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Colors • Systems • Solutions MSDS CODE: Date Revised: HY3 01/11/2006 Nick Paris

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Reason for Revision:

See Section 16

1. CHEMICAL, PRODUCT AND COMPANY IDENTIFICATION:

Product Code(s):A860, A875Product Name:Hydrotint® Liquid Iron Oxide BlackChemical Family:Inorganic Metal OxideSynonyms:Aqueous suspension of Iron Oxide, Iron Oxide SlurryC.A.S. Number:1317-61-9Color Index Name:Pigment Black 11Color Index Number:77499

Prepared By:

Manufacturer's Name/Address:

| Rockwood Pigments/Davis Colors | s, 7011 Muirkirk Road, Beltsville, Maryland, USA 20705 |
|--------------------------------|--|
| Business Tel: | (301) 210-7800 9a-5p (0900-1700) EST M-F |
| Rockwood Pigments/Davis Colors | s, 3700 East Olympic Boulevard, Los Angeles, California, USA 90023 |
| Business Tel: | (323) 269-7311 9am-5pm (0900-1700) PST M-F |

24 Hour Emergency (Chemtrec): 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

| OSHA Hazardous Ingredients (2 | 9CFR1910.120 | U): | Exposure Limit | s (8 Hrs.TWA) | Vapor Pressure |
|---|--------------------------------|----------------------|---------------------------------|-----------------------------------|-----------------------------|
| Components: Silicon Dioxide-Amorphous (SiO ₂) | C.A.S. 7631-86-9 | % (<1) | OSHA PEL 6 mg/m ³ | ACGIH TLV 10 mg/m ³ | (mm Hg) Not applicable |
| Ethylene Glycol* *Indicates toxic chemicals subject | 107-21-1 ct to the reportin | (3-5) g requireme | 50 ppm nts of section 313 c | 25 ppm of Title III and of 40 | 0.6 20°C (68°F) CFR 372. |

Non-Hazardous Ingredients

| non nazardoda ingredienta. | | Exposure Limit | Vapor Pressure | | |
|--|----------------------------------|-------------------------|--|---|-----------------------------|
| Components: Water Iron Oxide (Black) | C.A.S. 7732-18-5 1317-61-9 | % (25-30) (60-80) | OSHA PEL Not established, Not established. | ACGIH TLV Not established. Not established. | (mm Hg) 17.0 20⁰C (68ºF) |

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Black liquid or paste of thick consistency with mild ammonia-like odor. Inhalation of vapor or mist can cause headache, nausea, and irritation of nose, throat, and lungs. Will not burn or combust. Packaging material can burn or melt in fire, producing toxic smoke and fumes.

HMIS Codes: H=1, F=0, R=0, P=0 (0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe)

The following information is based on the hazard profiles of other aqueous pigment suspensions that are compositionally similar to this product. Typical data are: Potential Health Effects:

Eyes:Mild irritant. Effects are temporary and reversible. May cause irritation, redness, blurred
vision, and tearing.Skin:Not absorbed into the skin. Will not irritate skin and is not likely to cause allergic skin
reaction. If allowed to remain on the skin without being rinsed off with water, a thin film of
dried pigment may form. Injury or irritation of the skin can occur by direct mechanical action
or by rigorous skin cleaning necessary for removal of dried liquid.Ingestion:May be harmful if swallowed. Ingestion may cause nausea, vomiting, diarrhea, and
gastrointestinal irritation. Consult a physician.Inhalation:Mild irritant. Effects are temporary and reversible. Vapor or mist can cause headache,

nausea, and irritation of nose, throat, and lungs. Use in well-ventilated area and avoid breathing vapors.



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Human Effects and symptoms of overexposure:

| Acute: Chronic: Other Effects; | Repeated skin contact may result in the development of an allergic skin reaction in a small number of individuals. This product is non-carcinogenic and not listed on NTP, IARC Monographs, and OSHA. Individual hazardous constituents listed in Section 2 of this MSDS can have a different acute and chronic effect depending on the health condition of a person. Prolonged inhalation of vapor or mist may cause brain, lung, and other organ damage. No other chronic effects have been studied. | | | |
|--|--|--|-----------------------------|--|
| Medical Conditions Aggravated by Exposure: | Information available on ch aggravate any medical cond | emically similar products show that ition. | overexposure is unlikely to | |
| Carcinogenicity: | IARC: Not Listed | NTP: Product is not a known | OSHA: Not regulated | |
| Other: | None known | carcinogen | | |
| | | | | |

4. FIRST AID MEASURES

| Eyes: | Flush eyes with water, lifting eyelids periodically. Remove contact lenses. Continue flushing for 15 |
|-------------|---|
| Skin: | Wash with soap and water. Get medical attention in the unlikely event that irritation develops or persists. |
| Ingestion: | Do not induce vomiting. Contact medical personnel or poison control center immediately. Activated |
| Inhalation: | charcoal may be administered. If conscious, give two glasses or more of water. Do not give anything by mouth to an unconscious person. If exposed to excessive levels of fumes, move from work area to fresh air. If not breathing, give |

artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

| 5. FIRE | FIGHT | ING MEASURES |
|----------|-------|--------------|
| — | · · – | |

| Flammable Properties: Flash Point: | Not Flammable. Non-combustible in as-sold form. >110 C (230 F) |
|--|---|
| Upper Explosive Limit (UEL): | Not Explosive |
| Lower Explosive Limit (LEL): Auto-ignition Temperature: | Not Explosive |
| · | Exposure to heat greater than 100°C (212°F) can cause product to boil or splatter. |
| Extinguishing Media: | This product is not combustible or flammable. Use extinguishing agents that are |
| Fire fighting Instructions: | suitable for the surrounding fire: water spray, dry chemical, foam, or CO_2 . Firefighters should be equipped with self-contained breathing apparatus to |
| Unusual Fire and Explosion Hazards: | protect against potentially toxic and irritating fumes and smoke inhalation. Exposure to heat builds up pressure in closed container. Cool with water spray. This product is non-combustible. |

6. ACCIDENTAL RELEASE MEASURES

Small Spill: Sprinkle spill with dry absorbent powder, such as cement, dried clay or other absorbent material and mix with broom until mixture is dry. Sweep-up material with vacuum or use a shovel or scoop. Dispose in DOT approved waste container.

arge Spill: Contain spill with dike made of cement, sand, soil or other absorbent material. Sprinkle spill with dry absorbent powder, such as cement, dried clay or other absorbent material and mix with broom until mixture is dry. Vacuum or scoop material into an appropriately marked container for disposal. Sprinkle spill with dry absorbent powder, such as cement, dried clay or other absorbent material and mix with broom until mixture is dry. Keep out of sewers, storm drains, surface waters, and soil.

7. HANDLING AND STORAGE

Storage:

Store dry at ambient temperature away from food and beverages, excessive heat or flame sources (furnace, kilns, boilers etc.). Avoid freezing. Rotate stock to use older product first. Inspect container for leaks or cracks.



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Handling:

Avoid prolonged or repeated breathing of vapors. Avoid getting in eyes or on skin. Wash thoroughly after handling. Avoid contact with moisture. Re-seal container immediately after use. Shipping pallets are wrapped in polyethylene plastic. Removal may cause an electrostatic spark; therefore removal of the wrap should not be in the presence of flammable vapors.

| Storage Temperature (Min/Max) Shelf Life Special Sensitivity Other Precautions | Two years in closed container |
|---|-------------------------------|
|---|-------------------------------|

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| Engineering Controls: | Local exhaust ventilation is recommended. General mechanical ventilation is usually |
|-------------------------|---|
| Eyes: Skin: | Eye goggles or face shields are recommended to protect against splash or splatters. Body-covering clothing, Rubber, plastic or other solvent impervious cloves are |
| Respiratory Protection: | recommended. gloves are recommended. In typical uses of this product, no respiratory protection is required. However, if strong odor is present, work ambient vapor concentrations should be monitored and if the recommended exposure limit is exceeded, a NIOSH/MSHA approved respirator with 700 ppm vapor prefilter should be worn. Types: CCROVF; GMOV; SAF or SCBAF. |
| Other: | Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of bazardous chemicale. Demonstrate |
| Work/Hygiene Practices: | contaminated clothing immediately. Wash clothing before re-use. Employees should wash their hands and face before eating, drinking or using tobacco products. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| Appearance Odor Physical State pH Vapor Pressure Vapor Density. (Air=1) Boiling Point Freezing Point Solubility in Water Specific Gravity (H ₂ O=1) Evaporation Rate Volatile Organic Compounds (VOC) Chemical Formula | : Sweet, Gly : Liquid : 9 - 10 : 24 MM HG : Lighter that >100°C (21 : 0°C (32°F) : Major portion : 2.04 : Slower than 86 ar/f | col-like @ 25°C(77°F) n air l2°F) on is insoluble |
|---|---|---|
| Chemical Formula | : 86 gr/l : Mixture | |
| | | |

10. STABILITY AND REACTIVITY

Chemical Stability (Conditions to Avoid):

Incompatibility (materials to avoid):

Decomposition Temperature C^o (F^o): Hazardous Decomposition Products: Hazardous Polymerization: Stable. Keep away from flames and heat. Exposure to excessive heat greater than 100°C (212°F) can cause product to boil or splatter. Avoid freezing. Strong oxidizing agents. Materials that react with water. Avoid strong acids and alkalines. Does not decompose Produces Carbon Dioxide and/or Carbon Monoxide on combustion. Will not occur.



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11. TOXICOLOGICAL INFORMATION

The following information is based on the toxicity profiles of other products that are compositionally similar to this product. Typical data are:

Eves: Skin: Ingestion: Inhalation: Subchronic: Chronic/Carcinogenicity: Other (Mutagenic, Teratogenic, Reproductive Tests):

Not irritating to rabbit eyes Not irritating to rabbit skin Dermal, LD 50 not established for product Non irritating. The oral, LD50 for rats is greater than 5000 mg/Kg Non irritating. LC 50 not established for product Data not established for product Data not established for product

12. ECOLOGICAL INFORMATION

The following information is based on the toxicity profiles of other products that are compositionally similar to this product. Typical data are: Ecotoxicological Information:

Fish toxicity: Golden Orfe (Leuciscus idus) LCo greater than 1000 mg/l Chemical Fate Information: No appreciable bioconcentration is expected in the environment.

13. DISPOSAL CONSIDERATIONS

Material which cannot be re-used should be disposed in accordance with federal, state and local environmental control regulations at an authorized site. This product when discarded as sold is not a RCRA hazardous waste. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40CFR 261.20-24).

Container Disposal: Triple rinse with water, then dispose of in licensed landfill, if allowed by local regulation.

14. TRANSPORT INFORMATION

| DOT Shipping Name | : Not regulated |
|------------------------------|-----------------|
| Technical Shipping Name | |
| DOT Hazardous Classification | Not regulated |
| DOT Hazard Class | Not regulated |
| DOT Identification Number | Not regulated |
| DOT Labels required | Not regulated |
| DOT Placards required | Not regulated |
| UN Class | Not available |
| UN/NA Number | Not available |
| Freight Class | 55 |
| Harmonized Tariff Number | 3206.49.20 |

15. REGULATORY INFORMATION *****

U.S. Federal Regulations

Concentration

| OSHA: | This product is considered H | azardous by definition | n of Haza | rd Cor | nmunication | Sta | Indard |
|--|--|--|-----------|--------|-------------|-----|--------|
| CERCLA/SUPERFUND: | (29 CFR 1910.1200) due to e (40 CFR 117,302) Reportabl Not Reportable, however, requirements for your site. | ethylene glycol conten e Quantity (RQ): | t. | | | | |
| Section 302 (Extreme | d Reauthorization Act (SARA), ≱ly Hazardous Substances): | Title III: None | | | | | |
| Section 311/312 (Haz Section 313 (Reporta | ard Categories): ble Toxic Ingredients): | Delayed Health Haza | ard | | | | |
| Chemical Name: | - , | C A S | | | O | | |

C.A.S.



Reason for Revision:

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|---------------|--|
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| Prepared By: | |

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| | | Prepared By: | Nick Paris | Reason for Revis | sion: See Section 16 |
|------------------------|---|--|--|--|--|
| E | Ethylene Glycol | | | 107-21-1 | 3 to 5% |
| T.S.C.A | A.: | This product class is list | ed on TSCA Inventor | 1. | |
| ******* | ***** | ******* In | ternational Regulatior | IS ******* | ***** |
| | | l Protection Act (CEPA): | All componer Substances L provisions of C All component | non-hazardous hts of this product a ist (DSL), and acceptat EPA. s of this product are on t nmercial Chemical Subst | ble for use under the he European Inventory |
| ****** | ******* | **** | State Regulations | ****** | ***** |
| Califorr | ia Proposition 66 | Warning: | This product California to reproductive ha | contains chemicals kn cause cancer and bi arm. | own to the state of rth defects or other |
| CA MA NJ4 PA3 | Massachuset New Jersey (| e Drinking Water and To ts Hazardous Substance Other- included in 5 predo Non-hazardous present | List pminant ingredients > | - | |

| Chemical Name: | C.A.S. | Concentration | State Code |
|------------------|-----------|---------------|--------------|
| Ethylene Glycol | 107-21-1 | 3 - 5% | CA, NJ4, PA3 |
| Black Iron Oxide | 1317-61-9 | 60 - 80% | PA3.NJ4 |
| | | | 1710,1104 |

This information based on random sample analyses. Actual content may vary from batch to batch. Note:

16. OTHER INFORMATION

| Reason for revision | n: N | lew MSD | S forma | it, re-issue | |
|---------------------|------|----------------------|--------------|--------------------|--|
| | | /22/2001 /23/2003 | | Revise se | ection 6 concerning spills. |
| | | 20,2000 | | content a product. | product to OSHA hazardous classification due to ethylene glycol nd removed iron oxide 'fume' content because it is not present in |
| | 1 | 1/9/2005 | - | Revised \ | /OC content from 223 g/L to 86 g/L (section 9). Changed Ethylene |
| | 1, | /11/2006 | - | Update re | ntent from 5-10% to 3-5% (sections 2 & 15) eview date. |
| HMIS Codes: | H=1, | F=0, | R=0 , | P=0 | (0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe) |

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of the Manufacturer. The data on this sheet relates only to the specific material designated herein. It may not be valid for this material if used in combination with any other materials or process. It is the users responsibility to verify suitability and completeness of this information for their own particular use. The Manufacturer assumes no legal responsibility for use or reliance upon these data.



MSDS CODE: Colors + Systems + Solutions Date Revised: Prepared By:

A550, A569

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Reason for Revision:

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1. CHEMICAL, PRODUCT AND COMPANY IDENTIFICATION:

Product Code(s): Product Name: Chemical Family: Synonyms: C.A.S. Number: Color Index Name: Color Index Number:

Hydrotint® Liquid Iron Oxide Yellow Inorganic Metal Oxide Aqueous suspension of Iron Oxide, Iron Oxide Slurry 51274-00-1 Pigment Yellow 42 77492

Manufacturer's Name/Address:

Rockwood Pigments/Davis Colors, 7011 Muirkirk Road, Beltsville, Maryland, USA 20705 Business Tel: (301) 210-7800 9a-5p (0900-1700) EST M-F Rockwood Pigments/Davis Colors, 3700 East Olympic Boulevard, Los Angeles, California, USA 90023 Business Tel: (323) 269-7311 9am-5pm (0900-1700) PST M-F

24 Hour Emergency (Chemtrec): 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

| OSHA Hazardous Ingredients (2 | 9CFR1910.120 | 0): | Exposure Limit | s (8 Hrs.TWA) | Vapor Pressure |
|---|-------------------------|---------------------|---------------------|--|----------------------------|
| Components: | C.A.S. | % | OSHA PEL | ACGIH TLV | (mm Hg) |
| Silicon Dioxide-Amorphous (SiO ₂) | 7631-86-9 | (<1) | 6 mg/m ³ | 10 mg/m ³ | Not applicable |
| Ethylene Glycol* | 107-21-1 | (3-8) | 50 ppm | 25 ppm | 0.6 20°C (68°F) |
| *Indicates toxic chemicals subject OSHA Hazardous Ingredients (2 | 9CFR1910.120 | ig requireme 0): | Exposure Limit | f Title III and of 40 s (8 Hrs.TWA) | CFR 372. Vapor Pressure |
| Components: | C.A.S. | % | | | (mm Hg) |
| Water Iron Oxide (yellow) | 7732-18-5 51274-00-1 | (25-30) (60-75) | Not established | Not established Not established | 17.0 20°C (68°F) |

3. HAZARDS IDENTIFICATION ************

EMERGENCY OVERVIEW

Yellow liquid or paste of milky consistency with mild glycol-like odor. Inhalation of vapor or mist can cause headache, nausea, and irritation of nose, throat, and lungs. Will not burn or combust. Packaging material can burn or melt in fire, producing toxic smoke and fumes.

HMIS Codes: H=1, F=0, R=0, P=0 (0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe)

The following information is based on the hazard profiles of other aqueous pigment suspensions that are compositionally similar to this product. Typical data are:

Potential Health Effects:

| Eyes: | Mild irritant. Effects are temporary and reversible. May cause irritation, redness, blurred |
|-------------|---|
| | vision, and tearing. |
| Skin: | Not absorbed into the skin. Will not irritate skin and is not likely to cause allergic skin |
| | reaction, it allowed to remain on the skin without being rinsed off with water a thin film of |
| | oned pigment may form. Injury or irritation of the skin can occur by direct mechanical action |
| | or by rigorous skin cleaning necessary for removal of dried liquid |
| Ingestion: | May be harmful if swallowed. Ingestion may cause nausea vomiting diarrhea and |
| 1 | gascontestinar mation. Consult a physician, |
| Inhalation: | Mild irritant. Effects are temporary and reversible. Vapor or mist can cause headache, |
| | hausea, and irritation of nose, throat, and lungs. Use in well-ventilated area and avoid |
| | breathing vapors. |

Human Effects and symptoms of overexposure:

| RECEVENCE PIGME Colors + Systems + Solu | NTS tions MSDS CC Date Revi | sed: 01/11/20 | 06 | | HEET Page 2 of 5 |
|--|--|--|--|---|---------------------|
| | Prepared | By: Nick Par | is Reaso | on for Revision: | See Section 16 |
| Acute: | Monographs, and | ontact may result in th duals. This product I OSHA. Individual ha ent acute and chronic | is non-carcinogenic zardous constituent | c and not listed s listed in Section | on NTP, IARC |
| Chronic: | Prolonged inhalat | ion of vapor or mist m | ay cause brain, lunc | and other organ | damage. |
| Other Effects: | No other chronic | effects have been stud | died. | <i>,,</i> | |
| Medical Conditions Aggravated by Exposure: | Information availa aggravate any me | able on chemically si edical condition. | nilar products show | v that overexposu | ire is unlikely to |
| Carcinogenicity: | IARC: Not | Listed NTP: F | roduct is not a know | n OSHA: No | ot regulated |
| Other: | None known | | carcinogen | | |

4. FIRST AID MEASURES

| Eyes: | Flush eyes with water, lifting eyelids periodically. Remove contact lenses. Continue flushing for 15 |
|-------------|--|
| Skin: | minutes or until eyes return to normal. Get medical attention if irritation develops or persists. Wash with soap and water. Get medical attention in the unlikely event that irritation develops or persists. Remove contaminated clothing immediately. Wash clothing before re-use. |
| Ingestion: | Do not induce vomiting. Contact medical personnel or poison control center immediately. Activated charcoal may be administered. If conscious, give two glasses or more of water. Do not give anything by mouth to an unconscious person. |
| Inhalation: | If exposed to excessive levels of fumes, move from work area to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. |

5. FIRE FIGHTING MEASURES

| Flammable Properties: | Not Flammable. Non-combustible in as-sold form, |
|--|--|
| Flash Point: | >110°C (230°F) |
| Upper Explosive Limit (UEL): | Not Explosive |
| Lower Explosive Limit (LEL): | Not Explosive |
| Auto-ignition Temperature: | Exposure to heat greater than 100°C (212°F) can cause product to boil or splatter. |
| Extinguishing Media: | This product is not combustible or flammable. Use extinguishing agents that are suitable for the surrounding fire: water spray, dry chemical, foam, or CO ₂ . |
| Fire fighting Instructions: | Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes and smoke inhalation. |
| Unusual Fire and Explosion Hazards: | Exposure to heat builds up pressure in closed container. Cool with water spray. This product is non-combustible. |
| | |

6. ACCIDENTAL RELEASE MEASURES

Small Spill: Sprinkle spill with dry absorbent powder, such as cement, dried clay or other absorbent material and mix with broom until mixture is dry. Sweep-up material with vacuum or use a shovel or scoop. Dispose in DOT approved waste container.

Large Spill: Contain spill with dike made of cement, sand, soil or other absorbent material. Sprinkle spill with dry absorbent powder, such as cement, dried clay or other absorbent material and mix with broom until mixture is dry. Vacuum or scoop material into an appropriately marked container for disposal. Sprinkle spill with dry absorbent powder, such as cement, dried clay or other absorbent material and mix with broom until mixture is dry. Keep out of sewers, storm drains, surface waters, and soil.

7. HANDLING AND STORAGE

Storage: Store dry at ambient temperature away from food and beverages, excessive heat or flame sources (furnace, kilns, boilers etc.). Avoid freezing. Rotate stock to use older product first. Inspect container for leaks or cracks.

Handling: Avoid prolonged or repeated breathing of vapors. Avoid getting in eyes or on skin. Wash



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thoroughly after handling. Avoid contact with moisture. Re-seal container immediately after use. Shipping pallets are wrapped in polyethylene plastic. Removal may cause an electrostatic spark; therefore removal of the wrap should not be in the presence of flammable vapors.

| Storage Temperature (Min/Max) Shelf Life Special Sensitivity Other Precautions | Two years in closed container |
|---|-------------------------------|
|---|-------------------------------|

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| Engineering Controls: | Local exhaust ventilation is recommended. General mechanical ventilation is usually sufficient to keep product vapor below threshold limit values. |
|-------------------------|---|
| Eyes: | Eye goggles or face shields are recommended to protect against splash or splatters. |
| Skin: | Body-covering clothing. Rubber, plastic or other solvent-impervious gloves are |
| | recommended. gloves are recommended. |
| Respiratory Protection: | In typical uses of this product, no respiratory protection is required. However, if strong odor is present, work ambient vapor concentrations should be monitored and if the recommended exposure limit is exceeded, a NIOSH/MSHA approved respirator with 700 ppm vapor prefilter should be worn. Types: CCROVF; GMOV; SAF or SCBAF. |
| Other: | Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of hazardous chemicals. Remove contaminated clothing immediately. Wash clothing before re-use. |
| Work/Hygiene Practices: | Employees should wash their hands and face before eating, drinking or using tobacco products. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| Appearance | Yellow Liquid |
|---------------------------------------|----------------------------|
| Odor | Sweet, Glycol-like |
| Physical State | Liquid |
| pH | 8 - 10 |
| Vapor Pressure | |
| Vapor Density. (Air=1) | Lighter than air |
| Boiling Point | >100°C (212°F) |
| Freezing Point | 0°C (32°F) |
| Solubility in Water | Major portion is insoluble |
| Specific Gravity (H ₂ O=1) | 2.03 |
| Evaporation Rate | Slower than Ether |
| Volatile Organic Compounds (VOC) | 88 ar/l |
| Chemical Formula | Mixture |
| | |

10. STABILITY AND REACTIVITY

Chemical Stability (Conditions to Avoid):

Incompatibility (materials to avoid):

Decomposition Temperature C^o (F^o): Hazardous Decomposition Products: Hazardous Polymerization: Stable. Keep away from flames and heat. Exposure to excessive heat greater than 100°C (212°F) can cause product to boil or splatter. Avoid freezing. Strong oxidizing agents. Materials that react with water. Avoid strong acids and alkalines. Does not decompose

Produces Carbon Dioxide and/or Carbon Monoxide on combustion. Will not occur.

11. TOXICOLOGICAL INFORMATION



MATERIAL SAFETY DATA SHEET SDS CODE: HY2 Page 4 of 5

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The following information is based on the toxicity profiles of other products that are compositionally similar to this product. Typical data are:

Eyes: Skin: Ingestion: Inhalation: Subchronic: Chronic/Carcinogenicity: Other (Mutagenic, Teratogenic, Reproductive Tests): Not irritating to rabbit eyes Not irritating to rabbit skin Dermal, LD 50 not established for product Non irritating. The oral, LD50 for rats is greater than 5000 mg/Kg Non irritating. LC 50 not established for product Data not established for product Data not established for product

12. ECOLOGICAL INFORMATION

The following information is based on the toxicity profiles of other products that are compositionally similar to this product. Typical data are: Ecotoxicological Information: Fish toxicity: Golden Orfe (Leuciscus idus) LCo greater than 1000

Chemical Fate Information:

mg/l No appreciable bioconcentration is expected in the environment.

13. DISPOSAL CONSIDERATIONS

Material which cannot be re-used should be disposed in accordance with federal, state and local environmental control regulations at an authorized site. This product when discarded as sold is not a RCRA hazardous waste. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40CFR 261.20-24).

Container Disposal:

Triple rinse with water, then dispose of in licensed landfill, if allowed by local regulation.

14. TRANSPORT INFORMATION

| DOT Shipping Name | Not regulated |
|------------------------------|---------------|
| Technical Shipping Name | |
| DOT Hazardous Classification | Not regulated |
| DOT Hazard Class: | |
| DOT Identification Number | |
| DOT Labels required | |
| DOT Placards required | |
| UN Class | Not available |
| UN/NA Number | Not available |
| Freight Class | 55 |
| Harmonized Tariff Number | 3206.49.20 |

15. REGULATORY INFORMATION

| **** | | al Regulations | ******* | ***** | ****** |
|--|---|---|--------------|--------------------------|--------|
| OSHA: | This product is considered H | azardous by definition | of Hazard Co | mmunication St | andard |
| CERCLA/SUPERFUND: | (29 CFR 1910.1200) due to e (40 CFR 117,302) Reportable Not Reportable, however, requirements for your site. | Quantity (RQ): | | authorities to | verify |
| Section 302 (Extrem Section 311/312 (Ha | nd Reauthorization Act (SARA), nely Hazardous Substances): azard Categories): table Toxic Ingredients): | Title III: None Delayed Health Haza | ard | | |
| Chemical Name: Ethylene Glycol | | C.A.S. 107-21-1 | | Concentration 3 to 8% | |



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T.S.C.A.: This product class is listed on TSCA Inventory.

| ****** | International Regulations | ********** |
|---|--|--|
| Canadian WHMIS: Canadian Environmental Protection Act (CEP | Substances List (DSL), an | s product are on the Domestic d acceptable for use under the |
| EINECS: | provisions of CEPA. All components of this produ of Existing Commercial Cher | uct are on the European Inventory mical Substances (EINECS). |
| ****** | State Regulations | ****** |
| California Proposition 65 Warning: | | emicals known to the state of er and birth defects or other |

CA = California Safe Drinking Water and Toxic Enforce Act (Proposition 65)

MA = Massachusetts Hazardous Substance List

NJ4 = New Jersey Other- included in 5 predominant ingredients >1%

PA3 = Pennsylvania Non-hazardous present at 3% or greater

| Chemical Name: | C.A.S. | Concentration | State Code |
|-------------------|------------|---------------|--------------|
| Ethylene Glycol | 107-21-1 | 3 - 8% | CA, NJ4, PA3 |
| Iron Oxide Yellow | 51274-00-1 | 60 - 75% | PA3, NJ4 |

Note: This information based on random sample analyses. Actual content may vary from batch to batch.

16. OTHER INFORMATION

Reason for revision: New MSDS format, re-issue.

| | . How mode format, ic issue. |
|-------------|---|
| | 3/3/2000 - Change Ethylene content & pH |
| | 2/22/2001 - Change section 6 concerning spills. |
| | 7/23/2003 - Changed product to OSHA hazardous classification due to ethylene glycol content and removed iron oxide 'fume' content because it is not present in product. |
| | 11/9/2005 - Changed VOC content from 233 g/L to 88 g/L (section 9) |
| | 1/11/2006 - Updated review date. |
| HMIS Codes: | H=1, F=0, R=0, P=0 (0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe) |

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of the Manufacturer. The data on this sheet relates only to the specific material designated herein. It may not be valid for this material if used in combination with any other materials or process. It is the users responsibility to verify suitability and completeness of this information for their own particular use. The Manufacturer assumes no legal responsibility for use or reliance upon these data.



MATERIAL SAFETY DATA SHEET MSDS CODE:

Colors • Systems • Solutions

HY1

01/11/2006 Nick Paris

Page 1 of 5

Reason for Revision:

See Section 16

1. CHEMICAL, PRODUCT AND COMPANY IDENTIFICATION:

Date Revised:

Prepared By:

Product Code(s): Product Name: Chemical Family: Synonyms: C.A.S. Number: Color Index Name: Color Index Number: A1010, A1111, A1117, A1070 Hydrotint® Liquid Iron Oxide Red Inorganic Metal Oxide Aqueous suspension of Iron Oxide, Iron Oxide Slurry 1309-37-1 Pigment Red 101 77491

Manufacturer's Name/Address:

Rockwood Pigments/Davis Colors, 7011 Muirkirk Road, Beltsville, Maryland, USA 20705 (301) 210-7800 9a-5p (0900-1700) EST M-F **Business Tel:** Rockwood Pigments/Davis Colors, 3700 East Olympic Boulevard, Los Angeles, California, USA 90023 (323) 269-7311 9am-5pm (0900-1700) PST M-F Business Tel:

24 Hour Emergency (Chemtrec): 800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

OSHA Hazardous Ingredients (29CFR1910.1200): Exposure Limits (8 Hrs.TWA) Vapor Pressure (mm Hg) Components: C.A.S. % OSHA PEL ACGIH TLV Silicon **Dioxide-Amorphous** 7631-86-9 (<1) 6 mg/m^3 10 ma/m³ Not applicable (SiO_2) Iron Oxide (red) 1309-37-1 Not established (60-75)Not established Not applicable 0.6 20°C (68°F) Ethylene Glycol* 107-21-1 50 ppm 25 ppm (3-5)*Indicates toxic chemicals subject to the reporting requirements of section 313 of Title III and of 40 CFR 372. Non-Hazardous Ingredients: Exposure Limits (8 Hrs. TWA) Vapor Pressure (mm Hg) Components: C.A.S. OSHA PEL % ACGIH TLV Water 7732-18-5 (25-30)17.0 20°C (68°F) Not established Not established

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Red liquid or paste of milky consistency with mild glycol-like odor. Inhalation of vapor or mist can cause headache, nausea, and irritation of nose, throat, and lungs. Will not burn or combust. Packaging material can burn or melt in fire, producing toxic smoke and fumes.

HMIS Codes: F=0. R=0. P=0 (0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe) H=1.

The following information is based on the hazard profiles of other aqueous pigment suspensions that are compositionally similar to this product. Typical data are:

Potential Health Effects:

| Eyes: | Mild irritant. Effects are temporary and reversible. May cause irritation, redness, blurred vision, and tearing. |
|------------|---|
| Skin: | Not absorbed into the skin. Will not irritate skin and is not likely to cause allergic skin reaction. If allowed to remain on the skin without being rinsed off with water, a thin film of dried pigment may form. Injury or irritation of the skin can occur by direct mechanical action or by rigorous skin cleaning necessary for removal of dried liquid. |
| Ingestion: | May be harmful if swallowed. Ingestion may cause nausea, vomiting, diarrhea, and |

gastrointestinal irritation. Consult a physician. Mild irritant. Effects are temporary and reversible. Vapor or mist can cause headache, Inhalation: nausea, and irritation of nose, throat, and lungs. Use in well-ventilated area and avoid

Human Effects and symptoms of overexposure:

breathing vapors.

| | | | IAL SAF | ETY DA | TA SI | |
|--|--------------------------------|--|--|--|---|---|
| Colors • Systems • Sol | utions | MSDS CODE: Date Revised: | HY1 01/11/2006 | | | Page 2 of 5 |
| | | Prepared By: | Nick Paris | Reason for F | evision: | See Section 16 |
| Acute: Chronic: Other Effects: | numb Mono can h Prolo | ated skin contact may er of individuals. Thi graphs, and OSHA. In ave a different acute a nged inhalation of vapo her chronic effects hav | is product is non- ndividual hazardous nd chronic effect de or or mist may caus | carcinogenic and constituents listed pending on the he | not listed in Section alth conditio | on NTP, IARC 2 of this MSDS in of a person. |
| Medical Conditions Aggravated by Exposure: | | nation available on ch avate any medical conc | | oducts show that | overexposu | re is unlikely to |
| Carcinogenicity: | | IARC: Not Listed | NTP: Product i carcin | | OSHA: No | ot regulated |

Other: None known

4. FIRST AID MEASURES

| Eyes: | Flush eyes with water, lifting eyelids periodically. Remove contact lenses. Continue flushing for 15 |
|-------|--|
| | minutes or until eyes return to normal. Get medical attention if irritation develops or persists. |
| Skin: | Wash with soap and water. Get medical attention in the unlikely event that irritation develops or |
| | persists. Remove contaminated clothing immediately. Wash clothing before re-use. |

- Ingestion: Do not induce vomiting. Contact medical personnel or poison control center immediately. Activated charcoal may be administered. If conscious, give two glasses or more of water. Do not give anything by mouth to an unconscious person.
- Inhalation: If exposed to excessive levels of fumes, move from work area to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

5. FIRE FIGHTING MEASURES

| Flammable Properties: | Not Flammable. Non-combustible in as-sold form. |
|--|--|
| Flash Point: | >110℃ (230℉) |
| Upper Explosive Limit (UEL): | Not Explosive |
| Lower Explosive Limit (LEL): | Not Explosive |
| Auto-ignition Temperature: | Exposure to heat greater than 100°C (212°F) can cause product to boil or splatter. |
| Extinguishing Media: | This product is not combustible or flammable. Use extinguishing agents that are suitable for the surrounding fire: water spray, dry chemical, foam, or CO ₂ . |
| Fire fighting Instructions: | Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes and smoke inhalation. |
| Unusual Fire and Explosion Hazards: | Exposure to heat builds up pressure in closed container. Cool with water spray. This product is non-combustible. |
| | |

6. ACCIDENTAL RELEASE MEASURES

Small Spill: Sprinkle spill with dry absorbent powder, such as cement, dried clay or other absorbent material and mix with broom until mixture is dry. Sweep-up material with vacuum or use a shovel or scoop. Dispose in DOT approved waste container.

Large Spill: Contain spill with dike made of cement, sand, soil or other absorbent material. Sprinkle spill with dry absorbent powder, such as cement, dried clay or other absorbent material and mix with broom until mixture is dry. Vacuum or scoop material into an appropriately marked container for disposal. Sprinkle spill with dry absorbent powder, such as cement, dried clay or other absorbent material and mix with broom until mixture is dry. Keep out of sewers, storm drains, surface waters, and soil.

7. HANDLING AND STORAGE

Storage: Store dry at ambient temperature away from food and beverages, excessive heat or flame sources (furnace, kilns, boilers etc.). Avoid freezing. Rotate stock to use older product first. Inspect container for leaks or cracks.

Handling: Avoid prolonged or repeated breathing of vapors. Avoid getting in eyes or on skin. Wash



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Reason for Revision: See Section 16

thoroughly after handling. Avoid contact with moisture. Re-seal container immediately after use. Shipping pallets are wrapped in polyethylene plastic. Removal may cause an electrostatic spark; therefore removal of the wrap should not be in the presence of flammable vapors.

| Storage Temperature (Min/Max) Shelf Life Special Sensitivity Other Precautions | Two years in closed container Heat Keep closed container away from heat. If empty cont contains residue (vapors, liquids or solids), he container subject to hazard precautions given in | andle |
|---|--|-------|
| | MSDS. | |

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| Engineering Controls: | Local exhaust ventilation is recommended. General mechanical ventilation is usually sufficient to keep product vapor below threshold limit values. |
|-------------------------|---|
| Eyes: | Eye goggles or face shields are recommended to protect against splash or splatters. |
| Skin: | Body-covering clothing. Rubber, plastic or other solvent-impervious gloves are recommended. gloves are recommended. |
| Respiratory Protection: | In typical uses of this product, no respiratory protection is required. However, if strong odor is present, work ambient vapor concentrations should be monitored and if the recommended exposure limit is exceeded, a NIOSH/MSHA approved respirator with 700 ppm vapor prefilter should be worn. Types: CCROVF; GMOV; SAF or SCBAF. |
| Other: | Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of hazardous chemicals. Remove contaminated clothing immediately. Wash clothing before re-use. |
| Work/Hygiene Practices: | Employees should wash their hands and face before eating, drinking or using tobacco products. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| Appearance:Odor:Physical State: pH :Vapor Pressure:Vapor Density. (Air=1):Boiling Point:Freezing Point:Solubility in Water:Specific Gravity (H2O=1):Evaporation Rate:Volatile Organic Compounds (VOC):Chemical Formula: | Sweet, Glycol-like Liquid 9 - 10 24 MM HG @ 25°C(77°F) Lighter than air >100°C (212°F) 0°C (32°F) Major portion is insoluble A1010=1.93 A1070=1.94 A1111=2.03 A1117=2.20 Slower than Ether A1010=97 A1070=100 A1111=86 A1117=92 gr/l |
|---|--|
|---|--|

10. STABILITY AND REACTIVITY

Chemical Stability (Conditions to Avoid):

Incompatibility (materials to avoid):

Decomposition Temperature C^o (F^o): Hazardous Decomposition Products: Hazardous Polymerization: Stable. Keep away from flames and heat. Exposure to excessive heat greater than 100°C (212°F) can cause product to boil or splatter. Avoid freezing. Strong oxidizing agents. Materials that react with water. Avoid strong acids and alkalines. Does not decompose Produces Carbon Dioxide and/or Carbon Monoxide on combustion. Will not occur.

11. TOXICOLOGICAL INFORMATION



Non irritating. LC 50 not established for product

MSDS CODE: Date Revised: Prepared By:

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Reason for Revision:

Not irritating to rabbit skin Dermal, LD 50 not established for product

Non irritating. The oral, LD50 for rats is greater than 5000 mg/Kg

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See Section 16

The following information is based on the toxicity profiles of other products that are compositionally similar to this product. Typical data are:

Not irritating to rabbit eyes

Data not established for product

Data not established for product

Eyes: Skin: Ingestion: Inhalation: Subchronic: Chronic/Carcinogenicity: Other (Mutagenic, Teratogenic, Reproductive Tests):

12. ECOLOGICAL INFORMATION

The following information is based on the toxicity profiles of other products that are compositionally similar to this product. Typical data are: Ecotoxicological Information: Fish toxicity: Golden Orfe (Leuciscus idus) LCo greater than 1000 ma/l

No appreciable bioconcentration is expected in the environment.

13. DISPOSAL CONSIDERATIONS

Chemical Fate Information:

Material which cannot be re-used should be disposed in accordance with federal, state and local environmental control regulations at an authorized site. This product when discarded as sold is not a RCRA hazardous waste. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40CFR 261.20-24).

Container Disposal:

Triple rinse with water, then dispose of in licensed landfill, if allowed by local regulation.

14. TRANSPORT INFORMATION

| DOT Shipping Name : | Not regulated |
|------------------------------|---------------|
| Technical Shipping Name | Ŭ |
| DOT Hazardous Classification | Not regulated |
| DOT Hazard Class: | |
| DOT Identification Number | Not regulated |
| DOT Labels required | Not regulated |
| DOT Placards required | Not regulated |
| UN Class | Not available |
| UN/NA Number | Not available |
| Freight Class: | 55 |
| Harmonized Tariff Number : | 3206.49.20 |

15. REGULATORY INFORMATION

| ***** | | al Regulations | ****** | ***** | ***** |
|--|--|--|--------|--------------------------|--------|
| OSHA: | This product is considered (29 CFR 1910.1200) due to | | | mmunication Sta | andard |
| CERCLA/SUPERFUND: | (40 CFR 117,302) Reportab Not Reportable, however, requirements for your site. | e Quantity (RQ): | | authorities to | verify |
| Section 302 (Extrem Section 311/312 (Ha | nd Reauthorization Act (SARA ely Hazardous Substances): izard Categories): able Toxic Ingredients): |), Title III: None Delayed Health Haza | ard | | |
| Chemical Name: Ethylene Glycol | <u> </u> | C.A.S. 107-21-1 | | Concentration 3 to 5% | |

107-21-1

3 to 5%



3 - 5%

60 - 75

MSDS CODE: Date Revised: Prepared By: HY1 01/11/2006 Nick Paris Page 5 of 5

CA, NJ4, PA3

NJ4, PA3

Reason for Revision: See

T.S.C.A.: This product class is listed on TSCA Inventory.

| ******** | International Regulatio | ns ******************************* |
|---|----------------------------------|---|
| Canadian WHMIS: Canadian Environmental Protection Act (CE | PA): All compone Substances I | /non-hazardous nts of this product are on the Domestic .ist (DSL), and acceptable for use under the |
| EINECS: | | CEPA. ts of this product are on the European Inventory mmercial Chemical Substances (EINECS). |
| *********** | State Regulations | ********************** |
| California Proposition 65 Warning: | | contains chemicals known to the state of cause cancer and birth defects or other narm. |
| CA=California Safe Drinking Water and Toxic Enforce Act (Proposition 65)MA=Massachusetts Hazardous Substance ListNJ4=New Jersey Other- included in 5 predominant ingredients >1%PA3=Pennsylvania Non-hazardous present at 3% or greater | | |
| Chemical Name: | C.A.S. | Concentration State Code |

Note: This information based on random sample analyses. Actual content may vary from batch to batch.

107-21-1

1309-37-1

16. OTHER INFORMATION

Ethylene Glycol

Iron Oxide (red)

| Reason for revision: | 6/5/2000 - | Revise pigment content section 2. Ethylene Glycol content sections 2&15, revise specific gravity & VOC content section 9. |
|----------------------|-------------|--|
| | 2/22/2001 - | Revise section 6 concerning spills. |
| | | Changed product to OSHA hazardous classification due to ethylene glycol content and removed iron oxide 'fume' content because it is not present in product. |
| | 11/9/2005 - | Changed VOC content information from A1010=446 A1070=441 A1111=419 A1117=324 gr/l to A1010=97 A1070=100 A1111=86 A1117=92 gr/l. Changed Ethylene Glycol content from 5-10% to 3-5% (sections 2 & 15) |
| | 1/11/2006 - | |
| HMIS Codes: H= | =1, F=0, R= | 0, P=0 (0=Minimal, 1=Slight, 2=Moderate, 3=Serious, 4=Severe) |

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