



Technical Data Sheet

ACS Material LumioTech™ mCPCN

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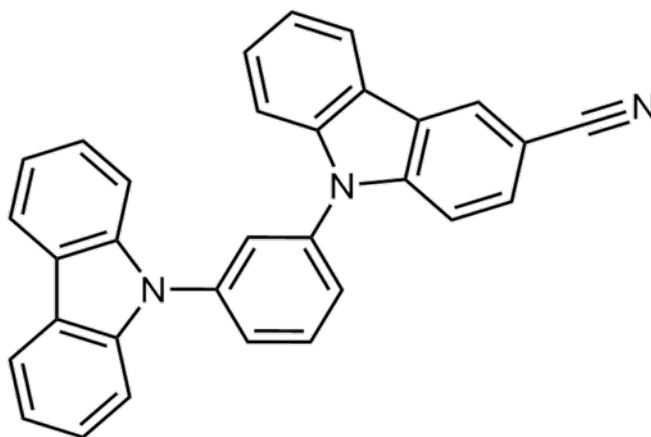
1. Overview

The field of organic light-emitting diodes (OLEDs) is constantly evolving. Within the wide array of materials and compounds advancing this technology, mCPCN stands out as a promising candidate within the OLED stack due to its unique structure, a high-triplet-energy phosphorescent host material, featuring a benzene core and two carbazole units (one containing a cyano group).

mCPCN is mainly used as phosphorescent host material which could be used for hosting blue, green, red and white light emitting TADF-OLED devices.

2. Specifications

Product Name	mCPCN
CAS no.	1392506-99-8
Chemical Formula:	C ₃₁ H ₁₉ N ₃
Full name:	9-(3-(9H-Carbazol-9-yl)phenyl)- 9H-carbazole-3-carbonitrile
Molecular weight (g/mol):	433.50 g/mol
Purity:	Sublimed: >99.0%
Physical state:	Solid
Color:	Off-white
Absorption (nm):	λ_{max} 326, 339 in DCM
Emission (nm):	λ_{max} 348, 365 in DCM
HOMO/LUMO (eV):	HOMO = 5.8 / LUMO = 2.2
Melting Point (°C):	222



Chemical Structure of 9-(3-(9H-Carbazol-9-yl)phenyl)-9H-carbazole-3-carbonitrile

3. Features

- **Exciplex Formation Capability:** One of the key advantages of mCPCN is its ability to form exciplexes, a property that is essential for the advancement of next-generation OLEDs, particularly those based on Thermally Activated Delayed Fluorescence (TADF) technology.
- **Enhanced Hole Transport Material:** The incorporation of a cyano group in mCPCN increases its electron affinity, facilitating more balanced hole and electron injection and transport. This design approach contributes to the efficient operation of OLEDs and helps extend their operational.
- **Comparison to mCP:** Devices based on mCPCN demonstrate improved thermal stability compared to those using mCP. Additionally, the film morphology of mCPCN-based devices is enhanced, contributing to better device performance.
- **Versatile Host Material:** mCPCN is suitable for use as a host material in TADF-OLEDs emitting blue, green, red, and white light, showcasing its broad applicability in various OLED configurations.

4. Application

- Asymmetric bipolar phosphorescent host material

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