

MATERIAL SAFETY DATA SHEET

SECTION 1: Product and Company Details

- **Product name** : Yellow Carbon dots (YC-Dots)
- **Product Status** : Solid (10 mg)
- **Storage Condition** : Room Temperature
- **Product Number** : YCD-1001
- **Brand** : C-Dots Nanotec
- **Company** : C-Dots Nanotec, LLC (address below)
- **Emergency Contact** : +1 786-871-7839

SECTION 2: Precursor

- Citric acid and 1,2-phenylenediamine

SECTION 3: Physical, Chemical, and Structural properties

Physical and Chemical Properties

- **Product Status:** Solid
- **Color** : Solid (Orange), Solution under Room Light (colorless)
- **Odor** : No data available
- **Solubility** : Amphiphilic (Dispersable in water and organic solvents)
- **Composition** : 93.4% of Carbon, 5.2% of Oxygen and 1.4% Nitrogen
- **Surface functionalization:** -COOH, -NH₂ functional groups

Characterization

UV-vis Spectrum

- **235 nm (C=C), 255 nm (C=N), 285 nm (C=O) and 421 nm NO₂ absorption cross-section.**

Fluorescence Spectra

- **Optically stabilized and Wavelength independent. Maximum excitation and emissions are at 400 nm, and 562 nm, respectively.**

FTIR Spectrum

- **OH/N-H Stretching (3276 cm⁻¹), C=O/C=C stretching (1500 cm⁻¹), C-C/C-N Stretching (1273 cm⁻¹)**

XPS Data

- **C=C (284.9 eV), C-O-H (286.8 eV), C=O (531.2 eV)**

Zeta Potential

- **-15.3 mV**

AFM/TEM average particle size

- **3.4 nm**

SECTION 4: Hazards identification

- The product was experimentally proven to be non-toxic. Toxicity experiments were carried out with sea-urchin and human cell lines.

SECTION 5: Product Handling

- Wear protective gloves/ protective clothing/ eye protection/ face protection.
- IF exposed or concerned: Get medical advice/ attention.
- Dispose of contents/ container to an approved waste disposal plant.

SECTION 6: First Aid Measures

Description of First Aid Measures

General advice

- Consult a physician with this safety data sheet

If inhaled

- If breathed in, carry the person into the fresh air. If the breathing difficulties are showing up immediately, consult a physician.

In case of skin contact

- Wash off with soap and plenty of water.

In case of eye contact

- Rinse the eyes with normal water at least 20 minutes.

If swallowed

- Never admit any foreign materials or objects by mouth to an unconscious person. Rinse mouth with water. Consult a Physician

Indication of any immediate medical attention and special treatment needed

- No data available

SECTION 7: Firefighting Measures

Extinguishing Media

Suitable extinguishing media

- Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

Special hazards arising from the substance or mixture

- Carbon oxides

Advice for firefighters

- Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 8: Storage Condition and Product Stability

- **In order to obtain the clean, characteristic data as mentioned in section 3, the container should be tightly closed (should not need to be airtight) after it opened and store it at room temperature.**

Storage class

- **Non Combustible solid**

Chemical stability

- **Stable under recommended storage conditions**

Incompatible materials

- **Please avoid strong oxidizing agents**

Further Information

The experimental details and analytical characterization data are assured to be correct and consistent. All the other information is correct to the present state of our knowledge but does not stated to be all-inclusive and shall be used only as in the guide. Company name and its Affiliates do not hold liable for any damage resulting from handling or contact with the above product.

www.cdotsnanotec.com

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