

SAFETY DATA SHEET

MAY BE USED TO COMPLY WITH OSHA'S HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200 AND SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) OF 1986 PUBLIC LAW 99-499. STANDARD SHOULD BE CONSULTED FOR SPECIFIC REQUIREMENTS.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

NAME OF PRODUCT: Eutectic 4550
SYNONYMS: Eutectic 4550 Powder
PRODUCT CODES: 4550-0.5K

**MANUFACTURER/
SUPPLIER:** EUTECTIC CORPORATION
N94 W14355 GARWIN MACE DRIVE
MENOMONEE FALLS, WI 53051 USA

TELEPHONE NUMBER (262) 532-4677
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EUTECTIC WEBSITE: www.eutectic.com

PRODUCT CLASSIFICATION: Thermal Spray Powder

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Odorless powder mix. Chemically stable and inert. Does not pose a fire hazard. **Non-Flammable:** Flames used for powder spraying can ignite combustibles. Refer to American National Standard Z49.1 for fire prevention during welding.

HEALTH DANGER: Toxic. Danger of serious damage to health by prolonged exposure through inhalation.

ROUTES OF ENTRY:

Primary route of entry is the respiratory system. Other possible routes are eyes, ingestion, and/or skin contact.

POTENTIAL HEALTH EFFECTS:

EYES: Inert foreign body hazard only.
SKIN: Prolonged contact may result in rashes/irritations due to drying of the skin and/or mechanical abrasion related to skin-to-clothing contact or skin-to-skin contact. May cause allergic skin reaction.
INGESTION: No adverse health effects anticipated by this route during proper industrial handling.
INHALATION: Exposure to dust may aggravate pre-existing respiratory conditions.

ACUTE HEALTH HAZARDS: see Section 11

CHRONIC HEALTH HAZARDS: see Section 11

WARNING: This product contains or produces a chemical known to the State of California to cause birth defects (or other reproductive harm) and cancer. (California Health & Safety Code 25249.5 et seq.).

WARNING: avoid breathing welding fumes and gases; they may dangerous to your health. Always use adequate ventilation and use appropriate personal protection equipment.

CARCINOGENICITY WHEN PRESENT

NICKEL - is listed as being carcinogenic to humans on **IARC** and **NTP** lists, and is listed by **NIOSH** as being a potential occupational carcinogen (with no further categorization).

CHROMIUM - Chromium VI is listed as being carcinogenic to humans on **IARC** and **NTP** lists, and is listed by **NIOSH** as being a potential occupational carcinogen (with no further categorization).

WELDING FUMES (not otherwise specified) are considered to be carcinogenic defined with no further categorization by **NIOSH** and **IARC**.

Package Labeling:

Additional advice on labeling

Although this product does not require a hazard warning label in all countries, we recommend that the safety advice should be observed:

Pictograms: GHS07- GHS08



Contains Nickel

R-Phrases:

Limited evidence of carcinogenic effect

May cause sensitization by skin contact

Toxic: danger of serious damage to health by prolonged exposure through inhalation

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Brazing/welding fumes and vapors may cause metal fume fever (headache, dizziness, dryness, cough, nausea, and fever) and these symptoms may appear 4-12 hours after exposure

GHS:

Hazard categories:

Respiratory/skin sensitization: Skin Sens: 1

Carcinogenicity: Carc. 2

Specific target organ toxicity – repeated exposure: STOT RE 1

Hazardous to the aquatic environment: Aquatic Chronic 3

Hazard Statements:

H317 May cause an allergic skin reaction

H351 Suspected of causing cancer

H372 Causes damage to organs through prolonged or repeated exposure

H412 Harmful to aquatic life with long lasting effects

Precautionary Statements:

P285 In case of inadequate ventilation wear respiratory protection

P314 Get medical advice if you do not feel well

P280 Wear protective gloves/protective clothing/eye protection/face protection

P202 Do not handle until all safety precautions have been read and understood

P260 Do not breathe dust/fume/gas/mist/vapors/spray

P501 Dispose of contents/container to waste treatment facility in accordance with local and national regulations

SECTION 2 NOTES: Before using this product, contact your doctor to determine if exposure to product or use of this product will aggravate your medical conditions.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

IMPORTANT: This section covers the materials from which these products are manufactured. Any of the chemicals or compounds subject to reporting under Title III, in Section 313, of the Superfund Amendments and Reauthorization Act (SARA) are marked by the symbol #.

Exposure Limit (mg/m³)

INGREDIENTS	CAS NUMBER	OSHA PEL	ACGIH-TLV	Percent Ingredients by Weight
Tungsten Carbide	12070-12-1	Not Listed	Not Listed	40 – 70
Nickel #	7440-02-0	1	0.2	30 – 60
Chromium #	7440-47-3	1	0.5	3 – 7
Iron	7439-89-6	10 (as Fe)	5 (as Fe)	1 – 5

CAS / EINECS NUMBER / HAZARD CLASSIFICATION FOR ABOVE INGREDIENTS IF PRESENT

INGREDIENTS	CAS NUMBER	EINECS NUMBER	Hazard Classification per ECD 67/548/EEC
Boron	7440-42-8	231-151-2	No
Carbon	7440-44-0	231-153-3	No
Chromium #	7440-47-3	231-157-5	No
Cobalt #	7440-48-4	231-158-0	R42/43 - R53
Columbium (Niobium)	7440-03-1	231-113-5	No
Copper #	7440-50-8	231-159-6	No
Graphite	7782-42-5	231-955-3	No
Iron	7439-89-6	231-096-4	No
Manganese #	7439-96-5	231-105-1	No
Molybdenum	7439-98-7	231-107-2	No
Nickel #	7440-02-0	231-111-4	Carc. Cat. 3; R40 - T; R48/23 - R43 – R52/53
Titanium	7440-32-6	231-142-3	No
Tungsten	7440-33-7	231-143-9	No
Tungsten Carbide	12070-12-1	235-123-0	No
Vanadium #	7440-62-2	231-171-1	No

SECTION 3 NOTES: Exposure limits are subject to change. Contact ACGIH and OSHA for current values. See Section 16 for European Council Directive 67/548/EEC R-phrases and S-phrases if applicable.

SECTION 4: FIRST AID MEASURES

EMERGENCY & FIRST AID PROCEDURES: Call for medical aid. Employ first aid techniques recommended by The American Red Cross.

EYES: Flush with a large amount of fresh water for at least 15 minutes. Get medical attention.

SKIN: Wash affected area with soap and water to remove dust or particles. If rash develops, see a physician. Get medical attention for irritations that persist.

INGESTION: Seek medical attention.

INHALATION: Remove to fresh air. If breathing is difficult administer oxygen. If breathing has stopped, begin artificial respiration and obtain medical assistance immediately.

GENERAL: Move to fresh air and call for medical aid.

SECTION 4 NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: See Section 3 for ingredients.

SECTION 5: FIRE FIGHTING MEASURES

Flammable: No

NFPA HAZARD CLASSIFICATION:

Health: 2 Flammability: 0 Reactivity: 0 Other:

HMIS HAZARD CLASSIFICATION:

Health: 2 Flammability: 0 Reactivity: 0 Protection:

EXTINGUISHING MEDIA: In case of fire, use approved class D fire extinguisher or smoother with dry sand, dry clay, or dry ground limestone. Do not use water, dry chemical, CO₂ or halon.

SPECIAL FIRE FIGHTING PROCEDURES: In case of fire wear suitable respiratory equipment with positive air supply.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HAZARDOUS DECOMPOSITION PRODUCTS: Not applicable

SECTION 5 NOTES: None

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Avoid generating dust. Powder may be vacuumed up or swept up and placed in a container for proper disposal.

PERSONAL PRECAUTIONS: If dust is present, use particle filter dust mask. Wear personal protective clothing and ensure adequate ventilation.

ENVIRONMENTAL PRECAUTIONS: Do not discharge powder into drains or bodies of water.

SECTION 6 NOTES: None

SECTION 7: HANDLING AND STORAGE

HANDLING: Avoid exposure to dust and do not ingest. Avoid contact with skin, eyes, and clothing. Some individuals can develop an allergic reaction to certain materials. See American National Standard Z49.1, Safety in Welding and Cutting, published by the "American Welding Society," 550 N.W. LeJeune Road, Miami, FL 33126 and OSHA Publication 2206 (29CFR 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954

STORAGE: Keep material sealed and dry before use and store in a cool location and in the original labeled container. After using, keep remaining product sealed and dry and keep powder in original labeled container and store in a cool and dry location.

SECTION 7 NOTES: None

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION



Read and understand the manufacturer's instructions and precautionary label on this product.

Always use adequate ventilation and wear appropriate personal protection. Do not breathe welding fumes and gases; they are dangerous to your health.

ENGINEERING CONTROLS: Proper ventilation must be maintained.

VENTILATION: Use enough ventilation, local exhaust at the spray area, or both, to keep the fumes and gases below the TLV's in the workers breathing and the general area. Train the worker to keep his head out of the fumes. Monitor fume levels and do not exceed permissible exposure limits or values.

RESPIRATORY PROTECTION: Use respirable fume respirator or air supplied respirator when spraying in a confined space or where local exhaust or ventilation does not keep exposure below the TLV's.

EYE PROTECTION: Wear safety glasses with side shields, face shield, and/or goggles to protect against airborne dust.

PROTECTIVE CLOTHING: Wear gloves when using or prolonged contact with skin or repeated contact with skin is likely. Wear hand and body protection to prevent injury. See ANSI Z49.1 for further information.

SKIN PROTECTION: Individuals having sensitive skin may find it beneficial to use a barrier cream or moisturizer when excessive or prolonged contact with skin is likely.

WORK HYGIENIC PRACTICES: Do not eat or consume beverages in the work area.

EXPOSURE GUIDELINES: Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits.

EFFECTS OF OVEREXPOSURE - Powder spraying may create one or more of the following health hazards:

FUMES AND GASES can be dangerous to your health.

PRIMARY ROUTES OF ENTRY are the respiratory system. Other possible routes are eyes, ingestion, and/or skin contact.

PREEXISTING respiratory or allergic conditions may be aggravated in some individuals (i.e. asthma, emphysema).

Powder spray fumes cannot be classified simply. The composition and quantity of both are dependent upon the metal being sprayed, the process, procedure, and the powder used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being sprayed (such as paint, plating, or galvanizing), the volume of the work area, the quality and the amount of ventilation, position of the worker's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the material is consumed, fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Fume and decomposition products, not the ingredients in the powder, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of materials in Section 3, plus those from the base metal and coating, etc., as noted above. These components are virtually always present as complex oxides and not as metals (Characterization of Arc Welding Fume: American Welding Society). Reasonably expected fume constituents of the fume could include: complex oxides of nickel, chromium and iron. The table below lists reasonably expected fumes that may be generated:

SUBSTANCE	CAS	Exposure Limit (mg/m ³)	
	NUMBER	OSHA PEL	ACGIH-TLV
Iron Oxide	1309-37-1	10 (as Fe)	5 (as Fe)
Chromium (VI)	not listed	0.005	0.05 (as Cr VI)
Nickel Oxide #	1313-99-1	1 (as Ni)	0.2 (as Ni)

Gaseous reaction products may include carbon monoxide and carbon dioxide. The fume limit for Cr VI (5 micrograms/m³) may be reached before the ACGIH recommended general welding fume limit of 5 mg/m³ is reached. Monitor fume levels and Cr VI level. Train workers about the hazards of Cr (VI). **Read and comply with the OSHA permissible exposure limits for hexavalent chromium (CrVI), Fed. Reg. 71 – 10099 (specifically 29 CFR 1910.1026, 29 CFR 1915.1026, and 29 CFR 1926.1126).** For CrVI, OSHA requires: "The employer shall perform initial monitoring to determine the 8-hour TWA exposure for each employee on the basis of a sufficient number of personal breathing zone air samples to accurately characterize full shift exposure on each shift, for each job classification, in each work area". Specialized equipment is required for monitoring Cr (VI) concentration in the workplace. OSHA Analytical Method Number ID-215 for area and breathing zone sampling and OSHA Analytical Method Number W4001 for wipe samples are listed on the OSHA website - www.osha.gov -as methods for measuring Cr(VI). This standard is complex and the employer should contact an occupational health professional for doing the Cr(VI) monitoring and all other fume monitoring. Also see AWS Publications AWS C2.1 "Recommended Safe Practices for Thermal Spraying" and AWS TSS, "Thermal Spraying, Practice, Theory and Application" for more information on thermal spraying.

SECTION 8 NOTES: In other countries the exposure limits listed above may be different and the appropriate country exposure limits should be used.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: grey powder. No odor. **pH:** not applicable **Flash Point:** not applicable **Boiling Point:** not applicable

SECTION 9 NOTES: None

SECTION 10: STABILITY AND REACTIVITY

GENERAL: This item is only intended for use in thermal spray applications.

STABILITY: Product is chemically stable and non-reactive.

HAZARDOUS POLYMERIZATION: Will not occur.

MATERIALS TO AVOID: Acids and bases.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Metallic oxides.

SECTION 10 NOTES: None

SECTION 11: TOXICOLOGICAL INFORMATION

Threshold Limit Value: The ACGIH recommended general limit for welding fume NOS (not otherwise specified) is 5 mg/m³. The ACGIH 1999 preface states: "The TLV-TWA should be used as guides in the control of health hazards and should not be used as firm lines between safe and dangerous concentrations." See Section 8 for specific fume constituents that may modify the TLV.

SHORT TERM (ACUTE) OVEREXPOSURE to spray powder fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. **IRON, IRON OXIDE** - Remove from overexposure and apply artificial respiration if needed. **CHROMIUM**- Inhalation of chromium can cause irritation of nasal membranes and skin. **NICKEL, NICKEL OXIDE** - May cause metallic taste, nausea, tightness in chest, fever, and allergic reactions.

LONG TERM (CHRONIC) OVEREXPOSURE is believed by some investigators to affect pulmonary functions. Target organs are eyes, skin, and respiratory system. **IRON, IRON OXIDE** - Long term overexposure to iron fumes can cause deposits of iron in the lungs (siderosis). Lungs will clear in time when exposure to iron and its compounds cease. **NICKEL, NICKEL OXIDE** - Long term overexposure to nickel products may cause lung fibrosis or pneumoconiosis. Overexposure to **HEXAVALENT CHROMIUM (CrVI)** is reported to cause lung cancer in humans.

SECTION 11 NOTES: See Section 2 for any carcinogenic effects.

SECTION 12: ECOLOGICAL INFORMATION

Contaminated Packaging: Empty containers should be taken for local recycling, recovery, or waste disposal. Powder may be recycled. Do not flush powder into surface water or sanitary sewers.

SECTION 12 NOTES: None

SECTION 13: DISPOSAL CONSIDERATION

WASTE DISPOSAL METHOD: Dispose of any powder and waste residues in accordance with EPA or local regulations. Where possible, recycling is the preferred method of disposal.

100207 **WASTES FROM THERMAL PROCESSES:** wastes from iron and steel industry; solid wastes from gas treatment containing dangerous substances. Classified as hazardous waste.

SECTION 13 NOTES: Review U.S. Federal Hazardous Waste Regulations §40 CFR261 to determine if this is hazardous in USA. Please be advised that state and local requirements, or other country requirements, for waste disposal may be more restrictive or otherwise different than U.S. Federal regulations.

SECTION 14: TRANSPORTATION INFORMATION

DOMESTIC TRANSPORT REGULATIONS (USA): DOT - not regulated.

DOMESTIC TRANSPORT REGULATIONS (CANADA): TDG - not regulated.

DOMESTIC TRANSPORT REGULATIONS (MEXICO): MEX - not regulated.

INTERNATIONAL TRANSPORT REGULATIONS:

ICAO – not regulated

IATA – not regulated

IMDG / IMO – not regulated

OTHER AGENCIES: No international regulations or restrictions are applicable.

SECTION 14 NOTES: Handle with care to avoid damaging the product. Keep product dry and in original labeled container.

SECTION 15: REGULATORY INFORMATION

Read and understand the manufacturer's Safety Data Sheet before handling or disposing of this product.

U.S. EPA TSCA (TOXIC SUBSTANCE CONTROL ACT): All constituents of these products are on the TSCA inventory list or are excluded from listing.

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to our Local Emergency Planning Committee.

EPCRA/SARA TITLE III 313 TOXIC CHEMICALS:

The following metallic components are listed as SARA 313 "TOXIC CHEMICALS" and are potentially subject to annual SARA 313 reporting. See Section 3 if the ingredient is present and for percent.

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>DISCLOSURE THRESHOLD</u>
Chromium & chromium compounds	7440-47-3	1.0 % de minimis concentration
Chromium VI	Not listed	0.1 % de minimis concentration
Barium compounds	Not listed	1.0 % de minimis concentration
Cobalt	7440-48-4	0.1 % de minimis concentration
Copper	7440-50-8	1.0 % de minimis concentration
Manganese	7439-96-5	1.0 % de minimis concentration
Nickel	7440-02-0	0.1 % de minimis concentration
Aluminum (fume or dust)	7429-90-5	1.0 % de minimis concentration
Silver	7440-22-4	1.0 % de minimis concentration

SECTION 16: OTHER INFORMATION

This Safety Data Sheet has been revised due to modifications to several paragraphs and/or new format.

Prepared by: Eutectic Corporation, USA

R-phrases
Nickel
 R40 : Limited evidence of a carcinogenic effect.
 R43 : May cause sensitization by skin contact.
 R48/23 : Toxic: danger of serious damage to health by prolonged exposure through inhalation.
 R52/53 Harmful to aquatic organisms - may cause long-term adverse effects in the aquatic environment.

S-phrases
Nickel
 S2: Keep out of the reach of children
 S36/37/39 : Wear suitable protective clothing, gloves and eye/face protection
 S45 : In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
 S61: Avoid release to the environment. Refer to special instructions/Safety data sheet.

SUPPLEMENTAL INFORMATION – DEFINITIONS:

IARC: International Agency for the Research on Cancer
NIOSH: National Institute for Occupational Safety and Health
OSHA: U.S. Occupational Safety and Health Administration
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service Registry Number
EINECS: European Inventory of Existing Chemical Substances

PEL: Permissible Exposure Limit
NTP: National Toxicology Program
TLV: Threshold Limit Value
ECD: European Council Directive
GHS: Globally Harmonized System

The information in this SDS was obtained from sources we believe are reliable. However, this information is provided without any representation or warranty, expressed or implied, regarding accuracy or correctness. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons we do not assume responsibility and expressly disclaim liability of loss, damage, or expense arising from it or any way connected with the handling, storage, use, or disposal of the product.