

DATE PRINTED: 01/25/1999

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MSDS NO. 11-065668

Trigonox 101-45B-pd

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

**PRODUCT NAME**  
Trigonox 101-45B-pd

**CHEMICAL NAME**  
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane  
on inert filler

**SYNONYM**  
Peroxide, 1,1,4,4-tetramethyl-1,4-butane-  
diyl, bis(1,1-dimethylethyl)

**CHEMICAL FORMULA**  
Mixture

**CAS #**  
MIXTURE

**CHEMICAL FAMILY**  
Organic peroxides/alkyl peroxides

**MANUFACTURERS NAME**  
Akzo Nobel Polymer Chemicals LLC

**PRODUCT/TECHNICAL INFORMATION**  
1-800-828-7929

**ADDRESS**  
300 South Riverside Plaza  
Chicago, IL 60606

**MEDICAL/HANDLING EMERGENCY**  
1-914-693-6946

**COUNTRY**  
USA

**TRANSPORTATION EMERGENCY**  
CHEMTREC 1-800-424-9300

**PRODUCT USE**  
Polymerization initiator

**REVISION DATE**  
12/08/1999

**ISSUE DATE**  
3/31/1994

**REVISION NO.**  
008

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE DESCRIPTION	PERCENT	CAS#
2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane	** 43.000- 47.000	78-63-7
Synthetic calcium silicate	** 22.500- 33.000	1344-95-2
Calcium carbonate	** 20.000- 26.000	471-34-1
Silica-crystalline cristobalite	1.000- 1.400	14464-46-1
Crystalline silica (Quartz)	0.500- 0.700	14808-60-7

\*\* SUBSTANCE IS A COMPOUND AND/OR MIXTURE

SECTION 3. HAZARDS IDENTIFICATION

**Appearance & Odor**

Fine, white powder with a distinct odor.

**STATEMENT OF HAZARDS**

DANGER!

ORGANIC PEROXIDE.

HEAT OR CONTAMINATION MAY CAUSE HAZARDOUS DECOMPOSITION.

CAUSE EYE AND SKIN IRRITATION.

MAY CAUSE RESPIRATORY TRACT IRRITATION.

CONTAINS MATERIAL WHICH CAN CAUSE LUNG DAMAGE.

CANCER HAZARD-CONTAINS MATERIAL WHICH CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.

**Fire & Explosion Hazards**

Peroxides and peroxide decomposition products are flammable and can ignite with explosive force if confined.

MARKETED BY  
**HARWICK STANDARD**  
DISTRIBUTION CORPORATION  
60 S. Seiberling Street - Akron, Ohio 44305  
Akron - Chicago - Northeast - Southern - West Coast

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**SECTION 3. HAZARDS IDENTIFICATION**  
(CONTINUED)  
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**Primary Route of Exposure**

Skin and eye contact and inhalation of dust are the principal routes of exposure to this product.

**Inhalation Acute Exposure**

Inhalation of dust or vapors may be irritating to the upper respiratory system.

**Skin Contact - ACUTE**

Skin contact can cause severe irritation with redness and edema.

**Eye contact - ACUTE**

Eye contact may cause severe irritation.

**Ingestion - ACUTE**

If swallowed, this product may cause severe irritation of the mouth, throat, and stomach.

**CARCINOGENICITY**

IARC	....NO	OSHA	....NO
NTP	....NO	ACGIH	....NO

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**SECTION 4. FIRST AID MEASURES**  
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**Inhalation First Aid**

Remove to fresh air. If breathing becomes difficult, oxygen may be given, preferably with a physician's advice. If not breathing, give artificial respiration. Get medical attention.

**Skin Contact - First Aid**

Immediately remove contaminated clothing and shoes. Wash skin with soap and plenty of water for at least 15 minutes. Do not attempt to neutralize with chemical agents. Get medical attention. Wash contaminated clothing before reuse. Thoroughly clean or destroy contaminated shoes.

**Eye Contact - First Aid**

Immediately flush eyes with large quantities of running water for a minimum of 15 minutes. If the victim is wearing contact lenses, remove them. Take care not to contaminate the victim's healthy skin and eyes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids. DO NOT let victim rub eye(s). Do not attempt to neutralize with chemical agents. Get medical attention immediately. Oils or ointments should not be used at this time. Continue flushing for an additional 15 minutes if a physician is not immediately available.

**Ingestion - First Aid**

Immediately give several glasses of water. DO NOT induce vomiting. If vomiting occurs, keep head below hips to reduce the risk of aspiration. Give fluids again. Have a physician determine if condition of patient will permit induction of vomiting or evacuation of stomach. Never give anything by mouth to a person who is unconscious or convulsing.

If victim is unconscious, monitor pulse, breathing and airway. If breathing stops, begin artificial respiration immediately. If the heart has stopped, give cardiopulmonary resuscitation (CPR). Get medical attention immediately.

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**SECTION 4. FIRST AID MEASURES**  
(CONTINUED)  
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**Medical conditions aggravated**

Persons with pre-existing skin disease may be at an increased risk if exposed dermally to this material.

**Note to Physician**

No specific antidote is known. Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical conditions.

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**SECTION 5. FIRE FIGHTING MEASURES**  
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**FLASH POINT**  
N/D F N/D C

**FLASH METHOD**

**AUTO IGNITION TEMPERATURE**  
N/D F N/D C

**UPPER EXPLOSION LIMIT**  
N/D

**LOWER EXPLOSION LIMIT**  
N/D

**Extinguishing Media**

Use water fog, dry chemical, carbon dioxide, or foam extinguishing agents.

Extinguish large fires with large amounts of water spray, fog or foam from a safe/protected position.

**Fire Fighting Procedures**

As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate non-essential personnel from the fire area. Firefighters should wear full-face, self-contained breathing apparatus and impervious protective clothing. If possible, move containers from the fire area. If not leaking, keep fire exposed containers cool with a water fog or spray to prevent rupture due to excessive heat. High pressure water may spread product from broken containers increasing contamination or fire hazard.

Dike fire control water for later disposal. Do not allow contaminated water to enter waterways.

**Fire & Explosion Hazards**

Peroxides and peroxide decomposition products are flammable and can ignite with explosive force if confined.

**Other Fire + Explosion Hazards**

This product can produce flammable vapors which may travel to a source of ignition and flash back.

**Hazardous Products/Combustion**

Thermal decomposition produces oxides of carbon and/or hazardous fumes, vapors and/or gasses.

**NFPA HEALTH RATING**  
2

**NFPA FLAMMABILITY RATING**  
1

**NFPA REACTIVITY RATING**  
1

**NFPA OTHER**

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

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### Cleanup

Stop source of spill. Sweep up spilled solid material being careful not to create dust. Place in a chemical waste container for disposal.

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## SECTION 7. HANDLING AND STORAGE

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### Handling

Containers should be located in an area where they can be rotated regularly (first in, first out) and visually inspected for damage or bulging on a regular basis.

Use approved equipment for transport of containers to avoid puncturing or rupturing containers. Do not use air pressure to empty containers.

Protective equipment should be worn when handling this product to avoid eye and skin contact.

Emptied container may retain product residues. Follow all warnings and precautions even after container is emptied.

### Storage

To insure product quality, storage temperatures should not exceed 86 F (30 C).

To insure against possible exothermic self-accelerating decomposition, storage temperatures must not exceed 167 F (75 C). This emergency temperature is derived from the SADT (see Sect. 11). Keep containers tightly closed. Store away from reducing agents and accelerators.

### MAXIMUM STORAGE TEMPERATURE

86.00 F            30.00 C

### General Comments

Containers should not be opened until ready for use. Use clean non-sparking equipment and tools when handling.

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### Respiratory protection

Use a NIOSH-approved organic vapor respirator with dust, mist and fume filters to reduce potential for inhalation exposure if use conditions generate dust, mist or aerosol and adequate ventilation (e.g. outdoor or well ventilated area) is not available. Where exposure potential necessitates a higher level of protection, use a NIOSH-approved, positive-pressure, pressure-demand, air-supplied respirator.

When using respirator cartridges or canisters, they must be changed frequently (following each use or at the end of the workshift) to assure breakthrough exposure does not occur.

### Skin Protection

Skin contact with this product should be prevented through the use of suitable protective clothing, gloves, and footwear selected with regard for use condition exposure potential.

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**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION  
(CONTINUED)**

**Eye Protection**

Because eye contact with this product may cause irritation, chemical goggles and/or a face shield should be worn when handling this product.

**Ventilation protection**

Local exhaust ventilation, enclosed system design, continuous monitoring devices, process isolation and remote control are traditional exposure control techniques which may be used to effectively minimize employee exposure.

**Other Protection**

Safety showers, with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool to tepid tap water, should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

**APPLICABLE EXPOSURE LIMITS**

Available exposure limits applicable to this product are shown below.

**EXPOSURE LIMITS/REGULATORY INFORMATION  
(IN MG/M3)**

SUBSTANCE DESCRIPTION	REG. AGENCY	PEL	TLV	TWA	STEL	CEIL
<b>2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane</b>	OSHA	N/D	N/D	N/D	N/D	N/D
	ACGIH	N/D	N/D	N/D	N/D	N/D
	NIOSH	N/D	N/D	N/D	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D
<b>Synthetic calcium silicate</b>	OSHA	15,0000	N/D	N/D	N/D	N/D
	ACGIH	N/D	10,0000	N/D	N/D	N/D
	NIOSH	N/D	N/D	15,0000	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D
<b>Calcium carbonate</b>	OSHA	15,0000	N/D	N/D	N/D	N/D
	ACGIH	N/D	10,0000	N/D	N/D	N/D
	NIOSH	N/D	N/D	10,0000	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D
<b>Silica-crystalline cristobalite</b>	OSHA	0.0500	N/D	N/D	N/D	N/D
	ACGIH	N/D	0.0500	N/D	N/D	N/D
	NIOSH	N/D	N/D	0.0500	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D
<b>Crystalline silica (Quartz)</b>	OSHA	0.1000	N/D	N/D	N/D	N/D
	ACGIH	N/D	0.1000	N/D	N/D	N/D
	NIOSH	N/D	N/D	0.0500	N/D	N/D
	SUPPLIER	N/D	N/D	N/D	N/D	N/D

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**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**  
(CONTINUED)  
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**LEGEND:**

**EXPOSURE LIMIT DESCRIPTIONS**

CEIL Ceiling Exposure Limit  
PEL Permissible Exposure Limit  
STEL Short Term Exposure Limit  
TLV Threshold Limit Value  
TWA Time Weighted Average  
N/D = Not Determined

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**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**  
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**VAPOR PRESSURE (mm Hg)**  
N/D

**VAPOR DENSITY (Air = 1.0)**  
N/D

**EVAPORATION RATE**  
N/D

**VOLATILE %**  
N/D

**BOILING POINT**  
N/D F N/D C

**ODOR THRESHOLD (ppm)**  
N/D

**SPECIFIC GRAVITY**  
N/D

**BULK DENSITY**  
N/D

**SOLUBILITY IN WATER**  
N/D Insoluble

**SOLUBILITY IN OTHER SOLVENTS**

**COEFFICIENT OF OIL/WATER**  
N/D

**POUR POINT**  
N/D F N/D C

**MELTING POINT**  
N/D F N/D C

**pH FACTOR**  
N/D

**CLOUD POINT**  
N/D F N/D C

**FLASH POINT**  
N/D F N/D C

**FLASH METHOD**  
N/D

**UPPER EXPLOSION LIMIT**

**LOWER EXPLOSION LIMIT**  
N/D

**AUTO IGNITION TEMPERATURE**  
N/D F N/D C

**Other**

SADT = 176 F (80 C) (See Sect. 10).

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**SECTION 10. STABILITY AND REACTIVITY**  
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**Stability**

This product is stable at ambient temperatures but may decompose if exposed to temperatures above 167 F (75 C).

**Incompatibilities**

This product is incompatible with strong acids, strong alkalis, reducing agents and accelerators.

**Polymerization**

Hazardous polymerization will not occur.

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**SECTION 10. STABILITY AND REACTIVITY**  
**(CONTINUED)**  
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**Decomposition**

Thermal decomposition will produce oxides of carbon and can produce flammable and/or combustible vapors and gases.

**Conditions to Avoid**

The SADT for this product is 176 F (80 C).  
The SADT (self-accelerating decomposition temperature) is an experimentally derived temperature at which a typical package of the product will undergo self-accelerating decomposition. Decomposition can be expected to be hazardous and uncontrollable.  
Under no circumstances should this product be exposed to temperatures near or above the emergency temperature of 167 F (75 C). Such an exposure could initiate hazardous decomposition.  
Contact with incompatible materials such as acids, alkalis, heavy metals and reducing agents will also result in hazardous decomposition.

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**SECTION 11. TOXICOLOGICAL INFORMATION**  
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**Toxicological - Inhalation**

Acute toxicity data (LC50) is not available for this product. The product contains crystalline silica which is known to cause silicosis.

**Inhalation Chronic Exposure**

Chronic inhalation exposure effects of this product are not known. This product is expected to cause moderate respiratory tract irritation. The product contains crystalline silica which is known to cause silicosis.

**Toxicological - Dermal**

Acute dermal (LD50) is not available for this product. The peroxide is severely irritating to rabbits. Calcium carbonate is a moderate skin irritant.

**Skin Contact - CHRONIC**

Chronic dermal effects for this product are not known. This product is expected to be severely irritating.

**Toxicological - Eye**

The peroxide is mildly irritating to rabbits. Calcium carbonate is a severe eye irritant.

**Toxicological - Ingestion**

Acute oral toxicity data (LD50) is not available for this product. The oral LD50 in rats for the peroxide is greater than 2000 mg/kg (slightly toxic to practically nontoxic). The oral LD50 in rats for calcium carbonate is greater than 5000 mg/kg (practically nontoxic).

**Ingestion - CHRONIC**

Chronic ingestion effects of this product are not known.

**CARCINOGENICITY/MUTAGENICITY**

The carcinogenic/mutagenic properties of this product are not known. Crystalline silica (cristobalite and quartz) is classified by IARC to be a known carcinogen to humans and by NTP as a substance which may be anticipated to be a carcinogen. The peroxide is not mutagenic in the Ames test.

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**SECTION 11. TOXICOLOGICAL INFORMATION**  
(CONTINUED)  
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**REPRODUCTIVE EFFECTS**

The reproductive toxicity of this product is not known.

**NEUROTOXICITY**

The neurotoxic effects of this product are not known.

**Other Toxicological Effects**

No other toxic effects for this product are known.

**Target Organs**

Overexposure to this product may affect the skin, eyes, upper respiratory tract and lungs.

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**SECTION 12. ECOLOGICAL INFORMATION**  
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**ECOTOXICOLOGICAL INFORMATION**

The ecological toxicity of this product is not known.

**DISTRIBUTION**

Other ecological information on this product is not known.

**CHEMICAL FATE**

Chemical fate information on this product is not known.

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**SECTION 13. DISPOSAL CONSIDERATIONS**  
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**Waste Disposal**

The characteristic of reactivity per RCRA would be exhibited by the unused product if it becomes a waste material.

**CONTAINER DISPOSAL**

Containers should be drained of residual product before disposal. Empty containers should be disposed of in accordance with all applicable laws and regulations.

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**SECTION 14. TRANSPORT INFORMATION**  
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**SHIPPING DESCRIPTION**

ORGANIC PEROXIDE TYPE D, SOLID  
(2,5-DIMETHYL-2,5-DI-(TERT-BUTYLPEROXY)HEXANE, 45%)  
5.2, UN3106, PG II  
NORTH AMERICAN ERG NO: 145

**REQUIRED LABELS**

ORGANIC PEROXIDE.

**ENVIRON. HAZARDOUS SUBSTANCE**

This product does not contain an environmentally hazardous substance per 49 CFR 172.101, Appendix A.

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**SECTION 15. REGULATORY INFORMATION**  
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**SECTION 15. REGULATORY INFORMATION**  
**(CONTINUED)**

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Component 2,5-Dimethyl-2,5-di-(tert-butylperoxy)hexane is subject to the follow

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**Enviromental List**

DSL	Domestic Substance List-Canada
NJ R-T-K	New Jersey R-T-K Hazard. Sub.
TSCA	Toxic Subst. Cont. Act -listed

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Component Synthetic calcium silicate is subject to the following

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**Enviromental List**

DSL	Domestic Substance List-Canada
MA. LIST	Massachusetts Substance List
PA. LIST	Penn. Hazardous Substance List
TSCA	Toxic Subst. Cont. Act -listed

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Component Calcium carbonate is subject to the following

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**Enviromental List**

DSL	Domestic Substance List-Canada
TSCA	Toxic Subst. Cont. Act -listed

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Component Silica-crystalline cristobalite is subject to the following

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**Enviromental List**

DSL	Domestic Substance List-Canada
MA. LIST	Massachusetts Substance List
NJ R-T-K	New Jersey R-T-K Hazard. Sub.
PA. LIST	Penn. Hazardous Substance List
TSCA	Toxic Subst. Cont. Act -listed

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Component Crystalline silica (Quartz) is subject to the following

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**Enviromental List**

DSL	Domestic Substance List-Canada
MA. LIST	Massachusetts Substance List
NJ R-T-K	New Jersey R-T-K Hazard. Sub.
PA. LIST	Penn. Hazardous Substance List
PROP 65	California Proposition 65
TSCA	Toxic Subst. Cont. Act -listed

Akzo Nobel Polymer Chemicals LLC  
MATERIAL SAFETY DATA SHEET

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**SECTION 15. REGULATORY INFORMATION**  
(CONTINUED)  
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**OTHER REGULATORY INFORMATION**

Warning: This product contains chemicals known to the State of California to cause cancer.

**WHMIS HAZARD CLASS**  
C,D-2A,F

**HAZARD RATING SOURCE**  
HMIS

**HEALTH**  
2

**REACTIVITY**  
1

**FLAMMABILITY**  
1

**OTHER**

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**SECTION 16. OTHER INFORMATION**  
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**OTHER INFORMATION**

TRIGONOX is a registered trademark of Akzo Nobel Chemicals Inc.

CREATED BY  
Product Safety(914)674-5000

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**KEY TO ABBREVIATIONS:**

**EQ=Equal**

**LT=Less Than**

**GT=Greater Than**

**AP=Approximately**

**TR=Trace**

**ND=No Data available**

The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable as of the date of publication. However, no warranty is made as to the accuracy of and/or sufficiency of such information and/or suggestions as to the merchantability or fitness of the product for any particular purpose, or that any suggested use will not infringe any patent. Nothing in here shall be construed as granting or extending any license under any patent. Buyer must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date of this document is more than three years old, call to make certain that this sheet is current.