Technical Data Sheet

ACS Material LumioTech™ PO-T2T

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1. Overview

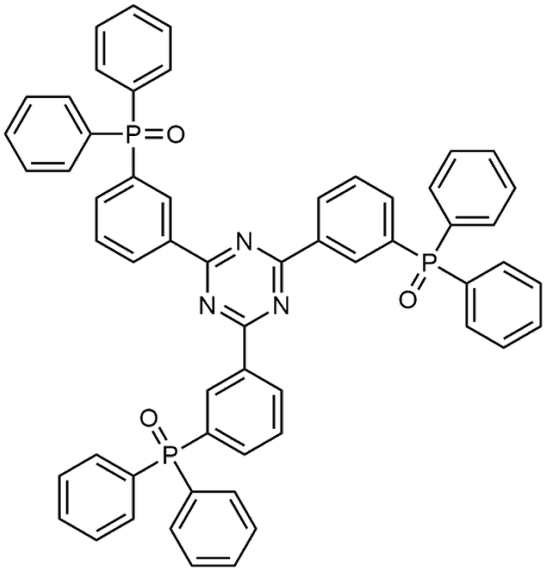
The field of organic light-emitting diodes (OLEDs) is dynamic and rapidly advancing. Among the various materials contributing to this technology, PO-T2T has emerged as a notable contender within the OLED stack. Officially named 2, 4, 6-Tris[3-(diphenylphosphinyl) phenyl] 1, 3 , 5-triazine, this electron deficient compound is distinguished by its triazine core and three diphenylphosphinyl groups. Its unique molecular design makes it a valuable material for use in organic electronic applications.

PO-T2T is mainly used as an electron transport/hole blocking or an electron acceptor material in organic electronics.

- Excellent thermal stability
- Excellent solubility in toluene, ethanol which helps in the formation of high-quality films
- Electron-deficient molecule with good electron mobility
- Good doped to ZnO, ZnMgO
- Alternative to problematic ZnO, ZnMgO, BPhen, and TPBi

2. Specifications

Product Name	PO-T2T
CAS no.	1646906-26-4
Chemical Formula:	C57H42N3O3P3
Full name:	2,4,6-Tris[3-(diphenylphosphinyl)phenyl]-1,3,5-triazine
Molecular weight (g/mol):	909.88 g/mol
Purity:	Sublimed: >99.0%
Physical state:	Solid
Color:	Off-white
Absorption (nm):	λmax 272 (in DCM)
Emission (nm):	λmax 295, 378 (in DCM)
HOMO/LUMO (eV):	HOMO = 7.55 / LUMO = 3.50
Melting Point (°C):	282 - 285



Chemical Structure of 2,4,6-Tris[3-(diphenylphosphinyl)phenyl]-1,3,5-triazine

3. Features

- **Exciplex Formation:** A key feature of PO-T2T is its ability to form exciplexes, which plays a vital role in advancing OLED technology, and crucial in Thermally Activated Delayed Fluorescence (TADF) OLEDs.

- **Electron Transport Layer (ETL) Functionality:** With the electron-deficient characteristics, PO-T2T is widely utilized as a material for electron transport layers. This contributes to the efficient operation and extended lifespan of OLED devices.

- **Improved OLED Performance:** By pairing with electron-donating materials, PO-T2T has demonstrated its effectiveness in enhancing critical OLED performance metrics. This includes prolonging device lifetime and lowering driving voltage, ultimately resulting in more energy-efficient OLED systems.

4. Applications

Function in OLEDs

- Acceptor material layer
- Electron transport layer (ETL) in luminescent devices/displays
- Hole blocking layer (HBL)
- Organic low molecular host

Function in perovskite-based devices

- Hole blocking layer (HBL) material at a multiplier perovskite-organic composite photodetector
- Organic semiconductor in radiation-emitting perovskite
- Organic low-molecular host in radiation-emitting perovskite
- Antisolvent in the method of perovskite production

Other Functions

- Electron transfer material in injection layers (EIL) in quantum dots
- Ink electron transport material
- Electron transport material in an electro-laser device based on nanorods
- Transport layer material in organic electronic devices
- Electron-generating layer in an N-type semiconductor