

MATERIAL SAFETY DATA SHEET

FERRO Code Number: 81-510150
 MSDS Rev.: 07-SEP-2006

MSDS Print Date: 01/08/07

SECTION I - PRODUCT AND COMPANY INFORMATION

Product Name: RED 221 ULTRA PLUS GEL
 CAS Number MIXTURE
 HMIS Hazard Rating: Health: 2* Fire: 3 Reactivity: 2 PPI: J

Company Identification: Ferro Corporation
 Liquid Coatings & Dispersions
 1301 N. Flora Street
 Plymouth IN 46563

Contact: James C. Heim
 Telephone/Fax: (574) 935-5131 (574) 935-5278
 Emergency Phone (24 Hour): Ferro Corporation
 (216) 641-5324
 Chemtrec (24 Hour): (800) 424-9300
 Preparer Ken Rados
 Environmental Engineer

Trade Name RED 221 ULTRA PLUS GEL
 UN Class 3
 UN Number 1866
 UN Pack Group III
 Shipping Name Resin Solution
 (Contains Styrene Monomer, inhibited)

SECTION II - HAZARDOUS INFORMATION

Ingredient Name	CAS Number	Percent	TSCA Inv
Styrene Monomer	100-42-5	25 - 50	Y
Unsaturated Polyester	TRADE SECRET	25 - 50	Y
Unsaturated Polyester	68511-26-2	5 - 10	Y
Kaolin (Aluminum Silicate)	1332-58-7	3 - 7	Y
Hydrated Alumina (Alumina Trihydrate)	21645-51-2	1 - 5	Y
Methyl Methacrylate Monomer	80-62-6	1 - 5	Y
Alkyl Quaternary Ammonium Montmorillonite	68953-58-2	0.5 - 1.5	Y
Amorphous Fumed Silica	112945-52-5	0.5 - 1.5	Y

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Ethylbenzene	100-41-4	< 0.5	Y
Silica, Crystalline Quartz	14808-60-7	< 0.5	Y

*** ALL Ingredients in this product are listed in the T.S.C.A. Inventory

Additional Ingredient Information:

Styrene may contain trace amounts of Benzene (CAS# 71-43-2) as an impurity.

Naphtha-Light Aromatic (CAS# 64742-95-6) contains:

1,2,4-Trimethylbenzene, Xylene and Cumene
Effective June 28, 1994 the EPA has deleted Barium Sulfate from the category "Barium Compounds" on the list of toxic chemicals under SARA 313. See Federal Register 40 CFR Part 372.

SECTION III - PHYSICAL DATA

Appearance/Color:	Red
Solubility (in water):	Negligible
Boiling Point:	100.°C - 145.°C (212.°F - 293.°F)
Vapor Pressure (mmHg):	4.5@ 68.°F (20.°C)
Evaporation Rate:	Slower than n-Butyl Acetate
% Volatile Weight	43.02%
% Volatile Volume	53.84%
Specific Gravity:	1.1345

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammability Class	IC
Flash Point:	83.°F - 89.°F (28.33°C - 31.67°C) Tag Closed Cup
Explosive Range:	1.1% 12.5%

EXTINGUISHING MEDIA:

Foam, Dry Chemical, CO2

SPECIAL FIREFIGHTING PROCEDURES

Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment/clothing. Treat as oil fire. Fight fire from a distance; sealed containers can rupture explosively when heated. Water may be used to keep fire-exposed containers cool until fire is out.

UNUSUAL FIRE & EXPLOSION HAZARDS:

Flammable liquid. Vapors may form explosive mixture with air. Can polymerize when heated. Combustion can produce toxic gases. Vapors are heavier than air, can travel along the ground or through ventilation systems, and be ignited by sparks, flames or static discharge.

UNSATURATED POLYESTER: Fire may produce poisonous or irritating gas, fumes or vapor. Excessive heat may trigger polymerization of

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confined material. Containers may explode in heat of fire.

SECTION V - HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL:

See Section VIII.

EFFECTS OF OVEREXPOSURE:

Barium Sulfate: As this compound is water soluble, it is generally not considered toxic. It has been reported however as an experimental tumorigen. May be harmful by inhalation or ingestion. May cause eye, skin and mucous membrane irritation. Soluble Barium impurities can lead to toxic reactions. Prolonged inhalation of dust may cause baritosis, an irritiaion of the lung tissue which is not incapacitating and usually is reversible.

A study conducted by the National Toxicology Program states that lifetime inhalation exposure of rats and mice to concentrations of Ethylbenzene (750 ppm) resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations of Ethylbenzene (75 ppm or 250 ppm). The study does not address the relevance of these results to humans. Ethylbenzene is considered a IRAC Group 2B carcinogen based on animal studies.

METHYL METHACRYLATE:

Methyl Methacrylate is a skin, nose and throat irritant and can cause allergic skin rashes. Skin permeation may occur. It is a severe eye irritant and can cause discomfort, tearing, blurring of vision and possible corneal damage. Inhalation can cause headache, nausea, weakness and lung irritation with cough, discomfort and shortness of breath. Temporary sensory nervous system effects can occur, as well as abnormal kidney function tests and temporary elevation of blood pressure.

SILICA, CRYSTALLINE QUARTZ and/or CRYSTALLINE CRISTOBALITE:

ACUTE: Inhalation of the dust may cause mechanical irritation to the respiratory tract. Skin and eye contact may cause a mechanical abrasion irritaion.

CHRONIC: Long term overexposure to Silica causes silicosis, a form of pulmonary fibrosis. Continued exposure to Silica can lead to cardiopulmonary impairment.

IARC has determined that respirable crystalline Silica from occupational exposure is in Group 1, "sufficient evidence in humans for carcinogenicity".

Ingestion causes a burning sensation of the mouth and throat, and gastrointestinal tract irritation.

UNSATURATED POLYESTER:

If ingested may cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea. Contact with the skin may cause skin irritation. Repeated dermal exposures can result in an eczematous dermatitis caused by primary irritation and/or sensitization. Repeated or prolonged exposure to high vapor

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concentrations may be irritating to the mucous membranes and upper respiratory tract.

Solvent absorption by inhalation and/or repeated skin contact has caused injury to liver, kidney, respiratory system, blood, and/or bone marrow in laboratory animals.

Intentional misuse by deliberately concentrating and inhaling vapors may be harmful or fatal.

May be aggravating to some skin and asthma-type conditions, and to pre-existing liver and/or kidney disorders.

NAPHTHA-LIGHT AROMATIC:

ACUTE:

Inhalation - High concentrations of vapors may be irritating to the respiratory tract. May cause headaches, dizziness, nausea and vomiting. May cause CNS depression (drowsiness, loss of coordination, and fatigue).

Eye & Skin - Repeated or prolonged contact may cause irritation.

Ingestion - Repeated ingestion may irritate the digestive tract.

CHRONIC:

Absorption of ingredients by inhalation and/or repeated skin contact may cause injury to the liver/kidney. Reports have associated repeated and prolonged occupational exposure to solvents with permanent brain and nervous system damage.

FIRST AID:

INHALATION: If inhaled, move individual to fresh air. Make comfortably warm but not hot. Use oxygen or artificial respiration as required. See a physician if irritation is present or persists.

SKIN: In case of contact, remove contaminated clothing. Wash thoroughly with soap & plenty of water. See a physician if irritation is present or persists. Launder contaminated clothing before reuse.

EYE: Immediately flush eyes with plenty of water for at least 15 minutes and get prompt medical attention.

INGESTION: If swallowed, call a physician immediately. Induce vomiting only at the instructions of a physician. Never give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN: Vomiting can cause aspiration of the liquid into the lungs, which can cause chemical pneumonitis, which can be fatal.

SECTION VI - STABILITY AND REACTIVITY DATA

Stability: This product may be unstable

Hazardous Polymerization: Hazardous polymerization may occur

INCOMPATIBILITY:

Styrene is incompatible with strong acids & bases, peroxides, oxidizers, aluminum chloride and metallic hydrides.

Methyl Methacrylate is incompatible with oxidizing and reducing agents. MMA is a strong solvent and can soften paints & rubber. Strong oxidizing agents.

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POLYESTER: Strong acids, peroxides, oxidizing agents.
 CONDITIONS TO AVOID:
 Avoid excessive heat and inadvertent addition of catalyst.
 POLYESTER: Avoid exposure to heat, open flame or contamination with oxidizing agents. Dissolution of material with uninhibited unsaturated monomers can result in exothermic autopolymerization.
 HAZARDOUS DECOMPOSITION PRODUCTS:
 Oxides of Carbon; incompletely burned hydrocarbons; Organic Acids.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 Styrene Monomer has a Reportable Quantity (RQ) = 1000 lbs.
 Methyl Methacrylate has a Reportable Quantity (RQ) = 1000 lbs.
 Confine spill. Remove all sources of ignition. Ventilate area and maintain ventilation. Use all described protective measures and equipment. Use absorbant material, such as clay or sand, to collect and contain for salvage and disposal. Prevent runoff from entering drains, sewers or waterways.
 WASTE DISPOSAL METHOD:
 Follow all applicable Federal, Provincial, State and Municipal laws, regulations and by-laws. Package in U.N. approved containers and transport to an approved treatment, storage and disposal (TSD) facility. (Also see Section X.)
 Unused product and cleaned-up material may be RCRA Hazardous Waste (D001, D003).

SECTION VIII - EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits					
	ACGIH TLV	ACGIH TLV-C	ACGIH STEL	OSHA STEL	OSHA PEL
Styrene Monomer	20.00 PPM	N/est	40.00 PPM	100.00 PPM	50.00 PPM
Unsaturated Polyester	N/est	N/est	N/est	N/est	N/est
Unsaturated Polyester	N/est	N/est	N/est	N/est	N/est
Kaolin (Aluminum Silicate)	2.00 mg/M3	N/est	N/est	N/est	10.00 mg/M3
Hydrated Alumina (Alumina Trihydrate)	10.00 mg/M3	N/est	N/est	N/est	15.00 mg/M3
Methyl Methacrylate Monomer	50.00 PPM	N/est	100.00 PPM	N/est	100.00 PPM

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Paint Additive	N/est	N/est	N/est	N/est	N/est
Alkyl Quaternary Ammonium Montmorillonite	N/est	N/est	N/est	N/est	N/est
Amorphous Fumed Silica	10.00 mg/M3	N/est	N/est	N/est	6.00 mg/M3
Barium Sulfate	10.00 mg/M3	N/est	N/est	N/est	5.00 mg/M3
Naptha - Light Aromatic	50.00 PPM	N/est	N/est	N/est	400.00 PPM
Ethylbenzene	100.00 PPM	N/est	125.00 PPM	N/est	100.00 PPM
DIALLYLDIMETHYLAMMONIUM CHLORIDE	N/est	N/est	N/est	N/est	N/est
Silica, Crystalline Quartz	0.05 mg/M3	N/est	N/est	N/est	N/est

RESPIRATORY PROTECTION:

@ The ACGIH/TLV and the OSHA/PEL for the Crystalline Silica Quartz are both for respirable dust. To determine the OSHA PEL use the following formulation: 10 mg/m3 divided by percent(%) of Quartz +2, as determined by monitoring analysis.
 Refer to 29 CFR 1910.1000 Table Z-3.

Use appropriate NIOSH/MSHA approved respiratory protection when exposure to airborne contaminants may exceed acceptable limits. In emergency situations, or when used in confined spaces, use self-contained breathing apparatus or other air supplied full-face respirator.

VENTILATION:

Ventilate to maintain exposure below published exposure limits. Use explosion proof motors and wiring.

PROTECTIVE GLOVES:

Use impervious butyl rubber gloves. Replace as often as needed to maintain protection.

EYE PROTECTION:

Use chemical safety goggles or full-face shield.

OTHER PROTECTIVE EQUIPMENT:

Eye wash stations & safety showers should be easily accessible. Where splash can occur, use protective clothing.

SECTION IX - SPECIAL PRECAUTIONS

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PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

DO NOT STORE ABOVE 100 degrees F (38 degrees C)!
 Avoid contact with eyes, skin, clothing. Avoid breathing vapor, mist or spray. Use with good ventilation. Wash thoroughly after handling. Store in cool, dry area in closed containers away from incompatible materials. Store away from sunlight, heat, sparks and open flames. Protect containers against physical damage. Do not smoke in work area. Do not store near food or feed.

OTHER PRECAUTIONS:

Since emptied containers retain product residues (vapor, liquid or solid), all hazard precautions listed in the MSDS should be observed! Avoid improper addition of promotor and/or catalyst. Consult product bulletin. Promotors (metal organics such as Cobalt, or Aniline type) and catalyst (organic peroxide type) used with this product, should always be premixed separately into the product.

**** NEVER MIX PROMOTORS & CATALYST DIRECTLY TOGETHER ****

SECTION X - REGULATORY INFORMATION

SARA TITLE III SECTION 313:

This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 and of 40 CFR 372:

Ingredient Name	CAS Number	Percent
Styrene Monomer	100-42-5	38.21
Methyl Methacrylate Monomer	80-62-6	2.49
Cobalt Compound (as Cobalt)	N/A	0.01

-PROP 65 (CARCINOGEN)

WARNING: This product contains a chemical known to the state of California to cause cancer.

Ingredient Name	CAS Number	Percent
Ethylene Glycol	107-21-1	< 0.5
Silica, Crystalline Quartz	14808-60-7	< 0.5

-PROP 65 (BOTH CARCINOGEN AND TERATOGEN)

WARNING: This product may contain a chemical known to the state of California to cause cancer or birth defects or other reproductive harm.

Ingredient Name	CAS Number	Percent
Hydrated Alumina (Alumina Trihydrate)	21645-51-2	1 - 5

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Ethylbenzene 100-41-4 < 0.5

Although Styrene Monomer is not listed under Prop. 65, trace amounts of Benzene may be present as an impurity. (<0.05%)

Although Aluminum Trihydrate itself is not listed under Prop. 65, this product may contain trace amounts of chemicals which appear on the State of California's listing of substances known to cause cancer or birth defects or other reproductive harm. (Proposition 65).

MASSACHUSETTS SUBSTANCE LIST:

Styrene (CAS# 100-42-5) is listed.

CERCLA - 40 CFR 302.4:

Styrene Monomer has a Reportable Quantity (RQ) = 1000 lbs.

Methyl Methacrylate has a Reportable Quantity (RQ) = 1000 lbs.

RCRA - 40 CFR 261:

Wastes containing Methyl Methacrylate in a liquid form may exhibit EPA Hazardous Waste Characteristics, D001 (ignitability) and D003 (reactivity).

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.

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