CIS-650-Solid

Technical Data Sheet

General Description

$CuInS_2$/ZnS core–shell quantum dots (QD) emitting vivid orange-red photoluminescence at a peak wavelength of 650 nm. Common uses include light-conversion and as a luminescent colorant. The ZnS shell and organic ligand sphere provide surface passivation for improved optical stability and safer handling. Exhibits strong UV absorption. Demonstrated use in UbiGro® greenhouse films. Can be used as an additive to polymers, inks, or coatings.

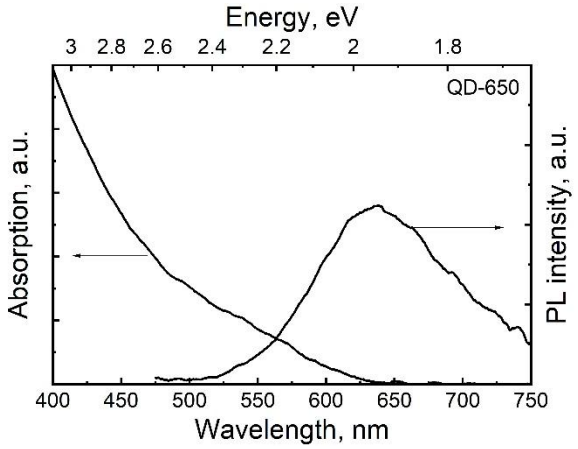
- Heavy metal- and phosphine-free composition supports regulatory and environmental objectives.
- Low self-absorption due to a large Stokes shift (>300 meV).

Properties

CAS #	927198-36-5
Delivery Form	Tacky particulate solids
Composition	$CuInS_2$/ZnS
Peak Emission Wavelength, UV excited (nm)	650 ± 20
Full width at half maximum (nm)	130 ± 50
Quantum Yield (%)	>75%
Color	Luminescent orange-red
Particle Size (nm)	6 ± 2
Ligand	Long chain carboxylic acid

For more information about test methods, contact your UbiQD representative.

Representative Absorption & Emission Spectra*



*Excited under 405 nm.

Handling, Storage & Shelf Life

- Avoid exposure to UV or direct sunlight during handling; normal indoor lighting is acceptable.
- Store in closed container at room temperature protected from light and moisture.
- Long term storage in halogenated solvents is not recommended.
- Unopened Shelf Life: 6 months

Stability & Durability

- May undergo photo-oxidation and loss of quantum yield if not properly formulated, packaged, and stored.
- As-supplied solids are intended for use in formulations and are not for direct use. Long-term stability depends on the user's chosen

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formulation and must be verified under intended conditions.

- Incompatible with strong acids and bases, or with strong oxidizing agents.
- QDs may degrade at temperatures 180-240°C.
- QD emission may redshift at temperatures >50°C.

Solvent & Polymer Compatibility

- Good solubility in non-polar solvents. Poor solubility in polar solvents.
- Successfully compounded into thermoplastic polymers via twin-screw extruder.
- Successfully blended into UV-curable resin.
- Emission wavelength and FWHM may shift depending on solvent and matrix. User must test in their chosen formulation and verify under intended conditions.

- + High, +/- Partial, - Low/Not Recommended

Solvent	Solubility	Shelf Life
Toluene	+	+/-
1-octadecene	+	+
Hexane	+	+
Water	-	-
Highly polar solvents	-	-

Polymer	Compatibility
Polyethylene	+
EVA	+
POE	+
PA (Nylon)	+
PMMA	+
EVOH	+
Polycarbonate	-
TPU	+
Acrylates	+

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