

Uranine 2313 Tracer Dye

Former trade names: Uranine Tracer 4313, HI-pH Stable Uranine 6313



General Description

Uranine is the disodium salt of Fluorescein, (Solvent Yellow 94). It is a strongly fluorescent, water soluble xanthene dye. In a purified form, it is known as D&C Yellow 8. Uranine is widely used as a tracer dye because of its characteristic neon green fluorescence. It is also used to color liquid chemicals like engine coolant. It is considered a fugitive dye because of its low fade resistance (light fastness). An interesting side note, Uranine was used for many years to dye the Chicago River green for St. Patrick's Day.

Physical & Chemical Properties

Chemical nature: xanthene dye, sodium salt
Physical form: powder
Ionic character: anionic
Pure dye content: 70-80 % by weight
Chemical formula: $C_{20}H_{10}Na_2O_5$
Molecular weight: 376.3
Appearance: orange-brown powder
Bulk density: 0.55-0.75 g/cm³
Solubilities: Water: 400 g/l
Ethanol: 700 g/l
Methyl Cellosolve: 400 g/l
Wavelength of maximum absorption (water)
 λ_{max} : 491 nm (primary), 322 nm (secondary)
Wavelength of peak emission: approx 525 nm (H₂O)
Maximum fluorescence occurs at pH 7.4.
(Fluorescence decreases rapidly below pH 7.0)
Molar absorptivity, ϵ : 84,000 M⁻¹cm⁻¹
Light fastness: poor (AATCC Rating: 1-2)
pKa values: 2.08, 4.31, 6.43
Very good stability in alkaline solutions
Recommended pH range: 6-13
Decomposition Temperature: 599°F (315°C)

Powder and Liquid Dye Forms

This dye is also available in liquid form under the trade name Uranine 2355 Liquid. One part powder is equivalent to 1.9 parts liquid by weight.

Storage & Handling

Store in a dry location. Keep container closed when not in use. Handle with care to avoid dust generation.
Shelf Life: 5 years from date of manufacture.

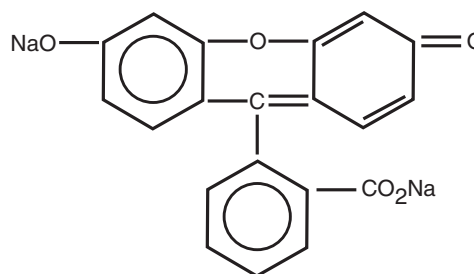
Transportation

Shipping: Not regulated for transport by US DOT/IATA.

Product Identification

Color Index Generic Name:	Acid Yellow 73
Color Index Constitution Number:	45350
CAS Number	518-47-8
EC (EINECS) Number	208-253-0
PubChem CID	9885981
Synonyms:	Acid Yellow 73, disodium salt Fluorescein, disodium salt

TSCA Name: Spiro[isobenzofuran-1(3H),9'-[9H]xanthen]-3-one, 3',6'-dihydroxy-, sodium salt (1:2)
TSCA Referenced Entry: CDSL_US_TSCA_518478



Common Applications

Industrial & Institutional Cleaners
Inks and Markers
Chemical Compounding
Engine coolant/antifreeze
Water Tracing / Sea Marker
Leak and Crack Detection
Oil field Services

Packaging

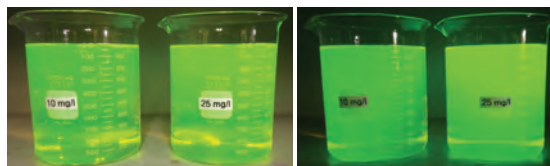
1-lb jars
5-lb jars
25-lb pails
100-lb drums

Typical Use Rates

Coloring Liquid Products: This dye can be added at varying concentrations to produce shades ranging from light to heavy. The following rates represent typical concentrations when coloring liquid products:

Shade	Concentration	1-lb treats	1-kg treats
Light	10 mg/L	≡ 12000 gallons	≡ 100000 liters
Medium	25 mg/L	≡ 4800 gallons	≡ 40000 liters
Heavy	50 mg/L	≡ 2400 gallons	≡ 20000 liters

mg/L: milligrams per liter ≡ equivalent to



Viewed under Fluorescent Light

Viewed under Ultraviolet Light

Coloring Marker Inks: 1.5 - 3.0% w/w

Water Tracing: variable - consult a professional hydrologist.

***Disclaimer:** Color shown is a CMYK approximation only. Actual color may vary depending upon concentration and the nature of the product to which this dye is applied. It is essential that thorough testing be completed on a sample basis before proceeding to use this dye on a production level. To our best knowledge, the information and recommendations contained herein are accurate and reliable. However, this information and our recommendations are furnished without warranty, representation, inducement, or license of any kind, including, but not limited to, the implied warranties of merchantability and fitness for a particular use or purpose. Customers are encouraged to conduct their own tests and to read the available product literature carefully before using this product. **Note:** Below pH 7.0, the fluorescence diminishes rapidly.

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