Material Safety Data Sheet
Product Code: Thermochromic Powder BPA Free

1. Product and Company Information

1.1 Product Identifiers:
Product Name: Thermochromic Powder BPA Free

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Product Class: Thermochromic powder for use in color change inks. May be used to prepare color change plastic masterbatch.

1.3 Details of the supplier of the safety data sheet:
QCR Solutions Corp
P.O. Box 7850
Port Saint Lucie FL, 34985
Tel: 772-237-5354
Fax: 772-672-3544

1.4 Emergency Phone Number: 772-237-5354

2. Hazardous Identification

2.1 Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Skin Irrit. 2: H315 - May cause skin irritation.
Eye Irrit. 2: H319 - Causes serious eye irritation.

2.2 GHS Label elements, including precautionary statements
Pictogram:

Signal word Danger

[Prevention]
P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face

[Response]
P302+P352 IF ON SKIN: Wash with soap and water
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P321 Specific treatment (see on this label)
P332+P313 If skin irritation occurs: Get medical advice/attention.
P371 If eye irritation persists: Get medical advice/attention.

[Storage]
P403+P233 Store in a well ventilated place. Keep container tightly closed.

[Disposal]
P501 Dispose of contents/container to an approved waste disposal plant

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS
Skin Irrit. 2: H315; Eye Irrit. 2: H319;

3. Composition / Information on Ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Hazardous Ingredients</th>
<th>Classification</th>
<th>Conc.</th>
<th>CAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Developer</td>
<td>Skin Irrit. 2: H315; Eye Irrit. 2: H319; STOT SE 3: H355;</td>
<td>10-20%</td>
<td></td>
</tr>
</tbody>
</table>

4. First Aid Measures

4.1 Description of first aid measures

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

For inhalation: Move the exposed person to fresh air. Seek medical attention.

For skin contact: Remove contaminated clothing and shoes. Wash thoroughly with mild soap and warm water. Consult a physician if there is persisting irritation. Wash clothing before reuse.

For eye contact: Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Seek medical attention if irritation or symptoms persist.

For swallowing: Seek medical attention if irritation or symptoms persist. DO NOT INDUCE VOMITING.

4.2 Most important symptoms and effects, both acute and delayed
Skin contact: Irritating to the skin.
Eye contact: Irritating to the eyes.
Inhalation: Irritating to respiratory system. Inhalation may cause coughing, tightness of the chest and irritation of the respiratory system.
Ingestion: Ingestion may cause nausea and vomiting.

4.3. Indication of any immediate medical attention and special treatment needed

Skin contact: Itching. Wash off immediately with plenty of soap and water.
Eye contact: May cause irritation to the eyes. Rinse immediately with plenty of water for 15 minutes holding the eyelids open. Seek medical attention if irritation or symptoms persist.
Inhalation: Inhalation of dust may cause shortness of breath.
Ingestion: Ingestion may cause nausea and vomiting. If you feel unwell, seek medical advice (show the label where possible).

5. Fire Fighting Measures

5.1. Extinguishing media
Suitable extinguishing media
Use as appropriate: carbon dioxide (CO2), dry chemical, foam.

5.2. Special hazards arising from the substance or mixture
Burning produces irritating, toxic and obnoxious fumes.

5.3 Special protective equipment and precautions for firefighters
Wear suitable respiratory equipment when necessary.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 Methods and materials for containment and cleaning up
Absorb with inert, absorbent material. Sweep up. Transfer to suitable, labelled containers for disposal. Clean spillage area thoroughly with plenty of water.

Waste disposal: This material must be disposed within accordance with federal, state, and local ordinances.

6.3 Environmental precautions
Do not allow to enter drains, sewers or watercourses.

7. Handling and Storage

7.1 Precautions for safe handling
Avoid contact with eyes and skin. Ensure adequate ventilation of the working area. Adopt best Manual Handling considerations when handling, carrying and dispensing.

7.2 Conditions for safe storage, including any incompatibles
Keep in a cool, dry, well ventilated area. Keep containers tightly closed. Store in correctly labelled containers.

7.3 Specific end use(s)
Apart from the uses mentioned in Section 1.2 no other specific uses are stipulated.

7.4 Suitable Packaging:
Plastic Containers

7.5 Further Information:
On processing FF powders for masterbatch heating may result in generation of formaldehyde. Ensure adequate ventilation of all fumes.

8. Exposure Control & Personal Protection

8.1 Control parameters
Components with workplace control parameters. Contains no substances with occupational exposure limit values.

8.2 Exposure controls
Appropriate engineering controls: Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal protective equipment
Individual protection measures
Wear chemical protective clothing.
Eye/face protection
Approved safety goggles
Skin protection – Hand protection
Chemical resistant gloves (PVC).
Respiratory protection
Wear suitable respiratory equipment.

Environmental Exposure Controls
Appropriate local exhaust ventilation is required.

9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORM:</td>
<td>Powder</td>
</tr>
<tr>
<td>COLOR:</td>
<td>Various</td>
</tr>
<tr>
<td>ODOR:</td>
<td>Slight</td>
</tr>
<tr>
<td>ODOR THRESHOLD:</td>
<td>no data available</td>
</tr>
<tr>
<td>pH:</td>
<td>no data available</td>
</tr>
<tr>
<td>MELTING POINT:</td>
<td>no data available</td>
</tr>
<tr>
<td>Decomposition temp:</td>
<td>no data available</td>
</tr>
<tr>
<td>BOILING RANGE:</td>
<td>100°C</td>
</tr>
<tr>
<td>FLASH POINT:</td>
<td>no data available</td>
</tr>
<tr>
<td>EVAPORATION RATE:</td>
<td>no data available</td>
</tr>
<tr>
<td>IGNITION TEMPERATURE:</td>
<td>no data available</td>
</tr>
<tr>
<td>FLAMMABILITY:</td>
<td>no data available</td>
</tr>
<tr>
<td>UPPER EXPLOSION LIMIT:</td>
<td>no data available</td>
</tr>
<tr>
<td>LOWER EXPLOSION LIMIT:</td>
<td>no data available</td>
</tr>
<tr>
<td>VAPOR PRESSURE:</td>
<td>no data available</td>
</tr>
<tr>
<td>VAPOR DENSITY:</td>
<td>no data available</td>
</tr>
<tr>
<td>RELATIVE DENSITY:</td>
<td>no data available</td>
</tr>
<tr>
<td>WATER SOLUBILITY:</td>
<td>Insoluble</td>
</tr>
<tr>
<td>VISCOSITY:</td>
<td>no data available</td>
</tr>
<tr>
<td>Partition coefficient:</td>
<td>no data available</td>
</tr>
</tbody>
</table>

9.2 Other safety information
no data available

10. Reactivity / Stability

10.1 Reactivity
Avoid sparks, flames, heat and sources of ignition.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Heating during moulding will generate high levels of formaldehyde vapours which should be vented.

1.4 Conditions to avoid
No Significant Hazard.

1.5 Incompatible materials
Avoid contact with: Strong bases.

10.6 Hazardous decomposition products
Formaldehyde may be generated and other harmful fumes.

11. Toxicology Measures

11.1 Information on toxicological effects
Toxilogical Information
Color Developer
Oral Rat LD50: 3400 mg/kg

Skin corrosion/irritation  No test data available
Serious eye damage/irritation No test data available
Respiratory or skin sensitization No test data available
Germ cell mutagenicity No test data available
Carcinogenicity No test data available
Reproductive toxicity No test data available
STOT-single exposure No test data available
STOT-repeat exposure No test data available
Aspiration hazard No test data available

12. Ecological Information

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available.

12.3 Bioaccumulative potential
No data available.

12.4 Mobility in soil
No data available.

12.5 Other effects
Harmful to aquatic organisms

13. Disposal Considerations

13.1 Waste treatment methods
Observe all federal, state and local regulations when disposing of this substance. Do not empty into drains, sewers or water-courses.

14. Transport Information
Material Safety Data Sheet
Product Code: Thermochromic Powder BPA Free

14.1 DOT (US)
Not dangerous goods
14.2 IMDG
Not dangerous goods
14.3 IATA
Not dangerous goods

15. Regulatory Information

Regulations

16. Other Information

Revision: Revision 3: Major revision to include the requirements of the HCS/HazCom 2012 Final Rule. Formaldehyde was removed from the SDS because it is below the reportable limit of 0.1%.

Text Hazard Statements from Section 3
Skin Irrit. 2: H315 - Causes skin irritation.
Eye Irrit. 2: H319 - Causes serious eye irritation.
P264 - Wash thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 - IF ON SKIN: Wash with plenty of water/.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321 - Specific treatment (see on this label).
P332+P331 - If skin irritation occurs: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.

HMIS® Classification: (scale 0 – 4)

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
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</thead>
<tbody>
<tr>
<td>HEALTH</td>
<td>1</td>
</tr>
<tr>
<td>FLAMMABILITY</td>
<td>1</td>
</tr>
<tr>
<td>REACTIVITY</td>
<td>0</td>
</tr>
<tr>
<td>PERSONAL PROTECTION</td>
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</table>

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health risks or hazards and should be used with caution. QCR Solutions Corp urges the customer receiving this SDS to study it carefully to become aware of the hazards, if any. In the interest of safety, you should notify your employees, agents, contractors, etc. of the information on this sheet and make it available to anyone using this product and request your customers to inform their employees, customers and agents as well.

The information contained in this SDS is based on the present state of knowledge and current national legislation. It provides guidance on health, safety and environmental aspects of this product and should not be construed as any guarantee of technical performance or suitability for particular applications.

Revision Date: May 27, 2015