

# Technical Data Sheet

**Product name:** Morpholine

**Cas No.:** 110-91-8

**Synonyms:** 1-Oxa-4-azacyclohexane; Tetrahydro-2H-1,4-oxazine

**Molecular Formula:** C<sub>4</sub>H<sub>9</sub>NO

**General description:** Morpholine is colourless liquid.

## ITEMS

## SPECIFICATION

Morpholine %	≥99.5%
Moisture %	≤0.25%
Boiling range °C	126.0-129.0

## Application

It is mainly used as raw material of medicine, rubber accelerator and fluorescent whitening agent. Morpholine is an intermediate of the fungicides enyl morpholine and flummorpholine and the organophosphorus insecticide thiophosphorion, etc.

## General physical data

1. Information on basic physical and chemical properties

a) Appearance

Form: liquid

Colour: colourlesscolourless

b) Odour

unpleasant

c) pH

10.6 at 5 g/l at 20 °C (68 °F)

d) Melting point/freezing point

Melting point/range: -7 - -5 °C (19 - 23 °F) - lit.

e) Initial boiling point and boiling range

129 °C (264 °F) - lit.

f) Flash point

31 °C (88 °F) - closed cup

g) Upper/lower flammability or explosive limits

Upper explosion limit: 10.8 %(V)

Lower explosion limit: 1.8 %(V)

h) Vapour pressure

9.80 hPa (7.35 mmHg) at 20.3 °C (68.5 °F) - OECD Test Guideline 104

41 hPa (31 mmHg) at 38 °C (100 °F)

9 hPa (7 mmHg) at 20 °C (68 °F)

i) Vapour density

3.01 - (Air = 1.0)

j) Relative density

0.996 g/cm<sup>3</sup> at 25 °C (77 °F) - lit.

k) Water solubility completely miscible

l) Partition coefficient: noctanol/water

log Pow: -2.55 at 25 °C (77 °F) - OECD Test Guideline 107

m) Auto-ignition temperature 255 °C (491 °F) at 1,013 hPa (760 mmHg)

#### **Other safety information**

Relative vapour density

3.01 - (Air = 1.0)

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## **Transport and Packing**

Morpholine is supplied in 200kg/drum, 4 drums packed into 1 pallet, 20 pallets loaded into 1FCL(16MT). It belongs to Hazard Class: 8+3, UN2054, Packing Group: I.



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## **Storage**

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

## **Safety and Handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.