



PN MC10-0029-XX Part A, Conductive Paste

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Conductive Paste
PRODUCT CODE: MAST PN MC10-0029-XX Part A

MANUFACTURER: MAST Technologies
ADDRESS: 6370 Nancy Ridge Dr., Suite 103
 San Diego, CA 92121-3212

Emergency Phone: (858)452-1700 (regular 8-hour line)
 San Diego, CA
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Issue Date: 07/02/2012
Supersedes Date: N/A

Product Use: Part A for nickel graphite loaded conductive paste kit.

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Weight %
Nickel	7440-02-0	35-45%
Graphite	7782-42-5	20-30%
Cobalt	7740-48-4	<1%
Silicone Resin		
Dimethyl, methylhydrogen silicone	68037-59-2	55-75% (of resin)
Dimethyl siloxane, dimethylvinyl-terminated	68083-19-2	15-35% (of resin)
Dimethylvinylated silica	68988-89-6	10-30% (of resin)
Tetramethyl tetravinyl cyclotetrasiloxane	2554-06-5	1-5% (of resin)

Notes: See additional exposure information in Section 8, below.

SECTION 3: HAZARDS IDENTIFICATION

HMIS Classification: Health: 2, Flammability: 2, Reactivity: 0, Protection: See PPE Section 8.

EMERGENCY OVERVIEW:

Specific Physical Form: Medium viscosity caulk
Odor, Color, Grade: Characteristic solvent odor, brown color
General Physical Form: Caulk

POTENTIAL HEALTH EFFECTS:

Eye Contact: Direct contact may cause temporary discomfort with mild redness, drying, and irritation when contacted by raw material, cured material, or sanding dust.

Skin Contact: May cause slight irritation and reddening when contacted by raw material, cured material, or sanding dust.

Inhalation: High concentrations of airborne dust may irritate the respiratory tract, including the nose, throat, and lungs. Symptoms may include coughing, nausea, headaches, or dizziness.

Ingestion: Ingestion may cause irritation to the gastrointestinal tract but is unlikely to occur in industrial or commercial use.

SECTION 4: FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water. Remove contact lenses. Flush with water for at least 15 minutes while occasionally lifting lower and upper eyelids. If irritation persists seek medical attention.

Skin Contact: Remove contaminated clothing and wash skin with soap and water. Wash clothing before reuse.

Inhalation: Remove to fresh air and rest in half-upright position. If breathing is difficult administer oxygen. Never give anything by mouth to an unconscious person. Get medical attention if symptoms develop.

Ingestion: If patient is fully conscious, give two glasses of water or milk at once. Do not induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical attention without delay.

Notes to Physician: There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g. gastric lavage after endotracheal intubation).

SECTION 5: FIRE FIGHTING MEASURES

Fire Hazards: Keep away from heat, sparks, open flame, or other ignition sources.

Flash Point: N/A

Autoignition Temperature: N/A

Flammable Limits in Air (% by volume) – LEL: N/A

Flammable Limits in Air (% by volume) – UEL: N/A

Extinguishing Media: Use dry chemical, alcohol-type or universal-type foams applied by manufacturer's recommended technique. Water may be ineffective.

Unsuitable Extinguishing Media for Safety Reasons: Do not use CO₂.

Special Fire Fighting Procedures: Do not spray a solid stream of water or foam directly into a pool of hot, burning paste as this may cause frothing and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area. Keep containers cool with a water spray, if possible.

Unusual Fire and Explosion Hazards: This product contains polydimethylsiloxane which can generate formaldehyde as a byproduct of oxidative thermal decomposition at temperatures greater than 150°C (300°F). See Section 10 for further information.



SECTION 6: ACCIDENTAL RELEASE MEASURES

Material Release or Spill: Shut off ignition sources. Stop leak if you can do so without risk. Spills should be contained with mechanical barriers. Transfer spilled material to a suitable container for disposal. Dust particles should be sequestered with a tarp if outdoors to prevent wind dispersion of particles until clean-up can occur.

Environmental Protection: Do not discharge particles into drains/surface waters/groundwater.

Methods for Clean-up and Waste Disposal: Refer to Section 8, below, for exposure controls. Restrict area and ensure adequate ventilation. Dampen and gently sweep spilled material. Mechanically pick up dampened material and dispose of in accordance with all Federal, State, and local regulations.

SECTION 7: HANDLING AND STORAGE

Precautions for Handling and Storage:

Normal precautions common to safe manufacturing practice should be followed in handling and storage.

Keep container closed in a cool, dry, ventilated place.	S3/S7/S8/S9
Avoid contact with skin and eyes.	S24/S25

Avoid contacts with water or moisture before cured.	R101
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Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. Avoid formation and inhalation of dust particles. Do not eat, drink, or smoke when using this product. Wash thoroughly with soap and water after handling.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Values and Source:

Silica, amorphous
 10 mg/m³ – 8 hours TWA (ACGIH), 6 mg/m³ – 8 hours TWA (OSHA, NIOSH)
 Tetra-n-propyl silicate: Observe values for n-propanol, formed on exposure to water or humid air
 200 ppm – 8 hours TWA (skin)(ACGIH, OSHA, NIOSH)
 250 ppm – STEL/CEIL (skin)(ACGIH, OSHA, NIOSH)

Personal Protective Equipment (PPE):

Eyes and Face: Use tightly-fitting safety goggles.

Skin: Use PVC-coated or nitrile gloves on hands and wear additional impervious clothing as appropriate to protect skin.

Respiratory: In the event that overexposure cannot be avoided, a full-face respirator with cartridges approved by NIOSH when exposure levels are known to be within the unit’s capability. Use a positive-pressure, air-supplied respirator if exposure levels are not known or where purifying respirators may not provide adequate protection for thermal decomposition products.

Engineering Controls: Provide local exhaust ventilation in processes to capture dust or thermal decomposition gases at their source.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical Appearance:	Paste
Color:	Brown
Odor:	Solvent odor
Solubility:	Insoluble
Specific Gravity (H₂O=1):	~2.10
Boiling Point:	N/A
Freezing Point:	N/A
Vapor Pressure:	N/A
Vapor Density (air=1):	N/A
Evaporation Rate (butyl acetate=1):	N/A

NOTE: The above information is not intended for use in preparing product specifications.

SECTION 10: STABILITY AND REACTIVITY DATA

Stability: This product is stable under ordinary conditions of use and storage.

Conditions to Avoid: Avoid contact with elevated temperatures or open flame.

Incompatibility with Other Materials: Avoid contact or contamination with strong oxidizers, strong bases, caustics, mineral acids, amines, and acid anhydrides.

Hazardous Decomposition Products: Burning can produce carbon monoxide, carbon dioxide, oxides of silicon, and hydrocarbons. Carbon monoxide is high toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

Traces of formaldehyde may be generated due to oxidative thermal decomposition at temperatures greater than 150°C (300°F). Exposure to formaldehyde can cause adverse effects such as skin and respiratory sensitization and eye and throat irritation. Formaldehyde is a potential carcinogen. Evaluate and control exposure to formaldehyde when warranted by conditions of use.

Hazardous Polymerization: Hazardous polymerization will not occur under normal processing.

SECTION 11: TOXOLOGICAL INFORMATION

Acute Toxicity: NIOSH – Selected LD₅₀'s and LC₅₀'s: No Data Available
ACGIH – 2000 Skin Absorption Designation: No Data Available



Carcinogenic Status: IARC Carcinogens: Not listed
 OSHA – Select Carcinogens: Not listed
 NTP Eighth Report – Known Carcinogens: Not listed

NOTE: Refer to Section 3 for further discussion of the health hazards associated with this preparation.

SECTION 12: ECOLOGICAL INFORMATION

Ecolotoxological Information: Not determined

Chemical Fate Information: Not determined

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of absorbed material in accordance with all federal, state, and local regulations. Dispose of contaminated water in a contained waste treatment system.

SECTION 14: TRANSPORT INFORMATION

DOT Classification: Proper Shipping Name: Consumer Commodity
 Hazard Class: ORM-D
 UN Number: N/A
 Packing Group: N/A
 Limited Quantity: No

Air Transportation: Proper Shipping Name: Coating solution
 Hazard Class: 3
 UN Number: UN1139
 Packing Group: II
 Limited Quantity: Yes

SECTION 15: REGULATORY INFORMATION

Status on Substance Lists: The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations.

C.H.I.P. Regulations: None

Federal EPA: Section 304 CERCLA Hazardous Substances (40 CFR 302)
 Xylene – 1330-20-7: 0.19%

Inventory Status: The ingredients of this product are listed on, or are exempt from listing, on the TSCA inventory.

State-Right-to-Know: California Prop 65: This product contains the following chemical(s) listed by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 as being known to cause cancer, birth defects or other reproductive harm:
Ethylbenzene – 100-41-4: <0.1000%

Massachusetts 105 CMR 670,000 Right-To-Know, Substance List (MSL):
None

New Jersey Right-To-Know, Substance List:
Dimethyl, methylhydrogen siloxane – 68037-59-2: 55-75%
Dimethyl siloxane, dimethylvinyl-terminated – 68083-19-2: 15-35%
Dimethylvinylated silica – 68988-89-6: 10-30%
Tetramethyl tetravinyl cyclotetrasiloxane – 2554-06-5: 1-5%

Pennsylvania Right-To-Know, Hazardous Substance List:
Dimethyl, methylhydrogen siloxane – 68037-59-2: 55-75%
Dimethyl siloxane, dimethylvinyl-terminated – 68083-19-2: 15-35%
Dimethylvinylated silica – 68988-89-6: 10-30%

California SCAQMN Rule 443.1 VOC's: Volatile Organic Compounds (VOC's) = Substances with vapor pressure of ≥ 0.5 mmHg at 104°C (219.2°F). This product contains <1 g/L VOC's.

Other Regulatory Info: EPA Hazard Categories: Immediate Health Hazard, Delayed Health Hazard.

SECTION 16: OTHER INFORMATION

Revision Information: No changes.

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PN MC10-0029-XX Part B, Conductive Paste

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Conductive Paste
PRODUCT CODE: MAST PN MC10-0029-XX Part B

MANUFACTURER: MAST Technologies
ADDRESS: 6370 Nancy Ridge Dr., Suite 103
 San Diego, CA 92121-3212

Emergency Phone: (858)452-1700 (regular 8-hour line)
 San Diego, CA
Information Phone: (858)452-1700
 San Diego, CA
Fax Line: (858)452-1702
 San Diego, CA

Issue Date: 07/02/2012
Supersedes Date: N/A

Product Use: Part B for nickel graphite loaded conductive paste kit.

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS Number	Weight %
Curing Agent	Mixture	100%
Dimethyl, methylhydrogen silicone	68037-59-2	55-75% (of agent)
Dimethyl siloxane, dimethylvinyl-terminated	68083-19-2	15-35% (of agent)
Dimethylvinylated silica	68988-89-6	10-30% (of agent)
Tetramethyl tetravinyl cyclotetrasiloxane	2554-06-5	1-5% (of agent)

Notes: See additional exposure information in Section 8, below.

SECTION 3: HAZARDS IDENTIFICATION

HMIS Classification: Health: 0, Flammability: 1, Reactivity: 1, Protection: See PPE Section 8.

EMERGENCY OVERVIEW:

Specific Physical Form: Liquid

Odor, Color, Grade: Characteristic odor, colorless

General Physical Form: Liquid

POTENTIAL HEALTH EFFECTS:

Eye Contact: Direct contact may cause temporary discomfort with mild redness, drying, and irritation when contacted by raw material, cured material, or sanding dust.

Skin Contact: May cause slight irritation and reddening when contacted by raw material, cured material, or sanding dust.

Inhalation: High concentrations of airborne dust may irritate the respiratory tract, including the nose, throat, and lungs. Symptoms may include coughing, nausea, headaches, or dizziness.

Ingestion: Ingestion may cause irritation to the gastrointestinal tract but is unlikely to occur in industrial or commercial use.

Chronic Overexposure: Long-term inhalation of iron dust particles results in siderosis, a benign pneumoconiosis.

SECTION 4: FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water. Remove contact lenses. Flush with water for at least 15 minutes while occasionally lifting lower and upper eyelids. If irritation persists seek medical attention.

Skin Contact: Remove contaminated clothing and wash skin with soap and water. Wash clothing before reuse.

Inhalation: Remove to fresh air and rest in half-upright position. If breathing is difficult administer oxygen. Never give anything by mouth to an unconscious person. Get medical attention if symptoms develop.

Ingestion: If patient is fully conscious, give two glasses of water or milk at once. Do not induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical attention without delay.

Notes to Physician: There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient. Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g. gastric lavage after endotracheal intubation).

SECTION 5: FIRE FIGHTING MEASURES

Fire Hazards: Keep away from heat, sparks, open flame, or other ignition sources.

Flash Point: N/A

Autoignition Temperature: N/A

Flammable Limits in Air (% by volume) – LEL: N/A

Flammable Limits in Air (% by volume) – UEL: N/A

Extinguishing Media: Use water spray, dry chemical, alcohol-type or universal-type foams applied by manufacturer's recommended technique.

Unsuitable Extinguishing Media for Safety Reasons: Do not use CO₂.

Special Fire Fighting Procedures: Do not spray a solid stream of water or foam directly into a pool of hot, burning paste as this may cause frothing and may intensify the fire. Use self-contained breathing apparatus when fighting fire in an enclosed area. Keep containers cool with a water spray, if possible.

SECTION 6: ACCIDENTAL RELEASE MEASURES



Material Release or Spill: Spills should be contained with mechanical barriers. Transfer spilled material to a suitable container for disposal. Dust particles should be sequestered with a tarp if outdoors to prevent wind dispersion of particles until clean-up can occur.

Environmental Protection: Do not discharge particles into drains/surface waters/groundwater.

Methods for Clean-up and Waste Disposal: Refer to Section 8, below, for exposure controls. Restrict area and ensure adequate ventilation. Dampen and gently sweep spilled material. Mechanically pick up dampened material and dispose of in accordance with all Federal, State, and local regulations.

SECTION 7: HANDLING AND STORAGE

Precautions for Handling and Storage:

Normal precautions common to safe manufacturing practice should be followed in handling and storage.

Keep container closed in a cool, dry place.	S3/S7/S8
Avoid contact with skin and eyes.	S24/S25

Avoid contacts with water or moisture before cured.	R101
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Any proposed use of this product in elevated-temperature processes should be thoroughly evaluated to assure that safe operating conditions are established and maintained. Avoid formation and inhalation of dust particles. Do not eat, drink, or smoke when using this product. Wash thoroughly with soap and water after handling.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Values and Source:

No Data Available

Personal Protective Equipment (PPE):

Eyes and Face: Use tightly-fitting safety goggles.

Skin: Use PVC-coated or nitrile gloves on hands and wear additional impervious clothing as appropriate to protect skin.

Respiratory: In the event that overexposure cannot be avoided, a full-face respirator with cartridges approved by NIOSH when exposure levels are known to be within the unit's capability. Use a positive-pressure, air-supplied respirator if exposure levels are not known or where purifying respirators may not provide adequate protection for thermal decomposition products.

Engineering Controls: Provide local exhaust ventilation in processes to capture dust or thermal decomposition gases at their source.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical Appearance: Liquid

Color:	Colorless
Odor:	Slight odor
Solubility:	N/A
Specific Gravity (H₂O=1):	1.03
Boiling Point:	>100°C
Freezing Point:	N/A
Vapor Pressure:	N/A
Vapor Density (air=1):	N/A
Evaporation Rate (butyl acetate=1):	N/A

NOTE: The above information is not intended for use in preparing product specifications.

SECTION 10: STABILITY AND REACTIVITY DATA

Stability: This product is stable under ordinary conditions of use and storage.

Conditions to Avoid: Avoid contact with elevated temperatures or open flame.

Incompatibility with Other Materials: Avoid contact or contamination with strong oxidizers.

Hazardous Decomposition Products: Burning can produce carbon monoxide, carbon dioxide, oxides of silicon, and hydrocarbons. Carbon monoxide is high toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

Traces of formaldehyde may be generated due to oxidative thermal decomposition at temperatures greater than 150°C (300°F). Exposure to formaldehyde can cause adverse effects such as skin and respiratory sensitization and eye and throat irritation. Formaldehyde is a potential carcinogen. Evaluate and control exposure to formaldehyde when warranted by conditions of use.

Hazardous Polymerization: Hazardous polymerization will not occur under normal processing.

SECTION 11: TOXOLOGICAL INFORMATION

Acute Toxicity: NIOSH – Selected LD₅₀'s and LC₅₀'s: No Data Available
ACGIH – 2000 Skin Absorption Designation: No Data Available

Carcinogenic Status: IARC Carcinogens: Not listed
OSHA – Select Carcinogens: Not listed
NTP Eighth Report – Known Carcinogens: Not listed

NOTE: Refer to Section 3 for further discussion of the health hazards associated with this preparation.

SECTION 12: ECOLOGICAL INFORMATION



Ecolotoxological Information: Not determined

Chemical Fate Information: Not determined

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of absorbed material in accordance with all federal, state, and local regulations. Dispose of contaminated water in a contained waste treatment system.

SECTION 14: TRANSPORT INFORMATION

DOT Classification: None

Air Transportation: None (Not regulated)

SECTION 15: REGULATORY INFORMATION

Status on Substance Lists: The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations.

C.H.I.P. Regulations: None

Federal EPA: Section 304 CERCLA Hazardous Substances (40 CFR 302)
Xylene – 1330-20-7: 0.19%

Inventory Status: The ingredients of this product are listed on, or are exempt from listing, on the TSCA inventory.

State-Right-to-Know: California Prop 65: This product contains the following chemical(s) listed by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 as being known to cause cancer, birth defects or other reproductive harm:
Ethylbenzene – 100-41-4: <0.1000%

Massachusetts 105 CMR 670,000 Right-To-Know, Substance List (MSL):
None

New Jersey Right-To-Know, Substance List:
Dimethyl, methylhydrogen siloxane – 68037-59-2: 55-75%
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Pennsylvania Right-To-Know, Hazardous Substance List:
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Dimethylvinylated silica – 68988-89-6: 10-30%

California SCAQMN Rule 443.1 VOC's: Volatile Organic Compounds (VOC's) = Substances with vapor pressure of ≥ 0.5 mmHg at 104°C (219.2°F). This product contains <1 g/L VOC's.

Other Regulatory Info: EPA Hazard Categories: Immediate Health Hazard, Delayed Health Hazard.

SECTION 16: OTHER INFORMATION

Revision Information: No changes.

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