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**1. PRODUCT AND COMPANY IDENTIFICATION:**

**PRODUCT NAME:** Machinable Powder for Cast Iron: 4224

**MANUFACTURER:** Selectrode Industries, Inc.  
230 Broadway  
Huntington Station, NY 11746 U.S.A.  
Phone: 631-547-5470  
Fax: 631-547-5475  
E-mail: [info@selectrode.com](mailto:info@selectrode.com)

**EMERGENCY TELEPHONE NUMBER:** 631-547-5470

**2. HAZARD IDENTIFICATION:**

**Emergency Overview:** This product is normally not considered hazardous as shipped. Avoid eye contact or inhalation of dust from the product. When this product is used in a welding process, the most important hazards are welding fumes and heat.

**Classification of the Substance/Mixture**

**CLP/GHS Classification (1272/2008):**

**Skin Sensitization, Category 1**

**Carcinogenicity, Category 2**

**Specific Target Organ Toxicity (Repeated Exposure), Category 1**

**EU Classification (67/548/EEC):**

**Toxic (T), Harmful (Xn), Irritant (Xi), Carcinogen Category 3, R48/23, R40, R43**

**Hazardous Classification per 29CFR 1910.1200 (Rev. July 1, 2012):**

**Skin Sensitization, Category 1**

**Carcinogenicity, Category 2**

**Specific Target Organ Toxicity (Repeated Exposure), Category 1**

**Labelling:**

**Symbols:**

**Signal Word:** Danger

**Hazard Statements:**

**H317** – May cause an allergic skin reaction.

**H351** – Suspected of causing cancer.

**H372** – Cause damage to respiratory system, eyes, brain and nervous system through prolonged or repeated exposure.

**Precautionary Statements:**

**P201** – Obtain special instructions before use.

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

**P210** – Keep away from heat/sparks/open flames/hot surfaces – No smoking.

**P260** – Do not breathe dust/fume/gas/mist/vapours/spray.

**P264** – Wash skin and hair thoroughly after handling.

**P270** – Do not eat, drink or smoke when using this product.

**P272** – Contaminated work clothing should not be allowed out of the workplace.

**P280** – Wear protective gloves/eye protection/face protection.

**P281** – Use personal protective equipment as required.

**P302+P352** – IF ON SKIN: Wash with plenty of soap and water.

**P333+P313** – IF skin irritation or rash occurs: Get medical advice/attention.

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**P308+P313** – IF exposed or concerned: Get medical advice/attention.

**P314** – Get medical advice/attention if you feel unwell.

**P363** – Wash contaminated clothing before reuse.

**P405** – Store locked up.

**P501** – Dispose of contents/container in accordance with local/regional/national/international regulations.

**3. COMPOSITION / INFORMATION ON INGREDIENTS:**

Chemical Identity	CAS #	Range %	OSHA PEL (mg/m3)	ACGIH-TLV (mg/m3)	Carcinogenicity	EU Classification (67/548/EEC)	CLP/GHS Classification (1272/2008)	Hazardous Classification per 29CFR 1910.1200 (Rev. July, 2012)
#Nickel	7440-02-0	86-97	1	1	Yes	Carc. Cat. 3 Xn) R40 Xi) R43 (T) R48/23	(H317) Skin Sens. 1 (H351) Carc. 2 (H372) STOT RE 1	(H317) Skin Sens. 1 (H351) Carc. 2 (H372) STOT RE 1
Boron	7440-42-8	1-5	NR	5	No	(Xn) R22	(H302) Acute Tox. 4 (H372) STOT RE 1	(H302) Acute Tox. 4 (H372) STOT RE 1
Silicon	7440-21-3	1-5	10	10	No	(F) R11	(H228) Flam. Sol. 2 (H372) STOT RE 1	(H228) Flam. Sol. 2 (H372) STOT RE 1

**Important** This section covers the materials of which the products manufactured. The fumes and gases produced during normal use of this product are covered in section 10. The term "Hazardous" in "Hazardous Material" should be interpreted as a term required and defined in OSHA Hazard Communication Standard 29CFR 1910-1200 and it does not necessarily imply the existence of hazard. The chemicals or compounds reportable by Section 313 of SARA are marked by the symbol #.

**4. FIRST AID MEASURES:**

**Inhalation:** Remove to fresh air immediately or administer oxygen. Get medical attention immediately.

**Skin:** Flush skin with large amounts of water. If irritation develops and persists, get medical attention.

**Eye:** Flush eyes with water for at least 15 minutes. Get medical attention.

**Ingestion:** Obtain medical attention immediately if ingested. Rinse mouth.

**5. FIRE-FIGHTING MEASURES:**

**Suitable Extinguishing Media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Use the extinguishing media recommended for the burning material and fire situation.

**Unsuitable Extinguishing Media:** Not applicable

**Specific Hazards Arising From Chemical:** Arcs and sparks can ignite combustibles and flammable products. Nickel/nickel oxides, Aluminium oxide, Silicon oxides

**Protective Equipment:** Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

**6. ACCIDENTAL RELEASE MEASURES:**

**Personal Precautions:** Refer to section 8.

**Environment Precautions:** Refer to section 13.

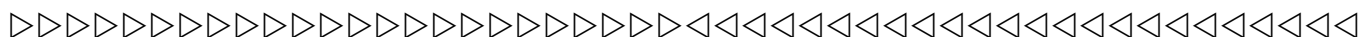
**Cleaning Measures:** Solid objects may be picked up and placed into a container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

**7. HANDLING AND STORAGE:**

**Precautions for Safe Handling:** Handle with care. Wear gloves when handling product. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and identity labels.

**Conditions for Safe Storage:** Avoid accumulations of dust. Good housekeeping practices are essential to mitigate/prevent risk of secondary explosions. Store the product in a tightly closed container. Isolate from incompatible materials. Protect containers from physical damage.

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**8. EXPOSURE CONTROLS/ PERSONAL PROTECTION:**

**Engineering Controls:** Avoid exposure to welding fumes, spatter, heated materials and dust. Ensure sufficient ventilation, local exhaust, or both, to keep welding fumes and gases from breathing zone and general area. Keep work place and protective clothing clean and dry. Train welders to avoid contact with live electrical parts and insulate conductive parts. Check condition of protective clothing and equipment on a regular basis.

**Exposure limits:** Use industrial hygiene equipment to ensure that exposure does not exceed applicable national exposure limits. The limits defined under section 3 can be used as guidance. Unless noted, all values are for 8 hour time weighted average. For information about welding fume analysis refer to section 10.

**Biological limits:** No available data

**Personal protection:**

**Respiratory protection:** Use an air purifying dust respirator when welding or brazing in a confined space, or when local exhaust or ventilation is not sufficient to keep exposure values within safe limits.

**Hands protection:** Wear appropriate gloves to prevent skin contact.

**EN 12477: Protection gloves for welders**

Requirements (EN Levels)	Type A	Type B
Abrasion (Cycles)	2 (500)	1 (100)
Cut (Factor)	1 (1.2)	1 (1.2)
Tear (Newton)	2 (25)	1 (10)
Puncture (Newton)	2 (60)	1 (20)
Burning Behaviour	3	2
Contact Heat	1	1
Convective Heat	2	-
Small Splashes	3	2
Dexterity	1 (11)	4 (6.5)

Type B gloves are recommended when high dexterity is required as for TIG welding, while type A gloves are recommended for other welding processes. The contact temp (°C) is 100 and the threshold time (seconds) >15.

**Eyes protection:** Welder's helmet or face shield with colour absorbing lenses. Shield and filter to provide protection from harmful UV radiation, infra red and molten metal approved to standard EN379. Filter shade to be a minimum of shade 9.

**Skin protection:** Heat-resistant protective clothing. Wear safety boots, apron, arm and shoulder protection. Keep protective clothing clean and dry. Clothing should be selected to suit the level, duration and purpose of the welding activity.

Class 1	
Impact of Spatter	15 Drops
Heat Transfer (radiation)	RHTI 24 ≥ 7 seconds
Process	<p>Manual welding with light formation of spatter and drops</p> <ul style="list-style-type: none"> <li>• Gas Welding</li> <li>• TIG Welding</li> <li>• MIG Welding</li> <li>• Micro plasma welding</li> <li>• Brazing</li> <li>• Spot Welding</li> <li>• MMA Welding (with rutile-covered electrode)</li> </ul>

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<b>Environmental Conditions</b>	<p style="text-align: center;"><b>Operation of machines</b></p> <ul style="list-style-type: none"> <li>• Oxygen cutting machines</li> <li>• Plasma cutting machines</li> <li>• Resistance welding machines</li> <li>• Machines for thermal spraying</li> <li>• Bench welding</li> </ul>
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<b>Class 2</b>	
<b>Impact of Spatter</b>	<b>25 Drops</b>
<b>Heat Transfer (radiation)</b>	<b>RHTI 24 ≥ 16 seconds</b>
<b>Process</b>	<p style="text-align: center;"><b>Manual welding with heavy formation of spatter and drops</b></p> <ul style="list-style-type: none"> <li>• MMA welding (with basic or cellulose-covered electrodes)</li> <li>• MAG welding (with CO2 or mixed gases)</li> <li>• MIG Welding (with high current)</li> <li>• Self shielded flux core arc welding</li> <li>• Plasma cutting</li> <li>• Gouging</li> <li>• Oxygen cutting</li> <li>• Thermal spraying</li> </ul>
<b>Environmental Conditions</b>	<p style="text-align: center;"><b>Operation of machines</b></p> <ul style="list-style-type: none"> <li>• In confined spaces</li> <li>• At overhead welding/cutting or in comparable constrained positions</li> </ul>

**9. PHYSICAL AND CHEMICAL PROPERTIES:**

**Appearance:** Powder

**Color:** None

**Odour:** Odourless

**Odour Threshold:** Not Available

**pH Value:** Not Available

**Specific Gravity:** 7.5 (H2O=1)

**Melting Point/Melting Range:** 1981° F, 1083° C

**Freezing Point:** Not Available

**Boiling Point/Boiling Range:** Not Available

**Flash point:** Not Available

**Evaporation Rate:** Not Available

**Self-in flammability:** Not Available

**Explosion limits:** Not considered to be an explosion hazard. Ultra fine particles may present an explosion hazard when dispersed in air.

**Vapour pressure:** Not Available

**Vapour density:** Not Available

**Density at 20°C:** Not Available

**Bulk Density:** 4.2 gm/cc ( 262 lb/ ft3 )

**Relative density:** 6-9 g/cm3

**Solubility:** Insoluble in water.

**Partition coefficient:** Not Available

**Auto-ignition temperature:** Not Available

**Decomposition temperature:** Not Available

**Other Information:** No available data.

**10. STABILITY AND REACTIVITY:**

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**Chemical Stability:** This product is stable under normal conditions.

**Hazardous Reactions:** Contact with chemical substances like acids or strong bases cause generation of gas. Keep away from any possible contact with water, because of violent reaction and possible flash fire.

**Conditions to Avoid:** Not applicable.

**Incompatible Materials:** Acids, alkalis, acetylene, oxidizers. Reacts violently with ammonium nitrate, bromates, iodates, chlorates, ethylene oxide

**Hazardous Decomposition Products:** When this product is used in a welding process, hazardous decomposition product would include those from volatilization, reaction or oxidation of the material listed in section 3 and those from the base metal and coating. The amount of fumes generated from this product varies with welding parameters and dimensions.

Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in section 3. Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the welding area can be affected by the welding process and influence the composition and quality of fumes and gases produced.

## 11. TOXICOLOGICAL INFORMATION:

**Signs and Symptoms of Overexposure:** Inhalation of welding fumes and gases can be dangerous to your health. Classification of welding fumes is difficult because of varying base materials, coatings, air contaminants and processes. The Internal Agency for Research on Cancer has classified welding fumes as possible carcinogenic to humans (Group 2B).

**Acute Effects:** Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. May cause sensitisation by skin contact

LD/LC50 Values that are relevant for classification		
Nickel 7440-02-0		
Oral	LD50	>9000 mg/kg (rat)
Inhalation	LC50	>10.2 mg/L/1 hr (rat)

LD/LC50 Values that are relevant for classification		
Boron 7440-42-8		
Oral	LD50	650 mg/kg (rat)

LD/LC50 Values that are relevant for classification		
Silicon 7440-21-3		
Oral	LD50	3160 mg/kg (rat)

**Chronic Effects:** Overexposure to welding fumes may affect pulmonary function. Prolonged inhalation of nickel (Classified 2B by IARC and R by NTP) above safe exposure limits may cause cancer.

## 12. ECOLOGICAL INFORMATION:

**Toxicity:** No available data.

**Persistence and Degradability:** No available data.

**Bio accumulative Potential:** The following figures are the bio concentration factor (BCF) for the substances on their own.  
BCF:

Nickel, BCF: 16

**Mobility in Soil:** No available data.

**Other Adverse Effects:** No available data.

Welding materials could degrade into components originating from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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**13. DISPOSAL CONSIDERATIONS:**

**Product:** For product elimination, consult recycling companies or appropriate local authority.

**Package:** May be disposed in approved landfills provided local regulations are observed.

**14. TRANSPORT INFORMATION:**

**UN-number:** Not applicable

**UN proper shipping name:** Not applicable

**Transport hazard class:** Not applicable

**Packing group:** Not applicable

**Environmental hazards:** Not applicable

**Special precautions for users:** Not applicable


**15. REGULATORY INFORMATION:**

**Safety, health and environment regulations/legislation specific for the substance or mixture:** Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others.

**Warning:** Welding fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation. Electric shock can kill. Arc rays and sparks can injure eyes and burn skin. Wear correct hand, head, eye and body protection.

**Chemical safety assessment:** No

USA: Under the OSHA Hazard Communication Standard, this product is considered hazardous.

**CALIFORNIA PROPOSITION 65:**  **WARNING:** This product contains chemicals including [Nickel], which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov). (California Health & Safety Code § 25249.5 et seq.)

United States EPA Toxic Substance Control Act: All constituents of this product are on the TSCA inventory list or are excluded from listing.

**EPCRA/SARA Title III Toxic Chemicals**

The following metallic components are listed as SARA 313 "Toxic Chemicals" and potential subject to annual SARA reporting. See Section 3 for weight percentage.

Ingredient Name	Disclosure Threshold
Nickel	1 mg/m3

**16. OTHER INFORMATION:**

The information in this document is believed to be correct as of the date issued. However, no warranty is expressed to be implied regarding the accuracy or completeness of this information. This information and product are furnished on the condition that the person receiving them shall make his own determinations as to the suitability of the product for his particular purpose and on the condition that he assumes the risk of his use thereof.

This Material Safety Data Sheet complies with the EC directives 91/155/EEC and 93/112/EEC, including modifications 2001/58/EC.

Complies with OSHA Communication Standard 29 CFR 1910.1200 and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499

**Hazard Statements:**

**H228** – Flammable solid

**H302** – Harmful if swallowed.

**H317** – May cause an allergic skin reaction.

**H351** – Suspected of causing cancer.

**H372** – Cause damage to respiratory system, eyes, brain and nervous system through prolonged or repeated exposure.

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**R-Phrases:**

**R11** – Highly flammable

**R22** – Harmful if swallowed.

**R40** – Limited evidence of a carcinogenic effect.

**R43** – May cause sensitization by skin contact.

**R48/23** – Toxic: danger of serious damage to health by

**S26** – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

**S28** – After contact with skin, wash immediately with plenty of water.

**S36/37/39** – Wear suitable protective clothing, gloves and eye/face protection.

End of the document.