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

Product identifier

Product code **39356**
 Product name **Halftone High Intensity Black**
 Product category **3900 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

| | |
|--|------------------------|
| Skin Corrosion/Irritation | Category 2 - (H315) |
| 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 2 - (H373) |
| Chronic aquatic toxicity | Category 2 - (H411) |

Label elements



Signal Word
Danger

Hazard Statements

H315 - Causes skin irritation
 H317 - May cause an allergic skin reaction

H319 - Causes serious eye irritation
 H360FD - May damage fertility. May damage the unborn child
 H373 - May cause 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
 P314 - Get medical advice/attention if you feel unwell
 P273 - Avoid release to the environment

Hazards not otherwise classified (HNOC)

Harmful to aquatic life.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

| Component | CAS-No | Weight % | Trade Secret | Note |
|--------------------------|--------------|----------|--------------|------|
| Glycol Ether Acrylate | Trade Secret | 10 - 30 | * | |
| Acrylated Monomer | Trade Secret | 10 - 30 | * | |
| Vinyl Functional Monomer | Trade Secret | 5 - 10 | * | |
| Glycol Ether Acrylate | Trade Secret | 5 - 10 | * | |
| Acrylated Monomer | Trade Secret | 5 - 10 | * | |
| Carbon black | 1333-86-4 | 1 - 5 | * | |
| Triethanolamine | 102-71-6 | 1 - 5 | * | |
| Photoinitiator | Trade Secret | 1 - 5 | * | |
| Photoinitiator | Trade Secret | 1 - 5 | * | |

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

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 |
|-----------------------------|---|
| Carbon black 1333-86-4 | TWA: 3 mg/m ³ inhalable particulate matter |
| Triethanolamine 102-71-6 | TWA: 5 mg/m ³ |

| | |
|-----------------------------|--|
| Component | OSHA PEL |
| Carbon black 1333-86-4 | TWA: 3.5 mg/m ³ |
| Component | OSHA PEL (vacated) |
| Carbon black 1333-86-4 | TWA: 3.5 mg/m ³ |
| Component | Ontario TWAEV |
| Carbon black 1333-86-4 | TWA: 3 mg/m ³ inhalable |
| Triethanolamine 102-71-6 | TWA: 0.5 ppm TWA: 3.1 mg/m ³ |
| Component | Mexico OEL (TWA) |
| Carbon black 1333-86-4 | TWA/VLE-PPT: 3.5 mg/m ³ STEL/PPT-CT: 7 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 |
| Odor | Characteristic 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 | 1.11 | |
| 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) | 9.28 |

| VOC by weight % (less water) | VOC by volume % (less water) | VOC lbs/gal (less water) | VOC grams/liter (less water) |
|---------------------------------|---------------------------------|-----------------------------|---------------------------------|
| 0-1 | No information available | 0-1 | 3.96 |

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) |
| Carbon black 1333-86-4 | > 15400 mg/kg (Rat) |
| Triethanolamine 102-71-6 | = 4190 mg/kg (Rat) |

| Component | Dermal LD50 |
|-----------------------------|--------------------------|
| Acrylated Monomer | = 3600 mg/kg (Rabbit) |
| Triethanolamine 102-71-6 | > 20000 mg/kg (Rabbit) |

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. Causes skin irritation (pain, redness and swelling). (based on components).

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. May cause 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 |
|---------------------------|-------|
| Carbon black 1333-86-4 | A3 |

| Component | IARC |
|---------------------------|----------|
| Carbon black 1333-86-4 | Group 2B |

| Component | OSHA |
|---------------------------|------|
| Carbon black 1333-86-4 | 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) 2,993.00 mg/kg
ATEmix (dermal) 3,054.00 mg/kg

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 |
|-----------------------------|--|
| Triethanolamine 102-71-6 | 96h EC50 Desmodesmus subspicatus: = 169 mg/L 72h EC50 Desmodesmus subspicatus: = 216 mg/L |

| Component | Fish |
|-----------------------------|---|
| Vinyl Functional Monomer | 96h LC50 Danio rerio: = 307 mg/L [static] |
| Triethanolamine 102-71-6 | 96h LC50 Pimephales promelas: > 1000 mg/L (static) 96h LC50 Lepomis macrochirus: 450 - 1000 mg/L (static) 96h LC50 Pimephales promelas: 10600 - 13000 mg/L (flow-through) |
| Photoinitiator | 96h LC50 Danio rerio: = 9 mg/L [static] |
| Photoinitiator | 96h LC50 Danio rerio: = 0.46 mg/L [semi-static] |

Persistence and Degradability

No information available.

Bioaccumulation

No information available

| Component | Partition coefficient |
|-----------------------------|-----------------------|
| Triethanolamine 102-71-6 | -2.53 |

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 | 10 - 30 | 1.0 |
| Glycol Ether Acrylate | Trade Secret | 5 - 10 | 1.0 |

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 | 10 - 30 |
| Glycol Ether Acrylate | Trade Secret | 5 - 10 |
| Xylenes (o-, m-, p- isomers) | 1330-20-7 | < 0.5 |

U.S. State Regulations

| Component | Massachusetts Right To Know |
|-----------------------------|-----------------------------|
| Carbon black 1333-86-4 | X |
| Triethanolamine 102-71-6 | X |

| Component | Minnesota Right To Know |
|-----------------------------|-------------------------|
| Acrylated Monomer | X |
| Carbon black 1333-86-4 | X |
| Triethanolamine 102-71-6 | X |

| Component | New Jersey Right To Know |
|---------------------------|--------------------------|
| Glycol Ether Acrylate | X |
| Glycol Ether Acrylate | X |
| Carbon black 1333-86-4 | X |

| | |
|-----------------------------|---------------------------------------|
| Triethanolamine 102-71-6 | X |
| Component | Pennsylvania Right To Know |
| Glycol Ether Acrylate | X |
| Glycol Ether Acrylate | X |
| Carbon black 1333-86-4 | X |
| Triethanolamine 102-71-6 | 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 |
| Carbon black | Carcinogen |

- This product contains carbon black in a non-respirable form. Inhalation of carbon black is unlikely to occur from exposure to this product

Canada

| | |
|-----------------------------|--|
| Component | NPRI - National Pollutant Release Inventory |
| Triethanolamine 102-71-6 | Part 4 Substance |

16. OTHER INFORMATION

| | | | | |
|--------------|---------------|---------------------|-------------------|----------------------------|
| HMIS: | Health | Flammability | Reactivity | Personal Protection |
| | 2 | 1 | 1 | X |

Key or legend to abbreviations and acronyms used in the safety data sheet**Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

| | |
|---------|----------------------------------|
| TWA | TWA (time-weighted average) |
| STEL | STEL (Short Term Exposure Limit) |
| Ceiling | Maximum limit value |

ACGIH: (American Conference of Governmental Industrial Hygienists)

- A1 - Known Human Carcinogen
- A2 - Suspected Human Carcinogen
- A3 - Animal Carcinogen

IARC: (International Agency for Research on Cancer)

- Group 1 - Carcinogenic to Humans
- Group 2A - Probably Carcinogenic to Humans
- Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

- Known - Known Carcinogen
- Reasonably Anticipated to be a Human Carcinogen

OSHA: (Occupational Safety & Health Administration)

- X - Present

Revision Date Feb-06-2020

Pursuant to NOM-018-STPS-2015

This information within is considered correct but is not exhaustive and will be used for guidance only, which is based on the current knowledge of the substance or mixture and is applicable to the appropriate safety precautions for the product.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific

material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet