derivatives will aid in the dispersion of this material in paints and vinyl plastics.

Table of Properties

Composition	Normal lead salicylate
Formula	$ \begin{array}{c} \text{HO} \qquad \qquad \text{OH} \\ \qquad \qquad \quad \\ \text{C}_6\text{H}_4 - \text{C}(=\text{O}) - \text{O} - \text{Pb} - \text{O} - \text{C}(=\text{O}) - \text{C}_6\text{H}_4 \end{array} $
Molecular Weight	481
Form	Soft crystalline powder
Color	Creamy white
Refractive Index (average)	1.78
Specific Gravity	2.36
Weight per Gallon	19.7 lb.
Lead Oxide Content (% PbO)	46.0-46.5
Moisture (loss at 105°C)	0.5% max.
Oil Absorption	35 g oil per 100 g
Fineness (Retained on No. 325 sieve)	0.3% max.
Solubility	0.5% soluble in water at 25°C Soluble in glycols and glycol ethers. Slightly soluble in methyl and ethyl alcohol. Insoluble in common aromatic and aliphatic hydrocarbons.

Uses

Paint—NORMASAL has the unique property of increasing the durability of drying oil films exposed to moisture, light, and heat—without impairing the drying of the films. Tests have shown that NORMASAL increases the gloss retention and retards the chalking rate of oil base paints. It markedly prolongs the color fastness of these paints. NORMASAL improves the performance of red lead primers in corrosion inhibitive paints, particularly on salt water exposure.

Vinyl Plastics—NORMASAL imparts exceptional light fastness to many vinyl plastic formulations. NORMASAL should be used with a basic stabilizer, such as, "Dutch Boy" PLUMB-O-SIL, "Dutch Boy" TRIBASE, or "Dutch Boy" DS-207. Such combinations enable the formulator to stabilize his compound against both light and heat degradation. The basic material, which is an acid acceptor, and hence, a heat stabilizer, also serves to prevent degradation of the normal lead salicylate. The compatibility of NORMASAL with ethylene glycol, the glycol ethers, and other common vinyl plasticizers gives even dispersion and light protection throughout the vinyl compound. Its light color and low tinting strength permits NORMASAL to be used without increase in the amount of coloring pigment in vinyl formulations.

Rubber—NORMASAL may be used as a combined activator and anti-scorching agent in rubber compounds. At processing and storage temperatures, it retards vulcanization, and at normal vulcanizing temperatures, it acts as an activator. Unlike other anti-scorching agents, NORMASAL has no harmful effects on the physical properties of the vulcanizates in which it is used. NORMASAL is of particular interest in natural rubber formulations.

"Dutch Boy"
PLUMB·O·SIL

AN INORGANIC

LOW-TINTING-POWER

STABILIZER FOR PLASTICS



A PRODUCT DEVELOPMENT OF NATIONAL LEAD COMPANY

"Dutch Boy"

PLUMB - O - SIL

Plumb-O-Sil, a co-precipitated mixture of lead orthosilicate and silica gel, is a soft, white powder which serves as an excellent stabilizer for both vinyl chloride and vinylidene chloride polymers, particularly when it is desired to produce a clear plastic.

Plumb-O-Sil can be tailored to fit the particular characteristics of the plastic being used. For example, Plumb-O-Sil A is produced with a refractive index of 1.64 to 1.67, making it an ideal stabilizer for use in vinylidene chloride plastics. Plumb-O-Sil B, refractive index 1.58 to 1.60, is designed for use with vinyl chloride-acetate plastics of approximately similar refractive index.

Table of Properties

PLUMB-O-SIL A

Lead Content (%PbO)	60 to 61
Silica Content (%SiO ₂)	39 to 40
Specific Gravity	4.1
Refractive Index	1.67

PLUMB-O-SIL B

Lead Content (% PbO)	49 to 50
Silica Content (% SiO ₂)	50 to 51
Specific Gravity	3.3
Refractive Index	1.58—1.60

When the vinyl or vinylidene plastic application requires a stabilizer without tinting strength and, therefore, without impairment to dye or other pigment additions, Plumb-O-Sil A or B should be used.

"Dutch Boy"

■ S 2 ■ 7

A dibasic lead stearate
that acts both as a lubricant
and a stabilizer.



A
PRODUCT DEVELOPMENT
OF
NATIONAL LEAD COMPANY

"Dutch Boy"

DS 207

DIBASIC LEAD STEARATE

DS207, the dibasic lead salt of stearic acid, is a soft, pure white, unctuous powder with all the apparent lubricity of normal lead stearate.

DS207 is insoluble in water and in most of the common organic solvents. It reacts with warm turpentine forming a waxy compound with an approximate 5% solubility therein. This compound is in turn soluble in mineral spirits which suggests its use as a protective coating for unpainted metal, the waterproofing of fabrics, etc.

DS207 is soluble in some plasticizers. Its basic lead content, its low refractive index and its solubility in these plasticizers make it an excellent stabilizer for some types of clear vinyl plastics. It serves a two-fold purpose. It is both a stabilizer and lubricant.

DS207 added to lubricating oil stocks produces excellent leaded greases. In this application its uniformity of both basicity and composition is an advantage.

Table of Properties

Composition	Dibasic Lead Stearate
Formula	$2\text{PbO} \cdot \text{Pb}(\text{C}_{17}\text{H}_{33}\text{COO})_2$
Color	white
Molecular Weight	1220
Specific Gravity	2.02
Refractive Index	1.60
Weight per Solid Gallon in Pounds.....	16.35
Lead Content (%Pb)	51
Melting Point	decomposes above 300°C without melting
Solubility	Insoluble in water, mineral spirits and linseed oil. 5% soluble in turpentine, soluble in tricresylphosphate and sev- eral other plasticizers.

Uses

Stabilizer for Vinyl Plastics—DS207 has two-way utility when used in vinyl plastics. It is an excellent heat and light stabilizer. It has some degree of solubility in tricresylphosphate and several other plasticizers. Moreover, DS207 is very soluble in mixtures of either tricresylphosphate or dioctylphthalate and some of the aromatic petroleum type plasticizers. It produces clear amber films when the aromatic petroleum type plasticizer is used to the extent of 50% or more, or comprises the total plasticizer content. DS207 is also an effective lubricant—an excellent replacement for the lubricant commonly employed with vinyl compounds to improve flow characteristics for molding, extruding and related processes.

As the Active Ingredient in Non-Permanent Films for the Protection of Steel—DS207 is approximately 5% soluble in turpentine. The solution finds use in the temporary protection of unpainted steel. It may be applied by spraying, brushing or dipping.

For Leaded Greases—DS207 makes superior leaded greases when mixed with lubricating oils. The greases are excellent protectives against corrosion due to the basic characteristics of the dibasic lead stearate. DS207 greases are uniform in composition which insures positive protection against wear of the machine parts to which they are applied.

Cutting Oils—DS207 has possibilities as a constituent of cutting oils. Other potential uses suggested by its composition are, as a drier in some types of paint, and as an additive to improve the brushing characteristics of oil paints.

"Dutch Boy"
TRI-MAL

**A New Highly
Basic Stabilizer**

A Product Development of
NATIONAL LEAD COMPANY



"Dutch Boy" **TRI - MAL**

TRI-MAL, the monohydrated tribasic lead salt of maleic acid is a soft light yellowish green, crystalline powder. TRI-MAL is insoluble in water and all other common solvents. Its relatively high refractive index and good properties for heat and light stabilizing make it desirable for use in a number of organic products.

TRI-MAL is the most basic lead light stabilizing material which can be produced. It has a total lead content equivalent to 89% PbO, and its available basic lead content is 66.5%. TRI-MAL is structurally designed to be a selective ultra-violet light absorbing material. Thus its properties make it valuable in application as both a light and heat stabilizing pigment for several industries.

Table of Properties

Composition	Tribasic lead maleate monohydrate
Formula	$ \begin{array}{c} \text{O} \\ \parallel \\ \text{HC}-\text{C}-\text{O}-\text{Pb}-\text{O}-\text{Pb} \\ \parallel \qquad \qquad \qquad \diagup \quad \diagdown \\ \text{HC}-\text{C}-\text{O}-\text{Pb}-\text{O}-\text{Pb} \quad \text{O.H}_2\text{O} \\ \parallel \\ \text{O} \end{array} $
Molecular Weight	1008
Form	Soft crystalline powder
Color	Yellowish green
Refractive Index (average)	2.08
Specific Gravity	6.0
Weight per Gallon	50.0 lb
Lead Oxide Content (% PbO)	88.5—89.0
Moisture (loss at 105°C)	0.10% max.
Fineness (Retained on No. 325 sieve)	0.5% max.
Solubility	Like most basic lead salts, TRI-MAL is insoluble in all common solvents.

Uses

Vinyl Plastics—TRI-MAL has a relatively high refractive index and, accordingly, is desirable as a yellowish green pigmenting material in a wide variety of plastic formulations where stability to both light and heat is important. It imparts light fastness to the vinyl plastics in which it is used and its high degree of basicity makes it a fine heat stabilizer, as well.

Suggested Uses—TRI-MAL might also be adapted to the stabilizing of chlorinated paraffins, chlorinated polythene and other chlorine containing plastics that are unstable to heat and light.

NATIONAL LEAD COMPANY

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