

## SUPER SHIELD-ER NICKEL EPOXY COATING

## 8411-PART A

# Safety Data Sheet

## Section 1: Product and Company Identification

### Product Identifier and Other Means of Identification

**Product Name:** Super Shield-ER Nickel Epoxy Coating

**SDS Code:** 8411-Part A

**Related Part #** 8411-1, 8411-2

### Recommended Use and Restriction on Use

**Use:** Nickel conductive epoxy resin

**Uses Advised Against:** Not for consumer use—INDUSTRIAL USE ONLY

### Details of Manufacturer or Importer

#### Manufacturer

MG Chemicals  
1210 Corporate Drive  
Burlington, Ontario L7L 5R6  
CANADA

MG Chemicals (Head Office)  
9347-193 Street  
Surrey, British Columbia V4N 4E7  
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**E-MAIL** (Competent Person): [sds@mgchemicals.com](mailto:sds@mgchemicals.com)

### Emergency Phone Number

**For hazardous material incidents ONLY**—leaks, spills, fires, exposures or accidents  
USA or CANADA: Call CHEMTREC ☎: **+1-800-424-9300**

**For emergencies involving dangerous goods;** Collect 24/7

CANADA: Call CANUTEC ☎: **+1-613-996-6666** or **\*666** on cellular phones

**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

**Section 2: Hazards Identification**

**Classification of Hazardous Chemical**

**WHMIS Classification**



B2 – Flammable Liquid; D2A – Very Toxic Material (Possible carcinogen IARC: 2B);  
D2B – Toxic Material (Skin & eye irritation)

**GHS Categories**

Criteria	Category	Signal Word	Pictograms
Eye Irritation/Damage	1	Danger	Corrosion
Specific target organ toxicity Repeated exposure	1	Danger	Health
Carcinogenicity	2	Warning	Health
Sensitization Skin sensitizer	1	Warning	Exclamation
Skin Irritation	2	Warning	Exclamation
Specific target organ toxicity Single exposure	3	Warning	Exclamation
Flammable liquid	3	Warning	Flame
Environmental Hazard Chronic Aqua. Tox.	3	none	none

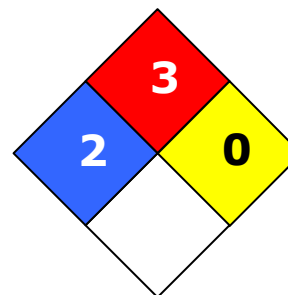
*Note:* The degree of severity is ranked within each hazard class from 1 (Highest Severity) to up to 5 (Lowest Severity). Severity categories do not allow comparisons between classes.

**Other Classifications**

**HMIS® RATING**

<b>HEALTH:</b>	<b>2</b>
<b>FLAMMABILITY:</b>	<b>3</b>
<b>PHYSICAL HAZARD:</b>	<b>0</b>
<b>PERSONAL PROTECTION:</b>	

**NFPA® 704 CODES**



*Approximate HMIS and NFPA Risk Ratings Legend:*





0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

*Continued on the next page*

**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

**Label Elements**

<b>Signal Word</b>	<b>DANGER</b>
<b>Pictograms</b>	<b>Hazard Statements</b>
	H318: Causes severe eye damage
	H372: Causes damage to lungs through prolonged or repeated exposure by inhalation H351: Suspected of causing cancer
	H315: Cause skin irritation H317: May cause allergic skin reaction H336: May cause dizziness or drowsiness
	H226: Flammable liquid and vapor
No Symbol Mandated	H412: Harmful to aquatic life with long lasting effects
<b>Prevention</b>	<b>Precautionary Statements</b>
P201 + P202	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P242 + P241 + P243	Use only non-sparking tools. Use explosion-proof electrical/ventilating/lighting equipment. Take precautionary measures against static discharge.
P260 + P271	Do not breathe mist/vapors/spray/fumes. Use only outdoors or in well ventilated area.

*Continued on the next page*

**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

<b>Prevention</b>	<b>Precautionary Statements (Continued)</b>
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/eye protection/face protection.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
<b>Response</b>	<b>Precautionary Statements</b>
P370 + P378	In case of fire: Use dry chemical, carbon dioxide, chemical foam, or water spray to extinguish.
P301 + P310, P331	IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTRE/doctor if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P305 + P351 + P338, P310	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/doctor.
P303 + P361 + P364 + P352	IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Wash with plenty of water/shower.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
<b>Storage</b>	<b>Precautionary Statements</b>
P403 + P235	Store in well ventilated place. Keep cool.
P405	Store locked up.
<b>Disposal</b>	<b>Precautionary Statements</b>
P501	Dispose of contents/container in accordance to local/regional/international regulations.

**Other Hazards**

Repeated exposure may cause skin dryness or cracking.

**SUPER SHIELD-ER NICKEL EPOXY COATING****8411-PART A****Section 3: Hazardous Ingredients**

<b>CAS #</b>	<b>Chemical Name</b>	<b>Wt%</b>
7440-02-0	nickel	45-55%
123-86-4	n-butyl acetate	15-20%
71-36-3	butan-1-ol	7-13%
68609-97-2	bisphenol-A-(epichlorhydrin)	5-8%
14807-96-6	talc (non-asbestos fiber)	1-3%
25068-38-6	alkyl glycidyl ether	1-2%

**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

**Section 4: First-Aid Measures**

<i>Exposure Condition</i>	<i>GHS Code/Symptoms/Precautionary Statements</i>
<b>IF IN EYES</b>	P305 + P351 + P338, P310
<b>Immediate Symptoms</b>	<i>irritation, redness, pain</i>
<b>Response</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
<b>IF INHALED</b>	P304 + P340, P312, P308 + P313
<b>Immediate Symptoms</b>	<i>cough, shortness of breath, dizziness, drowsiness, headaches</i>
<b>Response</b>	Remove person to fresh air (out of the contaminated zone) and keep comfortable for breathing.
<b>If feeling unwell</b>	Call a POISON CENTRE/doctor.
<b>If exposed or concerned</b>	Get medical advice/attention.
<b>IF SWALLOWED</b>	P301 + P310, P330, P331
<b>Immediate Symptoms</b>	<i>abdominal pain, nausea, headaches, dizziness, drowsiness, vomiting</i>
<b>Response</b>	Immediately call a POISON CENTRE/doctor. Rinse mouth. Do NOT induce vomiting.
<b>IF ON SKIN (or hair)</b>	P303 + P361 + P364, P352, P333 + P313
<b>Immediate Symptoms</b>	<i>irritation, dry skin, redness</i>
<b>Response</b>	IF ON SKIN (or hair): Take off immediately all contaminated clothing and wash it before reuse. Wash with plenty of water/shower.
<b>If skin irritation or rash occurs</b>	Get medical advice/attention.

**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

**Section 5: Fire-Fighting Measures**

<b>Auto-ignition Temperature</b>	Not available	<b>Flash Point</b> <sup>a)</sup>	27 °C [81 °F]	<b>LFL [LEL]</b> <b>UFL [UEL]</b> <sup>b)</sup>	1% 8%
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**In case of fire** P370 + P378

**Response** Use dry chemical, carbon dioxide, or chemical foam to extinguish. Use water spray to cool containers.

**Combustion Products** Produces carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), nickel oxide fumes, and other toxic fumes

**Fire-Fighter** Wear self-contained breathing apparatus for fire fighting

**General Information** Produces irritating and toxic fumes in fires or in contact with hot surfaces. A sufficiently hot fire may release toxic metal oxide fumes.

a) Based on Tag closed cup value for n-butyl acetate component

b) Values calculated using Raoult's Law and Le Chatelier principle for solvent components.

LFL = Lower Flammability [or Explosion] Limit (in volume %);

UFL = Upper Flammability [or Explosion] Limit (in volume %)

**Section 6: Accidental Release Measures**

**Personal Protection** See Section 8. Avoid breathing the mist/vapors.

**Containment** Remove all sources of ignition.  
Prevent spill from entering drains and waterways. Contain with inert absorbent (such as soil, sand, vermiculite).

**Cleaning** Collect liquid in a sealable, solvent-resistant container. Sprinkle inert absorbent compound onto spill, then sweep into the container. Wipe up further residue with paper towel and place dirty towels in container. Wash spill area with soap and water to remove the last traces of residue.

**RECOMMENDATION:** Use a grounded stainless steel or carbon steel container or a solvent resistant plastic container.

**Disposal** Dispose of spill waste according to Section 13.

**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

**Section 7: Handling and Storage**

**Prevention**

Keep out of reach of children.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Use only non-sparking tools. Use explosion-proof electrical/ventilating/lighting equipment. Take precautionary measures against static discharge.

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

Keep away from heat/sparks/open flames/hot surfaces. No smoking. Do not spray on an open flame or other ignition source.

Do not breathe vapors/mist/spray/fumes. Use only outdoors or in a well-ventilated area.

**Handling**

Wear protective gloves/clothing/eye protection.

Wash hands thoroughly after handling.

**Storage**

Keep container tightly closed. Store in a well-ventilated area. Keep cool. Store locked up.

**Section 8: Exposure Controls/Personal Protection**

**Routes of Entry**

Eyes, ingestion, inhalation, and skin

**Substances with Occupational Exposure Limit Values**

Chemical Name	Country	Long Term Exposure Limits (PEL)	Short Term Exposure Limits (STEL)
nickel (dust)	ACGIH	1.5 mg/m <sup>3</sup>	
	U.S.A. OSHA PEL	1 mg/m <sup>3</sup>	
	Canada AB	1.5 mg/m <sup>3</sup>	—
	Canada BC	0.05 mg/m <sup>3</sup>	—
	Canada ON	1 mg/m <sup>3</sup>	—
	Canada QC	1 mg/m <sup>3</sup>	—

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**SUPER SHIELD-ER NICKEL EPOXY COATING**
**8411-PART A**
*Continued...*

<b>Chemical Name</b>	<b>Country</b>	<b>Long Term Exposure Limits (PEL)</b>	<b>Short Term Exposure Limits (STEL)</b>
n-butyl acetate	ACGIH	150 ppm	—
	U.S.A. OSHA PEL	100 ppm	710 ppm
	Canada AB	150 ppm	200 ppm
	Canada BC	20 ppm	200 ppm
	Canada ON	150 ppm	—
	Canada QC	150 ppm	200 ppm
butan-1-ol	ACGIH	20 ppm	—
	U.S.A. OSHA PEL	100 ppm	300 ppm
	Canada AB	20 ppm	—
	Canada BC	15 ppm	30 ppm (Ceiling)
	Canada ON	20 ppm	—
	Canada QC	50 ppm (Ceiling)	—
talc (dust)	ACGIH	2 mg/m <sup>3</sup>	—
	U.S.A. OSHA PEL	20 <sup>a)</sup>	—
	Canada AB	2 mg/m <sup>3</sup>	—
	Canada BC	2 mg/m <sup>3</sup>	—
	Canada ON	2 mg/m <sup>3</sup>	—
	Canada QC	3 mg/m <sup>3</sup>	—

*Note:* Ingredients are listed in descending weight contribution order (from greatest to least). The ACGIH<sup>1</sup>, OSHA, and Canadian provinces exposure limits were consulted. Limits from by RTECS database<sup>2</sup> of the Canadian Centre for Occupational Health and Safety (CCOHS) a data from suppliers' SDS were also consulted. Short term exposure limits (STEL) are for 15 min and long term permissible exposure limits (PEL) for 8 h.

a) Million particles per cubic foot of air, based on impinge samples counted by light-field technique.

### Engineering Controls

**Ventilation**

Keep airborne concentrations below exposure limits.

### Personal Protective Equipment

**Eye protection**

Wear appropriate protective eyeglasses or chemical safety goggles.

**Skin Protection**

Use of protective gloves chemically resistant gloves.

For incidental exposure, you may use nitrile gloves.

For prolonged exposure, use polyvinyl alcohol (PVA) or Viton gloves and aprons.

*Continued on the next page*

**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

**Respiratory Protection** If exposed to vapors or mist above the exposure limit, wear respirator such as a half-mask respirator with organic vapor cartridge.

**RECOMMENDATION:** Consult your local safety supply store to ensure your respirator has filter cartridges appropriate for the ingredients listed in section 3 of this MSDS, and that the respirator is fitted to the employee by a professional. Ensure vapor cartridges are stored in sealed plastic bags when not being used.

**General Hygiene Considerations**

Wash hands thoroughly with water and soap after handling.

**Section 9: Physical and Chemical Properties**

<b>Physical State</b>	Liquid	<b>Appearance</b>	Grey
<b>Odor</b>	Fruity, alcohol-like	<b>Odor Threshold</b>	0.007 ppm
<b>pH</b>	Not available	<b>Specific Gravity @25 °C</b>	1.80
<b>Solubility in Water</b>	Slightly soluble	<b>Freezing/Melting Point</b>	Not available
<b>Flash Point <sup>a)</sup></b>	27 °C [81 °F]	<b>Vapor Pressure @ 20 °C</b>	Not available
<b>Boiling Point <sup>b)</sup></b>	≥118 °C [≥244 °F]	<b>Evaporation Rate</b>	Not available
<b>Lower Flammability Limit <sup>c)</sup></b>	1%	<b>Upper Flammability Limit <sup>c)</sup></b>	8%
<b>Auto-ignition Temperature</b>	Not available	<b>Decomposition Temperature</b>	Not available
<b>Viscosity @40 °C</b>	<20 mm <sup>2</sup> /s	<b>Vapor Density</b>	>4 (Air = 1)
<b>Partition Coefficient</b>	Not established		

a) Based on Tag closed cup value for n-butyl acetate component

b) Based on butan-1-ol component

c) Values calculated using Raoult's Law and Le Chatelier principle for solvent components.

d) Separation layer viscosity

**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

**Section 10: Stability and Reactivity**

<b>Reactivity</b>	Reacts exothermically with amines and mercaptans.
<b>Chemical Stability</b>	Chemically stable at normal temperatures and pressures.
<b>Conditions to Avoid</b>	Ignition sources. Low lying vapors may form explosive mixture with air.
<b>Incompatibilities</b>	Strong oxidizing agents, strong acids, strong bases
<b>Polymerization</b>	Will not occur
<b>Decomposition</b>	Will not decompose under normal conditions. For thermal decomposition, see combustion products in Section 5

**Section 11: Toxicological Information**

**Routes of Exposure**

Eyes, ingestion, inhalation, and skin

**Symptoms Summary**

<b>Eyes</b>	severe irritation, redness, pain
<b>Skin</b>	Causes moderate skin irritation, dry skin, and redness.
<b>Inhalation</b>	May cause cough, shortness of breath, dizziness, drowsiness, headaches.
<b>Ingestion</b>	May cause abdominal pain, nausea, vomiting. (See also inhalation symptoms.)
<b>Chronic</b>	Prolonged or repeated exposure may cause skin dryness and cracking, defat skin, and local redness, discomfort, and allergic reactions.

**Acute Toxicity (Lethal Exposure Concentrations)**

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	TCLo inhalation
nickel	5 000 mg/kg Rat	Not available	Not available	10 mg/m <sup>3</sup> 2h Mouse
n-butyl acetate	>10 768 mg/kg Rat	>17 600 mg/kg Rabbit	390 ppm 4 h Rat	200 ppm Human
butan-1-ol	790 mg/kg Rat	3 400 mg/kg Rabbit	Not available	Not available

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**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

Continued...

Chemical Name	LD50 oral	LD50 dermal	LC50 inhalation	TCLo inhalation
reaction products: bisphenol-A-(epichlor-hydrin) and epoxy resin	11 400 mg/kg Rat	100 pph 7 h Rabbit <sup>a)</sup>	Not available	Not available
talc	Not available	Not available	Not available	17 mg/m <sup>3</sup> 6 h 26 d Rat
alkyl glycidyl ether	19 200 mg/kg Rat <sup>a)</sup>	4 500 mg/kg Rat <sup>a)</sup>	Not available	Not available

Note: Representative toxicity data from by RTECS database of the Canadian Centre for Occupational Health and Safety (CCOHS)<sup>1</sup> data from supplier MSDS were also consulted.

**Other Toxicological Effects**

<b>Skin corrosion/irritation</b>	Causes skin irritation based on Draize tests on animals. Prolonged or repeated skin contact may cause dermatitis
<b>Serious eye damage/irritation</b>	Due to 13% Butan-1-ol, mixture is expected to cause severe eye irritation and irreversible eye damage
<b>Sensitization</b> (allergic reactions)	Exposure to the epoxy resin and nickel may cause allergic skin reaction
<b>Carcinogenicity</b> (risk of cancer)	Nickel is classified as a suspect carcinogen based on animal intratracheal instillation (intubation) or interperitoneal (in body cavity) injection studies. A reliable 2008 study by Oller <i>et al.</i> shows no carcinogenicity for the nickel metal via normal inhalation route.  <b>Nickel [7440-02-0]</b> IARC Group 2B: Possibly carcinogenic to humans ACGIH A5: Not suspected as a human carcinogen CA Prop 65: Listed as a carcinogen NTP: Reasonably anticipated to be human carcinogen
<b>Mutagenicity</b> (risk of heritable genetic effects)	No data available
<b>Reproductive Toxicity</b> (risk to sex functions)	No data available
<b>Teratogenicity</b> (risk of fetus malformation)	No data available

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**SUPER SHIELD-ER NICKEL EPOXY COATING****8411-PART A****STOT-single exposure**

n-butyl acetate and butan-1-ol can affect the central nervous system by inhalation causing drowsiness or dizziness, and they are a respiratory system irritant.

**STOT-repeated exposure**

Inhalation dust/mist containing nickel particles of less than 0.1 mm may cause chronic inflammation, lung fibrosis, and accumulation of the nickel particles.

**Aspiration hazard**

Cat 2 Aspiration hazard because greater than 10% Cat 2 aspiration toxicants (butan-1-ol) is present and the separations layer kinematic viscosity is  $\leq 20.5 \text{ mm}^2/\text{s}$ .

**Section 12: Ecological Information**

The ecotoxicity of the mixture was estimated by the calculation method using the summation of classified ingredients. The IMDG Code criteria and the raw-material MSDS along with supporting data for the classification of registered substances from the European Chemical Agency database (<http://echa.europa.eu>) were used.

Nickel is water insoluble under normal conditions and is classified as a category 3 environmental pollutant by ECHA registrants.

Butan-1-ol is not classifiable as an environmental toxicant (with minimal LC50 of 1840 mg/L for *Pimephales promelas* (fathead minnow) 96 h; and LC40 of 44 mg/L 48 h, EC50 648 mg/L *Daphnia magna* (water flea) 72 h).

The n-butyl acetate ingredient is an acute category 3 environmental toxicant liquid (biodegradable, with minimal LC50 of 18 mg/L for fathead minnow).

In Europe, similar the epoxy resins with CAS# 25068-38-6 and MW<700 is generally classified as chronic category 2 marine pollutant. It generally has LC50 96 h of >1 mg/L but  $\leq 10 \text{ mg/L}$ .

**Acute Ecotoxicity**

Category 3

*GHS Code: Hazard Statement*

H402: Harmful to aquatic life

P273: Avoid release to the environment

P391: Collect spillage

**Chronic Ecotoxicity**

Category 3

H412: Harmful to aquatic life with long lasting effects.

**Biodegradability**

Not readily biodegradable

**Other Effects**

VOC (Regulated Volatile Organic Content) = 42% [756 g/L]

**SUPER SHIELD-ER NICKEL EPOXY COATING**

**8411-PART A**

**Section 13: Disposal Information**

P501: Dispose of contents in accordance with all local, regional, national, and international regulations.

**Section 14: Transport Information**

**Ground**

**Refer to TDG regulations** (Canadian Transportation of Dangerous Goods regulations);  
**USA CFR 49 Regulations** (Parts 100 to 185).

Sizes 5 liter and under

**Limited Quantity**



Sizes greater than 5 liter

**UN number:** UN1139  
**Shipping Name:** COATING SOLUTION  
**Class:** 3  
**Packing Group:** III  
**Marine Pollutant:** No



**Air**

**Refer to ICAO-IATA Dangerous Goods Regulations.**

Sizes 10 liter and under

**Limited Quantity**



Sizes greater than 10 liters up to 60 L

**UN number:** UN1139  
**Shipping Name:** COATING SOLUTION  
**Class:** 3  
**Packing Group:** III  
**Marine Pollutant:** No



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**SUPER SHIELD-ER NICKEL EPOXY COATING****8411-PART A****Sea****Refer to IMDG regulations.**

Sizes 5 liter and under

**Limited Quantity**

Sizes greater than 5 liter

**UN number:** UN1139**Shipping Name:** COATING SOLUTION**Class:** 3**Packing Group:** III**Marine Pollutant:** No

**Note: Shipper must be appropriately trained and certified before involvement with the transport of dangerous goods.**

**Section 15: Regulatory Information****Canada****Domestic Substance List (DSL) / Non-Domestic Substance Lists (NDSL)**

All hazardous ingredients are listed on the DSL/NDSL.

**Industry and Science Canada**

MG Labels products intended for the workplace to conform to WHMIS labeling regulations. Product identification, net quantity declaration, minimum printing type size heights, and packaging of this product are in compliance.

**Health Canada**

Products produced by MG Chemicals intended for retail display conform to the Canadian Consumer Labeling Regulations.

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**SUPER SHIELD-ER NICKEL EPOXY COATING****8411-PART A****USA****CAA** (Clean Air Act, USA)

This product does not contain any class 1 ozone depleting substances.

This product does not contain any class 2 ozone depleting substances.

This product does not contain substances that are listed as hazardous air pollutants.

**EPCRA** (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45)

This product contains n-butyl acetate (CAS# 123-86-4; reportable quantity = 5000 lb [2268 kg]), n-butanol (CAS# 71-36-3; reportable quantity = 5000 lb [2268 kg]), and nickel (CAS# 7440-02-0, reportable quantity = 100 lb [45.4 kg]), which are subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

**TSCA** (Toxic Substances Control Act of 1976, USA)

All substances are TSCA listed.

**California Proposition 65** (Chemicals known to cause cancer or reproductive toxicity, Sept 2, 2011 revision, USA).

This product contains nickel (CAS# 7440-02-0), which is listed as a carcinogen.

**Europe****RoHS**

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, or PBDE's, and complies with European RoHS regulations.

**WEEE**

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

**Section 16: Other Information**

<b>MSDS Prepared by</b>	Michel Hachey
<b>Date of Creation</b>	09 January 2014
<b>Supersedes</b>	Not applicable
<b>Reason for Changes:</b>	New product

*Continued on the next page*



**SUPER SHIELD-ER NICKEL EPOXY COATING****8411-PART A****References**

- 1) ACGIH 2013 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2013).
- 2) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®), MDL Information Systems, Inc.

**Abbreviations**

ACGIH	American Conference of Governmental Industrial Hygienists (USA)
EC50	Half maximal effective concentration
EL50	Half maximal effective loading
NOELR	No observable effect loading ratio
GHS	Globally Harmonized System of Classification of Labeling of Chemicals
LC50	Lethal Concentration 50%
LCLo	Lowest published lethal concentration
LD50	Lethal Dose 50%
PEL	Permissible Exposure Limit
STEL	Short-Term Exposure Limit
TCLo	Lowest published toxic concentration
TWA	Time Weighted Average
VOC	Volatile Organic Content

**Technical Queries** Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at [www.mgchemicals.com](http://www.mgchemicals.com).

Email: [support@mgchemicals.com](mailto:support@mgchemicals.com)

**Mailing Addresses** *Manufacturing & Support*  
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