Safety Data Sheet

Disclaimer

The products produced by Encore Wire Corporation exhibit no specific hazard due to their construction beyond the hazards associated with the components used in their manufacture. This Safety Data Sheet (SDS) is a compilation of the data contained in the individual component SDS sheets and as such is reliant on the accuracy of those individual sheets. Under normal use there is no significant inherent hazardous exposure opportunity from the construction materials.

Section 1 – Identification

Manufacturer:
Encore Wire Corporation
1329 Millwood Road
McKinney, TX 75069
Phone: 972-562-9473
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Product	Normal Construction Components
• NM-B	• PVC, Nylon, Kraft Paper, Copper
• UF-B	• PVC, Nylon, Copper
• THHN/THWN-2	• PVC, Nylon, Copper
• TFN/TFFN	• PVC, Nylon, Copper
• SEU	• PVC, Nylon, Copper, Aluminum
• SER	• PVC, Nylon, Copper, Aluminum
• XHHW-2	• Crosslinked Polyethylene, Copper, Aluminum
• USE-2	• Crosslinked Polyethylene, Copper, Aluminum
• PHOTOVOLTAIC	• Crosslinked Polyethylene, Copper, Aluminum
• TRAY CABLE	• PVC, Nylon, Copper
• METAL CLAD	• PVC, Nylon, Copper, Aluminum / Steel
• ARMORED CABLE	• PVC, Nylon, Paper, Copper, Aluminum/Steel
• OVERHEAD SERVICE DROP	• Crosslinked Polyethylene, Steel, Aluminum
• MOBILE HOME FEEDER	• Crosslinked Polyethylene, Aluminum
• UNDERGROUND DIST. CABLE	• Crosslinked Polyethylene, Aluminum

Section 2 – Hazard Identification

Polyvinyl Chloride Compounds
1. Nature of Hazard

Under burning conditions, HCl gas will be produced. HCl gas is irritation to the upper respiratory tract. Exposure to high concentrations of HCl gas may be fatal. PVC compound is made from PVC resin, which may contain trace amounts of vinyl chloride monomer (VCM). VCM is regulated as a carcinogen by OSHA, and is listed by NTP and IARC as a carcinogen. Under normal processing conditions, significant exposure to VCM should not occur. Other processing vapors may produce irritation or acute effects in some individuals.

2. Special Precautions:
AVIOD INHALATION OF COMBUSTION PRODUCTS.

Hazard Rating	NFPA	HMIS
Health	2	0
Flammability	1	1
Reactivity	0	0

Nylon
Acute Overexposure Effects:
Caprolactam vapor may be released during processing. Dusts generated from mechanical processing may cause irritation to the eyes, skin or respiratory tract. The OSHA TWA and the ACGIH TLV for caprolactam vapor are 5 ppm.

Copper
Acute Overexposure:
Inhalation of fumes may cause irritation of the respiratory tract and metal fume fever with symptoms of fever, chills, nausea, chest tightness or metallic taste. Ingestion of metallic copper could be moderately irritating to the gastrointestinal tract.

Chronic Overexposure:
Long-term overexposure to dust or fume may cause skin irritation or discoloration of the skin and hair.

Affected Medical Conditions:
Persons with Wilson's Disease could be affected by copper exposure.

Crosslinked Polyethylene

POTENTIAL HEALTH EFFECTS

Routes of Exposure: Inhalation, Ingestion, Skin contact

Inhalation: Particulates, like other inert materials can be mechanically irritating.
Ingestion: May be harmful if swallowed.
Eyes: Particulates, like other inert materials can be mechanically irritating.
Skin: Experience shows no unusual dermatitis hazard from routine handling

Aluminum
Inhalation: Remove to fresh air; if condition continues, consult a physician.
Eyes: Flush thoroughly with running water to remove particulate; obtain medical attention.
Skin contact: Remove particles by washing thoroughly with soap and water. Seek medical attention if condition persists.
Ingestion: If significant amounts of metal are ingested, consult a physician.

Kraft Paper
Health Hazards (Acute and Chronic)
Acute: If product is cut, dust can result in eye irritation and nasal dryness or irritation.
Chronic: Rosin size can decompose to maleopimaric acid, a potential skin allergen. Not all Kraft paper covered by this MSDS contains rosin size.
Carcinogenicity: NTP: Not listed IARC: Not listed OSHA: No Prop. 65 No
Reproductive hazard: None found
Medical Conditions Generally Aggravated by Exposure: None known

Steel
Excessive inhalation of metallic fumes and dusts may result in irritation of eyes, nose and throat. High concentrations of fumes of iron-oxide, zinc, lead and manganese may result in metal fume fever. Metal Fume Fever is characterized by chills, fever, vomiting, irritation of throat, upset stomach, and body aches and siderosis.

Section 3 – Composition/Information on Ingredients

Polyvinyl Chloride Compounds
Compounded PVC is an inert material in its normal usage. All components are encapsulated in
the PVC matrix. Typical blending compositions are listed below:

Polyvinyl Chloride Resin	45 to 65% Polymer and Copolymer Resins
Inert Fillers	0 to 35% CaCO3, Clay, Hydrotalcite
Stabilizer	1 to 8% Organometallic Compounds of Zinc, Calcium
Plasticizer	10 to 40% High Molecular Weight Esters
Flame Retardant	0 to 3% Antimony Oxide

Section 4 First-aid Measures

Polyvinyl Chloride Compounds

Inhalation: Remove from exposure to fresh air; place under the care of a physician.
Ingestion: If swallowed, call a physician immediately. ONLY induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
Skin or Eyes: Flush with plenty of water for at least 15 to 30 minutes. Get medical attention immediately. Call a physician.

Nylon

Skin: Wash affected area with soap and water. Remove and launder contaminated clothing before reuse.
Eyes: Rinse eyes with running water for 15 minutes.
Inhalation: Move to fresh air. Seek Medical attention if symptoms appear more than casual.

Copper

Inhalation: Remove from exposure to fresh air; place under the care of a physician.
Ingestion: If swallowed, call a physician immediately. ONLY induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
Skin or Eyes: Flush with plenty of water for at least 15 to 30 minutes. Get medical attention immediately. Call a physician.

Crosslinked Polyethylene

Inhalation: Remove from exposure to fresh air; place under the care of a physician.
Ingestion: If swallowed, call a physician immediately. ONLY induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
Skin or Eyes: Flush with plenty of water for at least 15 to 30 minutes. Get medical attention immediately. Call a physician.

Aluminum

Inhalation: Remove to fresh air; if condition continues, consult a physician.
Eyes: Flush thoroughly with running water to remove particulate; obtain medical attention.
Skin contact: Remove particles by washing thoroughly with soap and water. Seek medical attention if condition persists.
Ingestion: If significant amounts of metal are ingested, consult a physician.

Kraft Paper

Route(s) of Entry: Inhalation

Signs and Symptoms of Exposure: Eye contact with dust can result in irritation, reddening and watering of eyes. Inhalation can result in coughing, wheezing, or sneezing. Dryness and irritation of nasal passages could result.

Steel
Excessive inhalation of metallic fumes and dusts may result in irritation of eyes, nose and throat. High concentrations of fumes of iron-oxide, zinc, lead and manganese may result in metal fume fever. Metal Fume Fever is characterized by chills, fever, vomiting, irritation of throat, upset stomach, and body aches and siderosis.

Section 5 – Fire-Fighting Measures

Polyvinyl Chloride Compounds
1. Extinguishing media: Water spray, CO2 or dry chemical fire extinguisher.
2. Special Fire Fighting Procedures: When fighting fires in confined spaces, self-contained breathing apparatus should be worn.
3. Unusual Fire and Explosion Hazard: PVC evolves hydrogen chloride, carbon monoxide, and other toxic gases when burned. Exposure to combustion products may be fatal and should be avoided.

Nylon
Flash point - 400° Centigrade
Fire extinguishing media: Water fog, foam, CO_2 or dry chemical extinguisher
Fire personnel should wear fire protective gear and self-contained breathing apparatus

Crosslinked Polyethylene
Flash point - 650° Centigrade
Extinguishing media: Water spray, CO_2 or dry chemical fire extinguisher
Dense smoke emitted when burned without sufficient oxygen. Possible dust explosion if fines accumulate.
Fire personnel should wear standard firefighting attire.

Aluminum
Halogen acids and sodium hydroxide in contact with aluminum may generate explosive mixtures of hydrogen. Fines will form explosive mixtures in the air and in contact with bromides, iodates or ammonium nitrates. Strong oxidizers cause violent reactions with considerable heat generation. Burning aluminum may generate carbon monoxide, carbon dioxide and ozone nitrogen oxides.

Kraft Paper
Flammable Limits: auto ignition temperature 400-500°F LEL: 40 mg/m^3
Extinguishing Media: Water, CO_2, or Sand
Special Fire-fighting Procedures: Use water to wet down paper dust to reduce the likelihood of ignition or dispersion of dust into air.

Unusual Fire and Explosion Hazards: Paper dust is a strong to severe explosion hazard if a dust "cloud" contacts an ignition source.

Steel
This material is not flammable.

Section 6 – Accidental Release Measures

Polyvinyl Chloride Compounds
In case of spill, sweep, scoop, or vacuum and remove. Dispose of material in accordance with local, state, and federal regulations. Evaluation of the product may be required by the end user at the time of disposal, since the product uses, transformations, and mixtures may affect disposal requirements.

Nylon
This material is not regulated by RCRA or CERCLA. Incinerate or bury in a licensed facility. Do not discharge into waterways or sewer systems without proper authority.

Copper
Acid solutions promote mobility and solubility of copper. Any method that keeps dust to a minimum is acceptable, do not use compressed air for cleaning.
Waste Disposal: If hazardous under 40 CFR 261, subparts B and C, material must be treated or disposed in a facility meeting the requirements of 40 CFR 264 or 265. If nonhazardous,
material should be disposed if in a facility meeting requirements of 40 CFR
257. If discarded in an unaltered form, material should be tested to determine if it must be classified as a hazardous waste for disposal purposes.

Crosslinked Polyethylene
Dispose of in accordance with local, state or federal regulations.

Kraft paper
Recycling is the recommended means of disposal.

Steel
Prevent waste from contaminating surrounding environment, scrap steel should be recycled. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, state, and local regulations.

Section 7 –Storage and Handling

General storage procedures acceptable. Keep away from heat or flame.

Section 8 – Exposure Controls/Personal Protection

Polyvinyl Chloride Compounds

1. Exposure Limits

Nuisance Dust:	OSHA PEL of 15 mg/m3 TWA* for 8 hours ACGIH TLV of 10mb/m3 TWA* for 8 hours
Vinyl Chloride:	OSHA PEL of 1.0ppm TWA* for 8 hours 5.0 ppm for 15 minutes TWA* ACGIH TLV of 5.0 ppm for 8 hours

*TWA = Time Weighted Average

2. Ventilation Recommendations:
General ventilation for thermal processing andnuisance dust control.

3. Specific personal Protective Equipment:
Respiratory Protection: If dust is produced during handling, an approved particulate filter respirator should be used. Organic vapor respirators should be worn if ventilation is inadequate to control vapors to below established exposure limitations.
Eyes: Safety glasses with side shields or goggles.
Skin: Gloves recommended when handling hot or molten plastic; other clothing and equipment as necessary.

Nylon

Gloves and apron to prevent contact during processing. When processing vapors are not adequately controlled, wear a NIOSH/MSHA approved organic vapor cartridge respirator. For excessive dust, wear a NIOSH/MSHA approved dust respirator. Use local exhaust to control the accumulation of dust or vapor during processing.

Copper

Local exhaust ventilation is recommended for dust and/or fume generating operations. Avoid inhalation or ingestion by practicing good housekeeping and personal hygiene procedures. Where airborne exposures may exceed OSHA/ACGIH permissible air concentrations, the minimum respiratory protection recommended is negative pressure air purifying respirator with cartridges that are NIOSH/MSHA approved against dust, fumes and mists having a TWA not less than 0.05 mg/cu m. Protective clothing is recommended for jobs with heavy dust exposure to prevent skin irritation. Contaminated clothing should be removed before leaving the plant premises.

Crosslinked Polyethylene
An approved respirator may be needed in areas with a high accumulation of fines.

Aluminum
Appropriate dust/mist/fume respirator should be used to avoid excessive inhalation of particulates. Safety glasses should be worn when cutting and glove worn when handling.

Kraft Paper
Wear gloves to avoid skin contact if allergic to maleopimaric acid. Rosin sizing used in kraft paper decomposes to maleopimaric acid. A dust mask or goggles may be needed in dusty conditions.

Steel
No inhalation exposures unless performing welding, cutting, or grinding this product. If performing welding, cutting or grinding then:
Ventilation: Use enough ventilation and/or local exhaust to keep fumes and gasses from your breathing zone and below all published exposure limits. Proper use of an appropriate respirator may be necessary when welding in a confined space, or if ventilation is inadequate.
Eye protection: Always wear safety glasses when sawing, brazing, grinding, or machining. Wear welding helmet or use face shield with filter lens, Shade No. 10 or darker when welding.
Protective clothing: Wear hand, head and body protection to prevent injury from cuts, scrapes, and wire pokes.

Section 9 – Physical and Chemical Properties

Polyvinyl Chloride Compounds
Specific Gravity: 1.1 to 1.6
Melting Point: 350° to 400° Fahrenheit

Nylon
Specific Gravity: 1.05 to 1.25
Decomposition Temperature: 300° Centigrade

Copper
Specific Gravity: 8.96
Melting Point: 1083° Centigrade

Crosslinked Polyethylene
Specific gravity: 1.01-1.35
Decomposition Temperature: 343° Centigrade

Aluminum
Specific Gravity: 2.5 to 2.9
Melting Point: 900° to 1200° Fahrenheit

Kraft Paper
Specific Gravity: Approximately 1
Auto ignition temperature: 400-500° Fahrenheit

Steel
Specific Gravity: 7.8
Melting point: 2700° Fahrenheit

Section 10 – Stability and Reactivity

Polyvinyl Chloride Compounds
Thermal degradation of this material produces Hydrogen Chloride, Carbon Monoxide and other common hazardous byproducts of combustion.

Nylon
Incompatible with strong oxidizing agents, acids and bases. Avoid prolonged exposure to extreme heat, dust accumulation and moisture during storage. Overheating may cause decomposition and the release of Hydrogen Cyanide, CO and Ammonia.

Copper
Contact with >52% hydrogen peroxide may cause a violent reaction, contact with acetylene may form unstable acetylides, copper foil burns spontaneously in gaseous chlorines and finely divided copper with finely divided halogenates may explode with heat, percussion or light friction. Hazardous oxide fines may evolve at temperatures above the melting point.

Crosslinked Polyethylene
Avoid contact with strong oxidizing agents. Decomposition generates Carbon dioxide, carbon monoxide, hydrogen bromide, methanol, oxides of antimony and trace volatile organics.

Aluminum
Halogen acids and sodium hydroxide in contact with aluminum may generate explosive mixtures of hydrogen. Fines will form explosive mixtures in the air and in contact with bromates, iodates or ammonium nitrate. Strong oxidizers cause violent reaction with considerable heat generation.

Kraft Paper
Kraft paper is chemically stable. Hazardous polymerization will not occur. Avoid contact with oxidizing agents and drying oils. Burning of paper fiber produces irritating and toxic fumes and gases including CO_2, aldehydes and inorganic acids.

Steel
Avoid contact with calcium hypochlorite, mineral acids, and oxidizing agents which may generate hydrogen gas. Steel wire will decompose to produce Iron Oxide (Rust). Welders are exposed to a range of fumes and gases. Fume particles contain a wide variety of oxides and salts of metals and other compounds, which are produced mainly from electrodes, filler wire and flux materials. Ozone is formed during most electric arc welding, and exposures can be high in comparison to the exposure limit. Oxides of nitrogen are found during manual metal arc welding and particularly during gas welding.

Section 11 – Toxicological Information

Polyvinyl Chloride Compounds
Toxicity Data: There is limited toxicity information available for this product.
Carcinogenicity: This product is not considered carcinogenic by OSHA, NTP, or IARC.
Reproductive Effects: None reported
Mutagenicity: Has not been reported
Teratogenicity: Has not been reported

Nylon
Acute oral toxicity: LD50 is 1475 – 1876 mg/kg for rats
Acute inhalation toxicity estimate: > 10 mg/L dust/mist for a four-hour exposure time
Acute dermal toxicity estimate: >5000 mg/kg

Copper
Acute oral toxicity: LD50 is 3.5 mg/kg for mouse
Inhalation toxicity: Scientific evidence does not indicate that exposure to copper dust or fume causes upper respiratory irritation in a manner that is different than irritation following high-dose exposure to other non-specific irritants
Reproduction: Female rats 22 weeks prior to mating, oral route, at 152 mg/kg effects included stunted fetus and central nervous system.
Genetic effects: None noted
Carcinogenic: None noted

Crosslinked Polyethylene

This product contains the following components which in their pure form have the following characteristics:

CAS-No.	Chemical Name	Effect	Target Organ
32687-78-8	Benzenepropanoic acid	Chronic effects	Liver
1163-19-5	Decabromodiphenyl oxide	Systemic effects	Liver, Kidney
1309-64-4	Antimony trioxide	Systemic effects	Eyes, Respiratory system

LC50 / LD50 Data

CAS-No.	Chemical Name	Route	Value	Species
32687-78-8	Benzenepropanoic acid	Oral LD50	>7000 mg/kg	Rat
1163-19-5	Decabromodiphenyl oxide	Oral LD50	> 5 mg/kg	Rat
1309-64-4	Antimony trioxide	Oral LD50	> 34600 mg/kg	Rat

Carcinogenicity Data

CAS-No.	Chemical Name	OSHA	IARC	NTP
1309-64-4	Antimony trioxide	No	2B	no

Aluminum
Acute inhalation toxicity: > 2.3 mg/L in rats
Acute oral toxicity: > 2000 mg/kg in rats

Kraft Paper
None of the ingredients present in this product, at concentrations equal to or greater than 0.1%, have been determined to be carcinogenic by IARC, NTP or OSHA

Steel
Inhalation: Prolonged inhalation may be harmful
Skin contact: May cause an allergic skin reaction
Eye contact: Direct contact with eyes may cause temporary irritation
Ingestion: Expected to be a low ingestion hazard

Sections 12-15 Omitted – Non-mandatory

Section 16 – Other Information

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We appreciate your inquiry and interest in Encore. Please call if you need additional information.

Sincerely,

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