

## Technical data sheet

# Methyl-endomethylene tetrahydrophthalic anhydride (METH/E – METH/ES)

Version: 03 date: November 2009

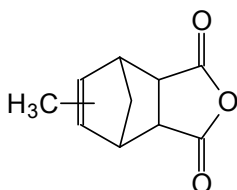
### Synonyms

Methylenic anhydride; *endo*-Methylenemethyltetrahydrophthalic anhydride; Methylnadac acid anhydride; Methyl-5-norbornene-2,3-dicarboxylic anhydride

### Formula

$C_{10}H_{10}O_3$

### Structural formula



**Molecular weight:** 178.2

### CAS number

25134-21-8

### EINECS number

246-644-8

### Product specification

Characteristics	Unit	Value (all versions)	Method*	Reference
Appearance		Clear liquid	L000	
Purity	%	98.0 min	MT101	
Acid content	%	1.0 max	L002	
Toluene solution (1:20)		Clear or slightly opalescent	L026	

\* Internal methods available upon request.

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## Typical properties

Characteristics	Unit	Value
		METH/E - METH/ES
Molecular weight	g/mol	176.1
Density @ 25°C	g/ml	1.239
Viscosity @ 25°C	mPa.s	230.0
Vapour pressure @ 120°C	mmHg	1.7
Refractive index $n_D^{25}$		1.5048

## Main applications

Methylnadic anhydride is mainly used as curing agent for epoxy resins and raw material for UPR formulations.

As curing agent for epoxy resins, which is the main application, it can be easily mixed with various liquid resins providing stable, low viscous mixtures and long pot lives.

Because of the low exothermic behaviour, it is recommended for casting and large impregnation goods.

Comparing to other organic liquid anhydrides, the resins cured with METH/E have superior thermal and electrical properties.

A suitable curing cycle at high temperature is necessary to reach the best performances.

## Product range

**METH/E** General purpose grade.  
Better stability at low temperature (lower risk of crystallization).  
Better wetting properties and better adhesion to glass fibres.  
Particularly suitable for “filament winding” technique.

**METH/ES** Similar to METH/E, but lower carbon dioxide formation in the presence of basic accelerators and better colour retention.

## **Handling**

- Packaging:** Galvanized steel drum 220 kg;
- Storage:** The product must be stored away from open flames or other potential ignition source.  
METH in all versions is sensitive to humidity. This causes acid formation, which crystallizes only when high acid content is reached.
- Shelf life:** 12 months from production date.

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