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"Dutch Boy"®

TRI-MAL®

A HIGHLY BASIC STABILIZER
FOR VINYL CHLORIDE
AND CURING AGENT FOR
CHLOROSULFONATED POLYETHYLENE

DUTCH BOY CHEMICALS

A Product Development of
NATIONAL LEAD COMPANY

F-55-56

NLI 115959

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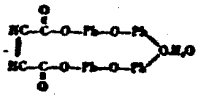
"Dutch Boy"

TRI-MAL*

TRI-MAL, the monohydrated tribasic lead salt of maleic acid, is a soft yellowish-white crystalline powder which is insoluble in water and all other common solvents. It is one of the most basic lead stabilizing materials which can be produced, with a total lead content equivalent to 89% PbO, and an available basic lead content of 66.5%. TRI-MAL is valuable as both a heat and light stabilizer for vinyl plastics, and as a vulcanizing or curing agent for chlorosulfonated polyethylene.

Table of Properties

Composition	Tribasic lead maleate monohydrate
Formula	
Molecular Weight	1008
Form	Soft crystalline powder
Color	Yellowish-white
Refractive Index	2.00 nom.
Specific Gravity	3.0
Weight per Gallon	25.0 lb.
Lead Oxide Content, % PbO, average	89
Moisture (loss at 105°C.), %	0.2 max.
Fineness (through No. 325 sieve), %	0.5 max.
Solubility	Insoluble in all common solvents

Vinyl Plastics, Chlorinated Pol
MAL is designed as both an HCl acid a
absorbing material. It imparts light fas
vinyl chloride polymers and copolym
paraffins. The high degree of basicity o
as well. It will prove most valuable wher
conditions must be met, because of it
hydrogen chloride split off from the ch

Chlorosulfonated Polyethylene (
curing and stabilizing agent for chloros
superior to other organic and metal cu
of which a most important one is relati
basic lead content and excellent ultravio
make an outstanding combination for t
superior to other metal oxides and ma
water sensitivity. TRI-MAL also provide
from sunlight and outdoor exposure
chlorosulfonated polyethylene compoun
age stability and improved shelf life. TR
of excellent properties to all chlorosu
tions, whether they are based on milled

Recomm

In vinyl plastics, chlorinated poly
mended concentration of TRI-MAL fo
and light is approximately 5 to 7%, bas

As a curing agent for chlorosulfonat
required is between 30 and 40%, base

*Trademark, E. I. DuPont de Nemours & Co., Wilmi

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"Dutch Boy"®

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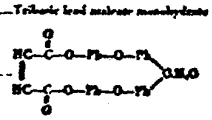
Table of Properties

	Tribasic lead maleate monohydrate
	
	1008
	Soft crystalline powder
	Yellowish-white
	2.08 max.
	0.0
	20.0 lb.
PbO, average	89
..., %	0.2 max.
... 325 (lime), %	0.2 max.
	Insoluble in all common solvents

Uses

Vinyl Plastics, Chlorinated Paraffins and Chlorinated Rubber—TRI-MAL is designed as both an HCl acid acceptor and as a selective ultraviolet light absorbing material. It imparts light fastness and outdoor weathering stability to vinyl chloride polymers and copolymers, chlorinated rubber and chlorinated paraffins. The high degree of basicity of TRI-MAL makes it a fine heat stabilizer as well. It will prove most valuable when severe heat requirements and processing conditions must be met, because of its ability to neutralize and inactivate the hydrogen chloride split off from the chlorinated resin.

Chlorosulfonated Polyethylene (HYPALON®)—TRI-MAL is an excellent curing and stabilizing agent for chlorosulfonated polyethylene. It has been found superior to other organic and metal oxide vulcanizing agents in several respects, of which a most important one is relative freedom from "scorching." The high basic lead content and excellent ultraviolet light screening properties of TRI-MAL make an outstanding combination for this purpose. Basic lead compounds are superior to other metal oxides and most organic curing agents in resistance to water sensitivity. TRI-MAL also provides the necessary resistance to discoloration from sunlight and outdoor exposure which is lacking in litharge. In addition, chlorosulfonated polyethylene compounds containing TRI-MAL have good package stability and improved shelf life. TRI-MAL will contribute its unique balance of excellent properties to all chlorosulfonated polyethylene elastomer applications, whether they are based on milled stocks or on solution coatings.

Recommendations

In vinyl plastics, chlorinated paraffins and chlorinated rubber, the recommended concentration of TRI-MAL for proper stabilization against both heat and light is approximately 5 to 7%, based on the weight of the resin.

As a curing agent for chlorosulfonated polyethylene, the amount of TRI-MAL required is between 30 and 40%, based on the weight of the elastomer.

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