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1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product code 18EC143
Product name Economy Halftone Yellow (MTR)
Product category 1800 Series UV Screen Ink

Other means of identification

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended use Printing operations

Details of the supplier of the safety data sheet

UNITED STATES	UNITED KINGDOM
Nazdar Company	Nazdar Limited
8501 Hedge Lane Terrace	Barton Road
Shawnee, KS 66227	Heaton Mersey
Tel: +001-913-422-1888	Stockport, England SK4 3EG
Tel: +001-800-677-4657	Tel: +44 161 442 2111
Fax: +001-913-422-2294	
www.nazdar.com	

Emergency telephone number

USA: Chemtrec: +001-800-424-9300
 Outside USA: Chemtrec: +001-703-527-3887
 24 Hour Emergency Phone Number

2. HAZARDS IDENTIFICATION

Classification

Serious eye damage/eye irritation	Category 2 - (H319)
Skin sensitization	Category 1A - (H317)
Reproductive toxicity	Category 1B - (H360FD)
Specific target organ toxicity (repeated exposure)	Category 1 - (H372)
Chronic aquatic toxicity	Category 2 - (H411)

Label elements



Signal Word
 Danger

Hazard Statements

H317 - May cause an allergic skin reaction
 H319 - Causes serious eye irritation
 H360FD - May damage fertility. May damage the unborn child
 H372 - Causes damage to organs through prolonged or repeated exposure

H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements

P264 - Wash face, hands and any exposed skin thoroughly after handling

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P337 + P313 - If eye irritation persists: Get medical advice/attention

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention

P202 - Do not handle until all safety precautions have been read and understood

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P308 + P313 - IF exposed or concerned: Get medical advice/attention

P270 - Do not eat, drink or smoke when using this product

P314 - Get medical advice/attention if you feel unwell

P273 - Avoid release to the environment

Hazards not otherwise classified (HNOC)

Causes mild skin irritation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Component	CAS-No	Weight %	Trade Secret	Note
Glycol Ether Acrylate	Trade Secret	30 - 60	*	
Vinyl Functional Monomer	Trade Secret	10 - 30	*	
Acrylated Monomer	Trade Secret	1 - 5	*	
Acrylated Monomer	Trade Secret	1 - 5	*	
Photoinitiator	Trade Secret	1 - 5	*	
Silicon dioxide, amorphous	7631-86-9	1 - 5	*	
Photoinitiator	Trade Secret	< 1	*	
Ethyl benzene (constituent)	100-41-4	< 0.5	*	1
1,2,4-Trimethylbenzene (constituent)	95-63-6	< 0.5	*	1

*The exact percentage (concentration) of composition has been withheld as a trade secret.

Note 1. Type of chemical: Constituent

4. FIRST AID MEASURES

Description of first aid measures

General Advice

Show this safety data sheet to the doctor in attendance.

Eye Contact

Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get medical attention if irritation develops and persists.

Skin Contact

Wash off immediately with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. If irritation (redness, rash, blistering) develops, get medical attention.

Inhalation

Remove person to fresh air and keep comfortable for breathing. If breathing is irregular or stopped, administer artificial respiration. Get medical attention immediately.

Ingestion

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Most important symptoms and effects, both acute and delayed

None under normal use conditions.

Indication of any immediate medical attention and special treatment needed

Notes to Physician

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Foam. Carbon dioxide (CO₂). Dry chemical. Water spray. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media

No information available.

Specific Hazards Arising from the Chemical

Thermal decomposition can lead to release of irritating gases and vapors. May emit toxic fumes under fire conditions. Hazardous polymerization may take place during a fire due to heat. Closed containers could violently rupture.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Cool containers / tanks with water spray. Sealed containers may rupture when heated.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions

Remove all sources of ignition. Ventilate the area. Avoid contact with eyes, skin and clothing. Avoid breathing dust or vapor. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental precautions

Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Keep out of drains, sewers, ditches and waterways. Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Use clean non-sparking tools to collect absorbed material.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling

Use personal protective equipment as required. Do not eat, drink or smoke when using this product. Ensure adequate ventilation.

Conditions for safe storage, including any incompatibilities

Storage

Keep at temperatures between 18°-32°C (65°-90°F). Keep containers tightly closed in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep out of the reach of children. Protect from direct sunlight. Keep away from open flames, hot surfaces and sources of ignition.

Incompatible Products

Strong acids. Strong bases. Strong oxidizing agents. Reducing agent.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits

Component	ACGIH TLV
Ethyl benzene (constituent) 100-41-4	TWA: 20 ppm

Component	OSHA PEL
Ethyl benzene (constituent)	TWA: 100 ppm

100-41-4	TWA: 435 mg/m ³
Component	OSHA PEL (vacated)
Silicon dioxide, amorphous 7631-86-9	TWA: 6 mg/m ³
Ethyl benzene (constituent) 100-41-4	TWA: 100 ppm TWA: 435 mg/m ³ STEL: 125 ppm STEL: 545 mg/m ³
Component	Ontario TWAEV
Ethyl benzene (constituent) 100-41-4	TWA: 20 ppm
Component	Mexico OEL (TWA)
Ethyl benzene (constituent) 100-41-4	TWA/VLE-PPT: 100 ppm TWA/VLE-PPT: 435 mg/m ³ STEL/PPT-CT: 125 ppm STEL/PPT-CT: 545 mg/m ³

Appropriate engineering controls

Engineering Measures

Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Users are advised to consider national Occupational Exposure Limits or other equivalent values. In case of insufficient ventilation, wear suitable respiratory equipment.

Individual protection measures, such as personal protective equipment

Eye/Face Protection

Wear safety glasses with side shields (or goggles). If splashes are likely to occur, wear suitable face shield. Ensure that eyewash stations and safety showers are close to the workstation location.

Skin Protection

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Hand Protection

Chemical resistant protective gloves.
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding >480 minutes of permeation time): eg. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), polyvinylchloride (0.7 mm) and other
Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers. Taking into account the varying conditions, the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.
Due to different glove types, the manufacturer's directions for use should be observed. Replace gloves immediately when torn or any change in appearance is noticed such as dimension, color, flexibility.

Respiratory Protection

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Respiratory protection must be provided in accordance with current local regulations. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. Wash hands before eating, drinking or smoking. Wash contaminated clothing before reuse. Avoid contact with eyes, skin and clothing. Wear suitable gloves and eye/face protection. Regular cleaning of equipment, work area and clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid	Appearance	Colored Liquid
Odor	Sweet Mild Acrylic	Odor Threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH		No data available
Melting Point / Freezing Point		No data available
Boiling Point / Boiling Range	> 149 °C / 300 °F	
Flash Point	> 94 °C / > 201 °F	Pensky Martens Closed Cup (PMCC)
Evaporation rate		No data available
Flammability Limit in Air		
Upper flammability limit		No data available
Lower flammability limit		No data available
Vapor Pressure		No data available
Vapor Density		No data available
Specific Gravity	1.1	
Water Solubility		No data available
Solubility in other solvents		No data available
Partition coefficient: n-octanol/water		No data available
Autoignition Temperature		No data available
Decomposition temperature		No data available
Kinematic viscosity		No data available
Dynamic viscosity		No data available
Explosive Properties	No data available	
Oxidizing Properties	No data available	

Other Information

Photochemically Reactive	No
Weight Per Gallon (lbs/gal)	9.2

VOC by weight % (less water)	VOC by volume % (less water)	VOC lbs/gal (less water)	VOC grams/liter (less water)
0-1	0-1	0-1	8.82

10. STABILITY AND REACTIVITY

Reactivity

No information available.

Chemical stability

Stable under normal conditions.

Possibility of Hazardous Reactions

None under normal processing. Do not store for longer periods at temperatures above 93°C (200°F).

Conditions to avoid

Temperatures above 93 °C / 200 °F. Protect from direct sunlight. Keep away from open flames, hot surfaces and sources of ignition.

Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents. Reducing agent.

Hazardous Decomposition Products

Thermal decomposition can lead to release of irritating gases and vapors. Carbon dioxide (CO₂). Carbon monoxide.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation	Specific test data for the substance or mixture is not available.
Eye Contact	Specific test data for the substance or mixture is not available.
Skin Contact	Specific test data for the substance or mixture is not available.
Ingestion	Specific test data for the substance or mixture is not available.

Component	Oral LD50
Glycol Ether Acrylate	= 4660 µL/kg (Rat)
Acrylated Monomer	= 5 g/kg (Rat)
Acrylated Monomer	= 5190 mg/kg (Rat)
Silicon dioxide, amorphous 7631-86-9	= 7900 mg/kg (Rat)
Ethyl benzene (constituent) 100-41-4	= 3500 mg/kg (Rat)
1,2,4-Trimethylbenzene (constituent) 95-63-6	= 3280 mg/kg (Rat)

Component	Dermal LD50
Acrylated Monomer	= 3600 mg/kg (Rabbit)
Acrylated Monomer	= 5000 mg/kg (Rabbit)
Silicon dioxide, amorphous 7631-86-9	> 2000 mg/kg (Rabbit)
Ethyl benzene (constituent) 100-41-4	= 15400 mg/kg (Rabbit)
1,2,4-Trimethylbenzene (constituent) 95-63-6	> 3160 mg/kg (Rabbit)

Component	Inhalation LC50
Silicon dioxide, amorphous 7631-86-9	> 2.2 mg/L (Rat) 1 h
Ethyl benzene (constituent) 100-41-4	= 17.4 mg/L (Rat) 4 h
1,2,4-Trimethylbenzene (constituent) 95-63-6	= 18 g/m ³ (Rat) 4 h

Information on toxicological effects

Symptoms Specific test data for the substance or mixture is not available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Specific test data for the substance or mixture is not available.
Eye damage/irritation Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components).
Irritation Specific test data for the substance or mixture is not available.
Corrosivity Specific test data for the substance or mixture is not available.
Sensitization Specific test data for the substance or mixture is not available. May cause an allergic skin reaction. (based on components).
Mutagenic Effects Specific test data for the substance or mixture is not available.
Carcinogenic effects Specific test data for the substance or mixture is not available.
Reproductive Effects Specific test data for the substance or mixture is not available. May damage fertility. May damage the unborn child. (based on components).
STOT - single exposure Specific test data for the substance or mixture is not available.
STOT - repeated exposure Specific test data for the substance or mixture is not available. Causes damage to organs through prolonged or repeated exposure. (based on components).
Chronic Toxicity Specific test data for the substance or mixture is not available
Target Organ Effects Liver, Respiratory system.
Aspiration hazard Specific test data for the substance or mixture is not available.
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	ACGIH
Ethyl benzene (constituent) 100-41-4	A3

Component	IARC
Ethyl benzene (constituent)	Group 2B

100-41-4	
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Component	OSHA
Acrylated Monomer	X
Ethyl benzene (constituent) 100-41-4	X

Numerical measures of toxicity - Product Information

Unknown Acute Toxicity 0 % of the mixture consists of ingredient(s) of unknown toxicity

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 2,331.00 mg/kg
ATEmix (dermal) 5,129.00 mg/kg mg/l

12. ECOLOGICAL INFORMATION

Ecotoxicity

Specific test data for the substance or mixture is not available. Toxic to aquatic life with long lasting effects. (based on components).

0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment

Component	Algae/aquatic plants
Silicon dioxide, amorphous 7631-86-9	72h EC50 Pseudokirchneriella subcapitata: = 440 mg/L
Ethyl benzene (constituent) 100-41-4	96h EC50 Pseudokirchneriella subcapitata: > 438 mg/L 96h EC50 Pseudokirchneriella subcapitata: 1.7 - 7.6 mg/L static 72h EC50 Pseudokirchneriella subcapitata: = 4.6 mg/L 72h EC50 Pseudokirchneriella subcapitata: 2.6 - 11.3 mg/L static

Component	Fish
Silicon dioxide, amorphous 7631-86-9	96h LC50 Brachydanio rerio: = 5000 mg/L (static)
Ethyl benzene (constituent) 100-41-4	96h LC50 Pimephales promelas: 7.55 - 11 mg/L (flow-through) 96h LC50 Poecilia reticulata: = 9.6 mg/L (static) 96h LC50 Oncorhynchus mykiss: 11.0 - 18.0 mg/L (static) 96h LC50 Pimephales promelas: 9.1 - 15.6 mg/L (static) 96h LC50 Oncorhynchus mykiss: = 4.2 mg/L (semi-static) 96h LC50 Lepomis macrochirus: = 32 mg/L (static)
1,2,4-Trimethylbenzene (constituent) 95-63-6	96h LC50 Pimephales promelas: 7.19 - 8.28 mg/L (flow-through)

Component	Crustacea
Silicon dioxide, amorphous 7631-86-9	48h EC50 Ceriodaphnia dubia: = 7600 mg/L
Ethyl benzene (constituent) 100-41-4	48h EC50 Daphnia magna: 1.8 - 2.4 mg/L
1,2,4-Trimethylbenzene (constituent) 95-63-6	48h EC50 Daphnia magna: = 6.14 mg/L

Persistence and Degradability

No information available.

Bioaccumulation

No information available

Component	Partition coefficient
Ethyl benzene (constituent) 100-41-4	3.2
1,2,4-Trimethylbenzene (constituent)	3.63

95-63-6	
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Other adverse effects
 No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste Disposal Methods Contain and dispose of waste according to local regulations.

Contaminated Packaging Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

Note: This information is not intended to convey all specific transportation requirements relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation information can be found in the specific regulations for your mode of transportation. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

DOT Not regulated
 Exception: In the US and Canada except when all or part of the transportation is by vessel, containers 119 gallons/ 450 Liters and less are not regulated [see 49CFR 171.4 (c)(1)]
 If in quantities of 5L or less (per inner packaging) for liquids or 5KG or less (per inner packaging) for solids these items may be shipped as not regulated [additional general packaging requirements must be met see 49CFR 173.24] [see 49CFR 171.4 (c)(2)]

ICAO / IATA / IMDG / IMO Not Regulated
 Exception: If in quantities of 5L or less (per inner packaging) for liquids or 5KG or less (per inner packaging) for solids these items may be shipped as not regulated [additional general packaging requirements must be met see ICAO/IATA special provision A197]
 Exception: If in quantities of 5L or less (per inner packaging) for liquids or 5KG or less (per inner packaging) for solids these items may be shipped as not regulated [additional general packaging requirements must be met see IMDG code 2.10.2.7]

15. REGULATORY INFORMATION

International Inventories

All components are listed on the TSCA Inventory. For further information, please contact: Supplier (manufacturer/importer/downstream user/distributor).

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Component	CAS-No	Weight %	SARA 313 - Threshold Values
Glycol Ether Acrylate	Trade Secret	30 - 60	1.0
Ethyl benzene (constituent)	100-41-4	< 0.5	0.1

The above glycol ether acrylate is considered a reactive chemical in ultraviolet curable inks. Once initiated by a high dose of ultraviolet light, this glycol ether acrylate rapidly polymerizes (i.e. hardens) and becomes part of the ink film. The polymerization process of UV curable inks is measured in milliseconds.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product contains the following substances which are listed hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act:

Component	CAS-No	Weight %
Glycol Ether Acrylate	Trade Secret	30 - 60
Xylenes (o-, m-, p- isomers)	1330-20-7	< 0.5
Ethyl benzene (constituent)	100-41-4	< 0.5

U.S. State Regulations

Component	Massachusetts Right To Know
Silicon dioxide, amorphous 7631-86-9	X
Ethyl benzene (constituent) 100-41-4	X
1,2,4-Trimethylbenzene (constituent) 95-63-6	X

Component	Minnesota Right To Know
Acrylated Monomer	X
Acrylated Monomer	X
Silicon dioxide, amorphous 7631-86-9	X
Ethyl benzene (constituent) 100-41-4	X
1,2,4-Trimethylbenzene (constituent) 95-63-6	X

Component	New Jersey Right To Know
Glycol Ether Acrylate	X
Ethyl benzene (constituent) 100-41-4	X
1,2,4-Trimethylbenzene (constituent) 95-63-6	X

Component	Pennsylvania Right To Know
Glycol Ether Acrylate	X
Silicon dioxide, amorphous 7631-86-9	X
Ethyl benzene (constituent) 100-41-4	X
1,2,4-Trimethylbenzene (constituent) 95-63-6	X

California Prop. 65

This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm

Component	California Prop. 65
Ethyl benzene (constituent)	Carcinogen

Canada

Component	NPRI - National Pollutant Release Inventory
Ethyl benzene (constituent) 100-41-4	Part 1, Group A Substance; Part 4 Substance
1,2,4-Trimethylbenzene (constituent) 95-63-6	Part 5, Individual Substances; Part 4 Substance

