MATERIAL SAFETY DATA SHEET

Ferro Corporation, Polymer Additives Division
Walton Hills Operation
7050 Krick Road
Walton Hills, Ohio 44146-4494 USA

Emergency telephone number
CHEMTREC: 1-800-424-9300
CHEMTREC (outside U.S.): 1-703-527-3887
Plant Number: 1-216-750-6708

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Name: Therm-Chek® 6325
Chemical Family: Polymer Additive
Chemical Name: Barium, Zinc Complex Mixture
CAS-No.: Mixture
Product Code: 1337814

Date of Preparation: 06/03/2014

2. HAZARDS IDENTIFICATION

Emergency Overview
Warning
May cause respiratory tract, eye and skin irritation. Avoid contact with the skin and the eyes. May be harmful if absorbed through skin. May be harmful if swallowed.

Color: Light yellow
Physical state: Liquid
Odor: Mild

	HMIS	NFPA 704
Health:	2	2
Flammability:	1	1
Physical Hazard:	1	0
PPE:	B	

Potential Health Effects

Principle routes of exposure: Eye contact. Skin contact. Inhalation.

Eye contact: May cause slight irritation.

Skin contact: Prolonged skin contact may cause skin irritation and/or dermatitis. May be harmful if absorbed through skin.

Inhalation: May cause irritation of respiratory tract.

Ingestion: May irritate digestive tract. May be harmful if swallowed.

Chronic toxicity: Prolonged skin contact may cause skin irritation and/or dermatitis.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Weight %
Epoxidized soybean oil	8013-07-8	50 - 60%
Diphenyl isodecyl phosphite	26544-23-0	10 - 20%
Barium nonylphenate	28987-17-9	5 - 10%
Triphenyl phosphite	101-02-0	1 - 5%
Diisodecyl phenyl phosphite	25550-98-5	1 - 5%
Phenol	108-95-2	1 - 5%
Hexanoic acid, 2-ethyl-, zinc salt (2:1)	136-53-8	1 - 5%
Benzoic acid	65-85-0	1 - 5%
Mineral Oil	8042-47-5	1 - 5%

The specific chemical identities are being withheld as a trade secret (29CFR1910.1200).

This material contains organo phosphorous compounds which may decompose from hydrolysis with water (moisture in air) to produce phenol, aliphatic alcohol, and phosphoric acid.

4. FIRST AID MEASURES

Eye contact: Rinse immediately with plenty of water, also under the eyelids. Get medical attention if irritation develops.

Skin contact: Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. If symptoms persist, call a physician.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. If symptoms persist, call a physician.

Ingestion: Drink plenty of water. Do not induce vomiting. Consult a physician if necessary.

Notes to physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash point (°C): 128(262°F) Method: PMCC

Suitable extinguishing media: Use dry chemical, CO2, water spray or "alcohol" foam.

Hazardous decomposition products under fire conditions: Thermal decomposition can lead to release of irritating gases and vapors.

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus (pressure-demand, NIOSH approved or equivalent) and full protective gear.

Unusual hazards: Material may change or decompose on exposure to moisture.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Evacuate area of all unnecessary personnel. Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Ensure adequate ventilation.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system. Prevent product from entering drains.

Methods for cleaning up: Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly. Dispose of promptly.

7. HANDLING AND STORAGE

Handling:
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Use only in area provided with appropriate exhaust ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Do not eat, drink, or smoke in areas of use or storage. Do not take internally. Wash thoroughly after handling.

Storage:
Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits

Minimize exposure in accordance with good hygiene practice.

Components	OSHA PEL	ACGIH
Phenol	5 ppm TWA 19 mg/m^3 TWA prevent or reduce skin absorption	Skin 5 ppm TWA

Engineering measures: Ensure adequate ventilation, especially in confined areas.

Eye protection: Safety glasses with side-shields.

Skin and body protection: Lightweight protective clothing.

Hand protection: Impervious gloves. Follow the recommendations given by the manufacturer of protective gloves.

Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment. NIOSH-approved respirators should be worn where engineering controls and work practices do not reduce exposure to or below the PEL. Seek professional advice prior to respirator selection and use.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Ensure that eyewash stations and safety showers are proximal to the work-station location. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Light yellow	**Physical state:**	Liquid
Odor:	Mild	**Molecular weight:**	No data available
Boiling point/range (°C):	No data available	**pH:**	No data available
Melting point/range (°C):	No data available	**Specific gravity (Water =1):**	1.020
Vapor pressure :	No data available	**Evaporation Rate (Water = 1)**	< 1.00
Water solubility:	Insoluble	**VOC content**	No data available

10. STABILITY AND REACTIVITY

Stability: Stable at normal ambient temperatures and storage conditions.

Polymerization Will not occur.

Hazardous decomposition products: None under normal use. Possible decomposition products from hydrolysis:. phenol, aliphatic alcohol, phosphorous acid.

Materials to avoid: Strong oxidizing agents. Strong acids and strong bases. Water.

Conditions to avoid Exposure to moisture.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: Information given is based on data on the components and the toxicology of similar products

Additional Target Organ Effects: Barium compound: Heart, gastrointestinal tract Phenol: Central nervous system, liver, kidneys

Component information, if any, is listed below

Epoxidized soybean oil

LD50s and LC50s: Oral LD50 (Rat) = 21000 mg/kg
Dermal LD50 (Rabbit) = 20000 mg/kg

Diphenyl isodecyl phosphite

LD50s and LC50s: Oral LD50 (Rat) = 2370 µL/kg
Oral LD50 (Rat) = 2417 mg/kg
Dermal LD50 (Rabbit) = 10200 mg/kg

Triphenyl phosphite

LD50s and LC50s: Dermal LD50 (Rat) = 1180 mg/kg
Oral LD50 (Rat) = 444 mg/kg
Dermal LD50 (Rabbit) = 2000 mg/kg
Inhalation LC50 (Rat) = 6.7 mg/L

Diisodecyl phenyl phosphite

LD50s and LC50s: Oral LD50 (Rat) = 8250 mg/kg
Dermal LD50 (Rat) = 2000 mg/kg

Phenol

LD50s and LC50s: Inhalation LC50 (Rat) = 316 mg/m^3
Oral LD50 (Rat) = 317 mg/kg
Dermal LD50 (Rat) = 525 mg/kg
Dermal LD50 (Rabbit) = 630 mg/kg

Benzoic acid

LD50s and LC50s: Oral LD50 (Rat) = 1700 mg/kg

Mineral Oil

LD50s and LC50s: Oral LD50 (Rat) = 5000 mg/kg

12. ECOLOGICAL INFORMATION

Aquatic toxicity: No data is available on the product itself. Information given is based on data on the components and the ecotoxicology of similar products.

Epoxidized soybean oil

Ecotoxicity - Fish Species Data:
48 h LC50 (Leuciscus idus) = 900 mg/L
Ecotoxicity - Water Flea Data:
24 h EC50 (Daphnia magna) = 100 mg/L
Ecotoxicity - Freshwater Algae Data:
72 h EC50 (Desmodesmus subspicatus) = 8 mg/L

Diisodecyl phenyl phosphite

Ecotoxicity - Fish Species Data:
48 h LC50 (Leuciscus idus) = 100 mg/L static
Ecotoxicity - Water Flea Data:
48 h EC50 (Daphnia magna) = 0.2 mg/L
Ecotoxicity - Freshwater Algae Data:
72 h EC50 (Desmodesmus subspicatus) = 45 mg/L

Phenol

Ecotoxicity - Fish Species Data:
96 h LC50 (Lepomis macrochirus) = 11.9 - 25.3 mg/L flow-through
96 h LC50 (Pimephales promelas) = 11.9 - 50.5 mg/L flow-through
96 h LC50 (Pimephales promelas) = 20.5 - 25.6 mg/L static
96 h LC50 (Oryzias latipes) = 23.4 - 36.6 mg/L static
96 h LC50 (Oryzias latipes) = 33.9 - 43.3 mg/L flow-through
96 h LC50 (Poecilia reticulata) = 34.09 - 47.64 mg/L static
96 h LC50 (Oncorhynchus mykiss) = 4.23 - 7.49 mg/L semi-static
96 h LC50 (Oncorhynchus mykiss) = 5.0 - 12.0 mg/L
96 h LC50 (Oncorhynchus mykiss) = 5.449 - 6.789 mg/L flow-through
96 h LC50 (Oncorhynchus mykiss) = 7.5 - 14 mg/L static
96 h LC50 (Cyprinus carpio) = 0.00175 mg/L semi-static
96 h LC50 (Lepomis macrochirus) = 11.5 mg/L semi-static
96 h LC50 (Lepomis macrochirus) = 13.5 mg/L static
96 h LC50 (Brachydanio rerio) = 27.8 mg/L
96 h LC50 (Poecilia reticulata) = 31 mg/L semi-static
96 h LC50 (Pimephales promelas) = 32 mg/L
Ecotoxicity - Water Flea Data:
48 h EC50 (Daphnia magna) = 10.2 - 15.5 mg/L
48 h EC50 (Daphnia magna) = 4.24 - 10.7 mg/L Static
Ecotoxicity - Freshwater Algae Data:
96 h EC50 (Pseudokirchneriella subcapitata) = 0.0188 - 0.1044 mg/L static
72 h EC50 (Desmodesmus subspicatus) = 187 - 279 mg/L static
96 h EC50 (Pseudokirchneriella subcapitata) = 46.42 mg/L

Benzoic acid

Ecotoxicity - Fish Species Data:
96 h LC50 (Gambusia affinis) = 180 mg/L
Ecotoxicity - Water Flea Data:
24 h EC50 (Daphnia magna) = 300 mg/L
48 h EC50 (Daphnia magna) = 860 mg/L Static
Ecotoxicity - Freshwater Algae Data:
3 h EC50 (Anabaena inaequalis) = 5 mg/L

Mineral Oil

Ecotoxicity - Fish Species Data:
96 h LC50 (Lepomis macrochirus) = 10000 mg/L

Persistence and degradability: Not determined

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Waste must be disposed of in accordance with federal, state and local environmental control regulations. Where possible recycling is preferred to disposal or incineration.

14. TRANSPORT INFORMATION

DOT (U.S.)

Proper shipping name: Not Regulated

TDG (Canada)
Proper Shipping Name Not Regulated

IMDG
Proper Shipping Name Not Regulated

IATA
Proper shipping name Not Regulated

15. REGULATORY INFORMATION

U.S. Regulations:

TSCA: Not subject to TSCA 12(b) Export Notification

SARA 313:

Components	U.S. - CERCLA/SARA - Section 313 - Emission Reporting
Phenol (1 - 5%)	1.0 % de minimis concentration
Zinc compounds (1 - 5%)	1.0 % de minimis concentration
Barium compounds (5 - 10%)	1.0 % de minimis concentration

State Regulations
This product or its ingredients have been evaluated for New Jersey, Pennsylvania, and California Prop 65 supplier notification requirements. Substances that are subject to notification requirements, if any, are listed below.

Components	PARTK:
Phenol	Listed (PARTK)
Zinc compounds	Listed (PARTK)
Barium compounds	Listed (PARTK)

Components	NJRTK:
Phenol	1487
Zinc compounds	2021
Barium compounds	sn 0180
Benzoic acid	0209

Canadian WHMIS

WHMIS hazard class: Non-controlled

Canadian Ingredient Disclosure List (IDL):

Components	Canada - WHMIS Ingredient Disclosure:

Triphenyl phosphite	1
Phenol	1
Benzoic acid	1

International Inventories

U.S. EPA TSCA 8(b):	Listed or exempt.
Canada DSL/NDSL list	All ingredient(s) are listed on the DSL or NDSL
Europe (EINECS):	Listed or exempt.
Philippines (PICCS):	Listed.
Japan (ENCS):	Listed or exempt.
Korea (KECL):	Listed.
China (IECS):	Listed.
Australia (AICS):	Listed.
New Zealand (NZIoC):	Listed.

16. OTHER INFORMATION

For Industrial Use Only

Prepared by: Ferro Technical Center

Disclaimer: The information and recommendations contained in this Material Safety Data Sheet have been compiled from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.

End of Safety Data Sheet