



SAFETY DATA SHEET

Issue Date 25-Oct-2018

Revision Date 09-Dec-2020

Version 4

ES-400

E-Stain Bronze ES-400

1. IDENTIFICATION

Product identifier

Product Name E-Stain Bronze ES-400

Other means of identification

Product Code ES-400

Recommended use of the chemical and restrictions on use

Recommended Use Restricted to professional users.

Uses advised against Consumer use

Details of the supplier of the safety data sheet

Supplier Address
Solomon Colors, Inc.
4050 Color Plant Road
Springfield, IL
62702

Manufacturer Address
Solomon Colors, Inc.
4050 Color Plant Road
Springfield, IL
62702

24 Hour Emergency Phone Number 800-373-7542 Use only in the event of an emergency involving a spill, leak, fire, exposure, or accident involving chemical

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This product is classified as hazardous according to the criteria contained in the Hazard Communication Standard 29 CFR 1910.1200 (known as HCS 2012) and the Hazardous Products Regulations SOR/2015-17 (known as WHMIS 2015).

Acute toxicity - Oral	Category 4.
Serious eye damage/eye irritation	Category 1
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive toxicity	Category 1B
Specific target organ toxicity (repeated exposure)	Category 2

Label elements

Emergency Overview

Danger

Hazard statements

Harmful if swallowed
Causes serious eye damage

May cause allergy or asthma symptoms or breathing difficulties if inhaled
 May cause an allergic skin reaction
 May cause genetic defects
 May cause cancer
 May damage fertility or the unborn child
 May cause damage to organs through prolonged or repeated exposure



Appearance Cloudy liquid

Physical state Liquid

Odor Slight

Precautionary Statements - Prevention

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Wear protective gloves/protective clothing/eye protection/face protection
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 In case of inadequate ventilation wear respiratory protection
 Contaminated work clothing must not be allowed out of the workplace
 Do not breathe dust/fume/gas/mist/vapors/spray

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention
 Specific treatment see section 4 of the SDS.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 Immediately call a POISON CENTER or doctor
 IF ON SKIN: Wash with plenty of water and soap
 If skin irritation or rash occurs: Get medical advice/attention
 Wash contaminated clothing before reuse
 IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing
 If experiencing respiratory symptoms: Call a POISON CENTER or doctor
 IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
 Rinse mouth

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Other Information

• Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Weight-%	Trade Secret
Proprietary Acid Solution	Proprietary	10-15	*
Ferrous Sulfate	7720-78-7	5-10	*
Copper Sulfate Pentahydrate	7758-99-8	1-5	*
Copper Chloride	7447-39-4	1-5	*
Manganese Chloride	7773-01-5	1-5	*
Sodium dichromate	10588-01-9	< 1	*

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

General advice	In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Skin Contact	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Ingestion	Clean mouth with water and drink afterwards plenty of water. If swallowed, call a poison control center or physician immediately.

Most important symptoms and effects, both acute and delayed

Symptoms	May be harmful if swallowed. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. May cause genetic defects. May cause cancer. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.
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Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

Contact with metals may evolve flammable hydrogen gas. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Runoff may pollute waterways.

Hazardous combustion products Thermal decomposition can lead to the release of irritating gases and vapors. Carbon monoxide. Carbon dioxide (CO₂). Hydrogen chloride. Sulfur Oxides. Copper Oxides. Nitrogen oxides (NO_x).

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Keep people away from and upwind of spill/leak. Ventilate affected area. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if you can do it without risk. Avoid contact with skin, eyes and inhalation of vapors.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not allow into any sewer, on the ground or into any body of water. See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Dike far ahead of liquid spill for later disposal. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13).

Methods for cleaning up Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Wash contaminated clothing before reuse. Avoid breathing vapors or mists. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place. Keep/store only in original container. Keep in properly labeled containers. Keep from freezing.

Incompatible materials Strong oxidizing agents. Metals. Magnesium, Phosphates, Acetylene, Hydrazine, and Zirconium. This material may be extremely hazardous in contact with chlorates and nitrates. Contact with hypochlorites (eg. Chlorine bleach, sulfides or cyanides) will liberate toxic gases. Alkali.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Ferrous Sulfate 7720-78-7	TWA: 1 mg/m ³ Fe	(vacated) TWA: 1 mg/m ³ Fe	TWA: 1 mg/m ³ Fe
Copper Sulfate Pentahydrate 7758-99-8	TWA: 1 mg/m ³ Cu dust and mist	-	IDLH: 100 mg/m ³ Cu dust and mist TWA: 1 mg/m ³ Cu dust and mist
Copper Chloride 7447-39-4	TWA: 1 mg/m ³ Cu dust and mist	-	IDLH: 100 mg/m ³ Cu dust and mist TWA: 1 mg/m ³ Cu dust and mist
Manganese Chloride 7773-01-5	TWA: 0.02 mg/m ³ Mn respirable particulate matter TWA: 0.1 mg/m ³ Mn inhalable particulate matter	(vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ Mn	IDLH: 500 mg/m ³ Mn TWA: 1 mg/m ³ Mn STEL: 3 mg/m ³ Mn
Sodium dichromate 10588-01-9	STEL: 0.0005 mg/m ³ Cr(VI) inhalable particulate matter TWA: 0.0002 mg/m ³ Cr(VI) inhalable particulate matter S*	TWA: 5 µg/m ³ (vacated) Ceiling: 0.1 mg/m ³ Ceiling: 0.1 mg/m ³ CrO ₃ applies to any operations or sectors for which the Hexavalent Chromium standard [29 CFR 1910.1026] is stayed or is otherwise not in effect	IDLH: 15 mg/m ³ Cr(VI) TWA: 0.0002 mg/m ³ Cr

Legend

*S

Skin - Skin Absorber

NIOSH IDLH Immediately Dangerous to Life or Health

Other Information

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Controls

Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection

Tight sealing safety goggles. Face protection shield.

Skin and body protection

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations

Wash face, hands and any exposed skin thoroughly after handling. Use personal protective equipment as required. Avoid prolonged or repeated contact with skin. Avoid breathing (dust, vapor, mist, gas). When using do not eat, drink or smoke. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state

Liquid

Appearance

Cloudy liquid

Color

Green

Odor

Slight

Odor threshold

No information available

Property

Values

Remarks • Method

pH

No information available

Melting point/freezing point	No information available
Boiling point / boiling range	No information available
Flash point	No information available
Evaporation rate	No information available
Flammability (solid, gas)	No information available
Flammability Limit in Air	
Upper flammability limit:	No information available
Lower flammability limit:	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific Gravity	No information available
Water solubility	No information available
Solubility in other solvents	No information available
Partition coefficient	No information available
Autoignition temperature	No information available
Decomposition temperature	No information available
Kinematic viscosity	No information available
Dynamic viscosity	No information available
Explosive properties	No information available
Oxidizing properties	No information available

Other Information

Softening point	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Density	9.4 lbs/gal
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

Extremes of temperature and direct sunlight.

Incompatible materials

Strong oxidizing agents. Metals. Magnesium, Phosphates, Acetylene, Hydrazine, and Zirconium. This material may be extremely hazardous in contact with chlorates and nitrates. Contact with hypochlorites (eg. Chlorine bleach, sulfides or cyanides) will liberate toxic gases. Alkali.

Hazardous Decomposition Products

Thermal decomposition can lead to release of irritating and toxic gases and vapors. Hydrogen chloride. Sulfur oxides. Copper Oxides. Nitrogen oxides (NOx).

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information	The product has not been tested The product is classified based on the mixture components.
Inhalation	May cause sensitization by inhalation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Eye contact	Risk of serious damage to eyes. Avoid contact with eyes.
Skin Contact	Irritating to skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
Ingestion	May be harmful if swallowed. Not for human consumption. Do not ingest. If swallowed then seek immediate medical assistance.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Ferrous Sulfate 7720-78-7	= 319 mg/kg (Rat)	= 155 mg/kg (Rat)	-
Copper Sulfate Pentahydrate 7758-99-8	= 300 mg/kg (Rat) = 960 mg/kg (Rat)	> 8 g/kg (Rabbit)	-
Copper Chloride 7447-39-4	= 584 mg/kg (Rat)	-	-
Manganese Chloride 7773-01-5	= 250 mg/kg (Rat)	-	-
Sodium dichromate 10588-01-9	= 46 mg/kg (Rat)	= 960 mg/kg (Rabbit)	= 200 mg/m ³ (Rat) 4 h

Information on toxicological effects

Symptoms	May be harmful if swallowed. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. May cause genetic defects. May cause cancer. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation	Not classified. (Based on mixture components.).
Serious eye damage/eye irritation	Eye Damage Cat 1. (based on mixture components).
Sensitization	Skin Sensitizer Cat 1. May cause an allergic skin reaction.
Germ cell mutagenicity	Contains a known or suspected mutagen.
Carcinogenicity	Category 1. May cause cancer. The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Sodium dichromate 10588-01-9	A1	Group 1	Known	X

ACGIH (American Conference of Governmental Industrial Hygienists)

A1 - *Known Human Carcinogen*

IARC (International Agency for Research on Cancer)

Group 1 - *Carcinogenic to Humans*

NTP (National Toxicology Program)

Known - *Known Carcinogen*

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - *Present*

Reproductive toxicity	Category 1B. Contains a known or suspected reproductive toxin.
STOT - single exposure	Not classified. (Based on mixture components).
STOT - repeated exposure	Category 2. (Liver, Kidney, Blood System).
Aspiration hazard	Not classified. (Based on mixture components).

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral) 1754.8 mg/kg

ATEmix (dermal) 2071.1 mg/kg

ATEmix (inhalation-gas) > 20,000 ppm
 ATEmix (inhalation-dust/mist) 12.525 mg/l
 ATEmix (inhalation-vapor) > 20 mg/l

12. ECOLOGICAL INFORMATION

This product contains a chemical which is listed as a severe marine pollutant according to DOT.

Ecotoxicity

Very toxic to aquatic life with long lasting effects
 0% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging Do not reuse container.

Chemical Name	California Hazardous Waste Status
Copper Sulfate Pentahydrate 7758-99-8	Toxic
Copper Chloride 7447-39-4	Toxic
Manganese Chloride 7773-01-5	Toxic
Sodium dichromate 10588-01-9	Toxic Corrosive Ignitable

14. TRANSPORT INFORMATION

DOT

Marine pollutant

Not regulated (If shipped in NON BULK packaging by ground transport) Exempt under DOT 49 CFR 173.154 (d). This material is corrosive to aluminum only.

This product contains a chemical which is listed as a severe marine pollutant according to DOT.

ICAO (air)

UN/ID no.

3265

Proper shipping name

CORROSIVE LIQUID, ACIDIC, ORGANIC N.O.S. (UREA HYDROCHLORIDE)

Hazard Class

8

Packing Group

III

IATA

UN/ID no.

3265

Proper shipping name

CORROSIVE LIQUID, ACIDIC, ORGANIC N.O.S. (UREA HYDROCHLORIDE)

Hazard Class

8

Packing Group

III

IMDG

UN/ID no.

3265

Proper shipping name

CORROSIVE LIQUID, ACIDIC, ORGANIC N.O.S. (UREA HYDROCHLORIDE)

Hazard Class

8

Packing Group

III

Marine pollutant

This product contains a chemical which is listed as a marine pollutant according to IMDG/IMO

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Does not comply
PICCS	Complies
AICS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
 EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
 ENCS - Japan Existing and New Chemical Substances
 IECSC - China Inventory of Existing Chemical Substances
 KECL - Korean Existing and Evaluated Chemical Substances
 PICCS - Philippines Inventory of Chemicals and Chemical Substances
 AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Copper Chloride - 7447-39-4	1.0
Copper Sulfate Pentahydrate - 7758-99-8	1.0
Manganese Chloride - 7773-01-5	1.0
Sodium dichromate - 10588-01-9	0.1

SARA 311/312 Hazard Categories

See section 2 for more information

CWA (Clean Water Act)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Ferrous Sulfate 7720-78-7	1000 lb	-	-	X
Copper Sulfate Pentahydrate 7758-99-8	-	X	-	-
Copper Chloride 7447-39-4	10 lb	X	-	X
Sodium dichromate 10588-01-9	10 lb	X	-	X

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Ferrous Sulfate 7720-78-7	1000 lb	-	RQ 1000 lb final RQ RQ 454 kg final RQ
Copper Chloride 7447-39-4	10 lb	-	RQ 10 lb final RQ RQ 4.54 kg final RQ
Sodium dichromate 10588-01-9	10 lb	-	RQ 10 lb final RQ RQ 4.54 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Hexavalent chromium - 18540-29-9	Carcinogen Developmental Female Reproductive Male Reproductive

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Water 7732-18-5	-	-	X
Ferrous Sulfate 7720-78-7	X	X	X
Copper Chloride 7447-39-4	X	X	X
Copper Sulfate Pentahydrate 7758-99-8	X	-	X
Manganese Chloride 7773-01-5	X	-	X
Sodium dichromate 10588-01-9	X	X	X

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

NFPA	Health hazards 3	Flammability 1	Reactivity 0	Physical and Chemical Properties -
HMIS	Health hazards 3	Flammability 1	Physical hazards 0	Personal protection X

Prepared By Solomon Colors - Lab Technical Services
Issue Date 25-Oct-2018
Revision Date 09-Dec-2020
Revision Note
 Periodic Review

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet