

Printing date 11/20/2017

Reviewed on 11/20/2017

## 1 Identification of the substance/mixture and of the company

· **Product identifier**

· **Trade name:** XM-C-1208 Carbon Resistive Ink

· **Application of the substance / the mixture** Functional electronic carbon printing ink

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

Applied Ink Solutions  
200 Flanders Road  
Westborough, MA 01581  
USA

· **Information department:**

Product Safety  
Email: [sales@appliedinksolutions.com](mailto:sales@appliedinksolutions.com)

· **Emergency telephone number:**

Applied Ink Solutions : 617-965-5511  
Chemtrec USA Emergency : 800-424-9300  
Chemtrec International Emergency : 703-527-3887

## 2 Hazard(s) identification

· **Classification of the substance or mixture**



GHS08 Health hazard

Carc. 2

H351 Suspected of causing cancer.



GHS07

Skin Irrit. 2

H315 Causes skin irritation.

Eye Irrit. 2A

H319 Causes serious eye irritation.

Skin Sens. 1

H317 May cause an allergic skin reaction.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

· **Label elements**

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS07



GHS08

· **Signal word** Warning

· **Hazard-determining components of labeling:**

Phenoxy Resin

Carbon black

· **Hazard statements**

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

(Contd. on page 2)

Printing date 11/20/2017

Reviewed on 11/20/2017

Trade name: XM-C-1208 Carbon Resistive Ink

(Contd. of page 1)

H412 Harmful to aquatic life with long lasting effects.

· **Precautionary statements**

- P261 Avoid breathing dust/fume/gas/mist/vapors/spray  
P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P310 If swallowed: Immediately call a poison center/doctor.  
P302+P352 If on skin: Wash with plenty of soap and water.  
P304+P341 If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.  
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.  
P337+P313 If eye irritation persists: Get medical advice/attention.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



· **HMIS-ratings (scale 0 - 4)**



· **Other hazards**

· **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.  
· **vPvB:** Not applicable.

### 3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

112-15-2	Diethylene glycol monoethyl ether acetate	40-60%
	⚠ Eye Irrit. 2A, H319	
	Phenoxy Resin	10-25%
	⚠ Aquatic Chronic 2, H411; ⚠ Skin Irrit. 2, H315; ⚠ Eye Irrit. 2A, H319; ⚠ Skin Sens. 1, H317	
1333-86-4	Carbon black	5-15%
	⚠ Carc. 2, H351	
3089-11-0	Hexa(methoxymethyl)melamine	1-5%
	⚠ Eye Irrit. 2A, H319	

· **Additional Components:**

7782-42-5	Graphite	10-25%
-----------	----------	--------

(Contd. on page 3)

**Trade name: XM-C-1208 Carbon Resistive Ink**

(Contd. of page 2)

#### 4 First-aid measures

- **Description of first aid measures**

- **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

- **After eye contact:**

Wash eyes immediately with a large amount of water or normal saline, occasionally lifting upper and lower eye lids until no evidence of chemical remains (about 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.

- **After swallowing:**

Do not induce vomiting unless instructed to do so by a physician. Wash out mouth with water and keep person at rest. Seek immediate medical attention.

- **Information for doctor:**

- **Most important symptoms and effects, both acute and delayed** No further relevant information available.

- **Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

#### 5 Fire-fighting measures

- **Extinguishing media**

- **Suitable extinguishing agents:**

ABC powder

Fire-extinguishing powder

Alcohol resistant foam

- **For safety reasons unsuitable extinguishing agents:** Water with full jet

- **Special hazards arising from the substance or mixture** No further relevant information available.

- **Advice for firefighters**

- **Protective equipment:** Wear SCBA.

#### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation

Keep away from ignition sources

Wear protective equipment. Keep unprotected persons away.

- **Environmental precautions:**

Inform respective authorities in case of seepage into water course or sewage system.

Do not allow to enter sewers/ surface or ground water.

- **Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Ensure adequate ventilation.

- **Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

- **Protective Action Criteria for Chemicals**

- **PAC-1:**

112-15-2	Diethylene glycol monoethyl ether acetate	16 mg/m <sup>3</sup>
	Phenoxy Resin	90 mg/m <sup>3</sup>

(Contd. on page 4)

**Trade name: XM-C-1208 Carbon Resistive Ink**

(Contd. of page 3)

1333-86-4	Carbon black	9 mg/m <sup>3</sup>
67762-90-7	Synthetic Amorphous Silica	120 mg/m <sup>3</sup>
<b>· PAC-2:</b>		
112-15-2	Diethylene glycol monoethyl ether acetate	170 mg/m <sup>3</sup>
	Phenoxy Resin	990 mg/m <sup>3</sup>
1333-86-4	Carbon black	99 mg/m <sup>3</sup>
67762-90-7	Synthetic Amorphous Silica	1,300 mg/m <sup>3</sup>
<b>· PAC-3:</b>		
112-15-2	Diethylene glycol monoethyl ether acetate	1,000 mg/m <sup>3</sup>
	Phenoxy Resin	5,900 mg/m <sup>3</sup>
1333-86-4	Carbon black	590 mg/m <sup>3</sup>
67762-90-7	Synthetic Amorphous Silica	7,900 mg/m <sup>3</sup>

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**  
 Ensure good ventilation/exhaust at the workplace.  
 Prevent formation of aerosols.
- **Information about protection against explosions and fires:**  
 Protect against electrostatic charges.  
 Keep ignition sources away - Do not smoke.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and containers:** No special requirements.
- **Information about storage in one common storage facility:**  
 Do not store together with alkalis (caustic solutions).  
 Do not store together with oxidizing and acidic materials.
- **Further information about storage conditions:**  
 Protect from heat and direct sunlight.  
 Keep container well-sealed in cool, dry location.  
 Store receptacle in a well ventilated area.
- **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**  
 The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.  
 At this time, the other constituents have no known exposure limits.

<b>1333-86-4 Carbon black</b>	
PEL	Long-term value: 3.5 mg/m <sup>3</sup>
REL	Long-term value: 3.5* mg/m <sup>3</sup> *0.1 in presence of PAHs; See Pocket Guide Apps.A+C

(Contd. on page 5)

**Trade name: XM-C-1208 Carbon Resistive Ink**

(Contd. of page 4)

TLV	Long-term value: 3* mg/m <sup>3</sup> *inhalable fraction
-----	--

- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
 Keep away from food and beverages.  
 Immediately remove all soiled and contaminated clothing.  
 Wash hands before breaks and at the end of work.  
 Avoid contact with the eyes and skin.
- **Respiratory equipment:**  
 In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.
- **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

- **Material of gloves** Nitrile rubber, NBR
- **Penetration time of glove material** Contact glove manufacture for break-through time.
- **Eye protection:**



Tightly sealed goggles

**9 Physical and chemical properties**

 · **Information on basic physical and chemical properties**

 · **General Information**

 · **Appearance:**

<b>Form:</b>	Fluid
<b>Color:</b>	Clear to light yellow

<b>Odor:</b>	Sweet
--------------	-------

<b>Odor threshold:</b>	Not determined.
------------------------	-----------------

<b>pH-value:</b>	Not determined.
------------------	-----------------

 · **Change in condition**

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	217.4 °C (423.3 °F)

<b>Flash point:</b>	98 °C (208.4 °F)
---------------------	------------------

<b>Flammability (solid, gaseous):</b>	Not applicable.
---------------------------------------	-----------------

<b>Ignition temperature:</b>	310 °C (590 °F)
------------------------------	-----------------

<b>Decomposition temperature:</b>	Not determined.
-----------------------------------	-----------------

<b>Auto igniting:</b>	Product is not selfigniting.
-----------------------	------------------------------

<b>Danger of explosion:</b>	Product does not present an explosion hazard.
-----------------------------	---

(Contd. on page 6)

**Trade name: XM-C-1208 Carbon Resistive Ink**

(Contd. of page 5)

· <b>Explosion limits:</b>	
<b>Lower:</b>	Not determined.
<b>Upper:</b>	Not determined.
· <b>Vapor pressure at 25 °C (77 °F):</b>	0.1 hPa (0.1 mm Hg)
· <b>Density:</b>	See other information
· <b>Relative density</b>	Not determined.
· <b>Vapor density</b>	Not determined.
· <b>Evaporation rate</b>	1.6-2.3 (BuAc=1)
· <b>Solubility in / Miscibility with Water:</b>	Water miscible No
· <b>Partition coefficient (n-octanol/water):</b> Not determined.	
· <b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
· <b>Solvent content:</b>	
<b>VOC content:</b>	0.00 %
<b>Solids content:</b>	12.7 +/- 2.0%
· <b>Other information</b>	No further relevant information available.

## 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability** Stable
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid**  
Heat, flames and sparks. Extremes of temperature and direct sunlight.  
Contact with incompatible materials.
- **Incompatible materials:** Strong Oxidizing Agents, Strong Acids, Strong Bases
- **Hazardous decomposition products:** Carbon monoxide and carbon dioxide

## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

### Phenoxy Resin

Oral	LD50	30,000 mg/kg (Rat)
Dermal	LD50	>1,200 mg/kg (Rat)

- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.
- **Sensitization:** Sensitization possible through skin contact.
- **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:  
Irritant

(Contd. on page 7)

Printing date 11/20/2017

Reviewed on 11/20/2017

**Trade name: XM-C-1208 Carbon Resistive Ink**

(Contd. of page 6)

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

1333-86-4 Carbon black

2B

· **NTP (National Toxicology Program)**

None of the ingredients are listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients are listed.

## 12 Ecological information

· **Toxicity**

· **Aquatic toxicity:** No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· **Behavior in environmental systems:**

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Ecotoxical effects:**

· **Remark:** Harmful to fish

· **Additional ecological information:**

· **General notes:**

Water hazard class 2 (Self-assessment): hazardous for water

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

Harmful to aquatic organisms

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

· **Waste treatment methods**

· **Recommendation:**

Must not be disposed of as regular garbage/trash. Do not allow product to reach sewage system.

Disposal must be made in accordance with Federal, State, and Local regulations.

· **Uncleaned packagings:**

· **Recommendation:** Disposal must be made in accordance with Federal, State, and Local regulations.

## 14 Transport information

· **UN-Number**

· **DOT, ADR, ADN, IMDG, IATA**

Not Regulated

· **UN proper shipping name**

· **DOT, ADR, ADN, IMDG, IATA**

Not Regulated

(Contd. on page 8)



**Trade name: XM-C-1208 Carbon Resistive Ink**

(Contd. of page 7)

- |  |                 |
|--|-----------------|
| · <b>Transport hazard class(es)</b>  |                 |
| · <b>DOT, ADR, ADN, IMDG, IATA</b>   |                 |
| · <b>Class</b>   | Not Regulated   |
| · <b>Packing group</b>   |                 |
| · <b>DOT, ADR, IMDG, IATA</b>  | Not Regulated   |
| · <b>Environmental hazards:</b>  | Not applicable. |
| · <b>Special precautions for user</b>  | Not applicable. |
| · <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b> | Not applicable. |
| · <b>UN "Model Regulation":</b>  | Not Regulated   |

### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**

- **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

- **Section 313 (Specific toxic chemical listings):**

112-15-2 | Diethylene glycol monoethyl ether acetate

- **TSCA (Toxic Substances Control Act):**

All ingredients are listed or comply with TSCA regulations.

- **Proposition 65**

- **Chemicals known to cause cancer:**

1333-86-4 | Carbon black

- **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients are listed.

- **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients are listed.

- **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

- **Carcinogenic categories**

- **EPA (Environmental Protection Agency)**

None of the ingredients are listed.

- **TLV (Threshold Limit Value established by ACGIH)**

1333-86-4 | Carbon black

A4

- **NIOSH-Ca (National Institute for Occupational Safety and Health)**

1333-86-4 | Carbon black

- **New Jersey State Right To Know List**

112-15-2 | Diethylene glycol monoethyl ether acetate

- **Pennsylvania Hazardous Substances List**

112-15-2 | Diethylene glycol monoethyl ether acetate

(Contd. on page 9)



Printing date 11/20/2017

Reviewed on 11/20/2017

**Trade name: XM-C-1208 Carbon Resistive Ink**

(Contd. of page 8)

- **California SCAQMD Rule 443.1 VOC's:** No information available.
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS07 GHS08

- **Signal word** Warning
- **Hazard-determining components of labeling:**  
Phenoxy Resin  
Carbon black
- **Hazard statements**  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H317 May cause an allergic skin reaction.  
H351 Suspected of causing cancer.  
H412 Harmful to aquatic life with long lasting effects.
- **Precautionary statements**  
P261 Avoid breathing dust/fume/gas/mist/vapors/spray  
P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P310 If swallowed: Immediately call a poison center/doctor.  
P302+P352 If on skin: Wash with plenty of soap and water.  
P304+P341 If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.  
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.  
P337+P313 If eye irritation persists: Get medical advice/attention.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
- **National regulations:**
- **Other regulations, limitations and prohibitive regulations**  
**RoHS (EU)2015/863 along with EU Directive 2002/95/EC – Waste from Electrical and Electronic Equipment (WEEE):**  
Applied Ink Solutions products do not exceed the amount of allowable levels concerning: Cadmium (Cd); Mercury (Hg); Lead (Pb); Hexavalent chromium (Cr6+); Polybrominated biphenyls (PBB); Polybrominated diphenyl ethers (PBDE); Bis(2-Ethylhexyl) phthalate (DEHP); Benzyl butyl phthalate (BBP); Dibutyl phthalate (DBP); Diisobutyl phthalate (DIBP); Bis(2-Ethylhexyl) phthalate (DEHP); Benzyl butyl phthalate (BBP); Dibutyl phthalate (DBP); Diisobutyl phthalate (DIBP).
- Applied Ink Solutions has confirmed with our precious metal suppliers that they do not use conflict minerals, as outlined in the **Dodd-Frank Wall Street Reform and Consumer Protection Act in Title XV, Section 1502.**
- Registration, Evaluation and Authorization of Chemicals (REACH) & Substances of Very High Concern (SVHC):** This product does not contain substances on the SVHC list.
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

(Contd. on page 10)

**Trade name: XM-C-1208 Carbon Resistive Ink**

(Contd. of page 9)

## 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Department issuing SDS:** Product safety department

· **Contact:** Mr. Cole

· **Revision History:** New SDS

· **Date of preparation / last revision** 11/20/2017 / -

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

Skin Sens. 1: Skin sensitisation – Category 1

Carc. 2: Carcinogenicity – Category 2

Carc. 2: Carcinogenicity – Category 2

Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3