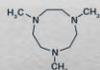
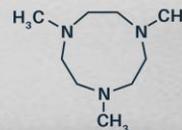


1,4,7-Trimethyl-1,4,7-triazonane (Me₃TACN)



PRODUCT IN FOCUS

EXSYN[®]
ESSENTIAL CHEMISTRY

1,4,7-Trimethyl-1,4,7-triazonane (Me₃TACN)

INTRODUCTION

1,4,7-Trimethyl-1,4,7-triazonane (Me₃TACN) is a valuable macrocyclic tridentate ligand derived from 1,4,7-triazacyclononane. In Me₃TACN, each nitrogen atom is substituted with a methyl group, which significantly modifies its steric and electronic properties. Me₃TACN is widely used as a ligand in coordination chemistry due to its ability to form stable complexes with transition metals such as Cu, Ni, Fe, Mn, and Zn.

MANUFACTURE

Me₃TACN can be synthesized starting from diethylenetriamine and 1,2-dibromoethane through a straightforward multi-step process. First, diethylenetriamine undergoes tosylation to protect the amine groups. The resulting tris-tosylated intermediate is then treated with 1,2-dibromoethane under controlled conditions to promote cyclization. Subsequently, the tosyl protecting groups are removed under acidic conditions to afford the parent triazacyclononane (TACN) framework. Finally, *N*-methylation is carried out using formaldehyde and formic acid under basic conditions to obtain Me₃TACN.

APPLICATIONS

Me₃TACN is the ligand of choice for researchers and manufacturers seeking robust metal complexation and reproducible catalytic efficiency. The main areas of application include:

☒ Coordination Chemistry:

- Me₃TACN is widely employed as a ligand in transition metal complexes, offering excellent complex stability, well-defined coordination geometry, and enhanced catalytic performance.

☒ Catalysis:

- Metal–Me₃TACN complexes are widely utilized as catalysts in oxidation reactions (including epoxidation and hydroxylation), C–H activation processes, and various environmental catalysis applications.

☒ Medicinal and Bioinorganic Chemistry:

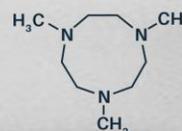
- The strong chelating capability of Me₃TACN enables effective stabilization of metal ions in biological systems. Its medicinal and bioinorganic applications include radiopharmaceutical chelation, metal-based drug development, enzyme mimic studies, and research on MRI contrast agents (derivatized forms).

☒ Polymerization catalysts and advanced material development:

- Me₃TACN and its derivatized forms are widely used as ligands in polymerization catalysts, surface modification of materials, and metal–organic framework (MOF) research, among other advanced materials applications.

Synonyms	<i>N,N',N''</i> -Trimethyl-1,4,7-triazacyclononane; TMTAN
CAS no.	96556-05-7
EINECS no.	619-228-2
Molecular formula	C ₉ H ₂₁ N ₃
Molecular weight	171.28
Structure	

1,4,7-Trimethyl-1,4,7-triazonane (Me₃TACN)



PRODUCT IN FOCUS



SPECIFICATIONS

Test	Unit	Specification
Appearance	-	Colorless to yellow oil
Color (10% v/v in MeOH)	Hazen	NMT 150
Purity	% Area	NLT 95.0
Me ₅ Dien	% Area	NMT 1.5
Volatile	% Area	NMT 2.5
Single Maximum Unknown Impurity	% Area	NMT 1.0
Total Unknown Impurity	% Area	NMT 2.5

STORAGE & PRECAUTION

Keep sealed at 2-8 °C, protect from air.

PACKING

Globally compliant packaging

REACH Status

REACH Registered

ExSyn offers ,4,7-Trimethyl-1,4,7-triazonane on commercial scales and welcomes enquiries. No matter the quantity you need, our exceptional quality and service will make ExSyn your supplier of choice! If you need any additional information or SDS, please contact us.