

ORGANIC PIGMENT  
COMPOUNDS

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MEDICAL IMAGING  
APPLICATIONS

# 5-Nitro Isophthalic Acid (5-NIPA)

MOF INNOVATIONS

## PRODUCT IN FOCUS

**EXSYN<sup>®</sup>**  
 ESSENTIAL CHEMISTRY

## 5-Nitro Isophthalic Acid (5-NIPA)

### INTRODUCTION

5-Nitro Isophthalic Acid (5-NIPA) is an aromatic organic compound derived from isophthalic acid. The presence of two carboxylic acid groups along with a nitro substituent at the 5-position makes it a valuable intermediate in the manufacture of fine chemicals, pharmaceuticals, dyes, pigments, and advanced materials.

### MANUFACTURE

Industrial production of 5-Nitro Isophthalic Acid is generally carried out either through the nitration of isophthalic acid using concentrated nitric acid and concentrated sulfuric acid under controlled reaction conditions, or by the oxidation of 1,3-dimethyl-5-nitrobenzene using potassium permanganate (KMnO<sub>4</sub>) under carefully controlled conditions.

### APPLICATIONS

5-Nitro Isophthalic Acid is valued because of its chemically versatile nature, both nitro and carboxyl groups allow multiple downstream reactions. It serves as a strategic intermediate in specialty chemical manufacturing.

#### ⓧ Pharmaceutical Intermediates:

- 5-NIPA is widely used as a key intermediate in the manufacture of contrast media such as Iohexol, a non-ionic, contrast agent commonly employed in medical imaging procedures as CT scans, angiography, and urography to enhance the visibility of internal body structures.
- Used in synthesis of antibacterial compounds, anti-inflammatory molecules, etc.

#### ⓧ Dye and Pigment Industry:

Acts as an intermediate for

- Azo dyes, specialty pigments and color-forming aromatic compounds.

#### ⓧ Polymer and Resin Chemistry:

The dicarboxylic acid groups participate in polymerization reactions

- Used in specialty polyesters, functional polymers and high-performance resins.

#### ⓧ Metal–Organic Frameworks (MOFs):

Metal–Organic Framework research frequently uses nitro-substituted aromatic dicarboxylic acids as ligands.

Applications include:

- Gas storage, catalysis, sensors and separation technology.

Additionally, 5-NIPA is used in co-ordination chemistry and preparation of advanced materials.

#### Synonyms

5-Nitro-1,3-benzenedicarboxylic acid; 1-Nitrobenzene-3,5-dicarboxylic acid; 5-Nitro-*m*-phthalic acid.

#### CAS no.

618-88-2

#### EINECS no.

210-568-3

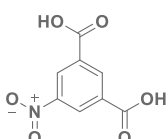
#### Molecular formula

C<sub>8</sub>H<sub>5</sub>NO<sub>6</sub>

#### Molecular weight

211.13

#### Structure



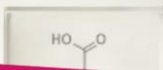
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### SPECIFICATIONS

Test	Unit	Specification
Appearance	-	Off-white to yellow-solid powder
Melting range	°C	Between 258.0 to 264.0
Loss on drying	% w/w	NMT 0.5
Assay by titration	% w/w	Between 98.0 to 102.0
<b>Purity (by HPLC):</b>		
5-Nitro isophthalic acid	%	NLT 99.0
Any single Impurity	%	NMT 0.5
Total impurities	%	NMT 1.0

### STORAGE & PRECAUTION

Keep container tightly closed at ambient temperature.

### PACKING

UN Approved drums;

Packaging quantities (net weight/volume per container): 30 kg/drum, 250 kg/drum

Primary Packaging (material of construction of packaging and closure): Plastic drums

### REACH Status

Not registered

ExSyn offers 5-Nitro isophthalic acid (5-NIPA) on a commercial scale and welcomes your enquiries. Regardless of the quantity required, our commitment to exceptional quality and reliable service makes ExSyn the preferred supplier of choice. Should you require any additional information or the SDS, please feel free to contact us.