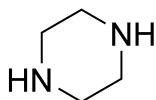


## Technical Data Sheet

### PIPERAZINE ANHYDROUS (PIP-ANH)

#### General



MW: 86.1 gmol<sup>-1</sup>  
CAS No.: 110-85-0  
EINECS No.: 203-808-3  
IUPAC name: Piperazine

Piperazine (PIP; CAS 110-85-0) is a cyclic ethylene amine with two secondary amine groups. In its pure form, PIP has a freezing point of 106°C and a boiling point of 147°C. Due to its narrow liquid range, commercial piperazine is often supplied as 68 % active content diluted with water (PIP 68%). AkzoNobel supplies Piperazine 68 % and Piperazine 99 % – more commonly known as "anhydrous piperazine" or "piperazine flakes". Piperazine is commonly used as a raw material for several commercially available drugs. Other possible application fields include polyamides, gas sweetening and as an intermediate in PU catalysts.

#### Sales Specification

Characteristic	Unit	Specification	Methods of Analysis
Appearance	-	white flakes	200
Piperazine	w%	Min99.7 (as waterfree)	526
Water	w%	max 1.0	305
Color	Hazen	max 50	201

Methods of Analysis are available upon request.

In case of dispute, the listed Method of Analysis will be used as reference methods.

#### Physical and Chemical Properties

Property	Value	Property	Value
Form	flakes	pH	12 at 15 % solution
Colour	white	Melting point/freezing point	106 °C at 1 013 hPa
Odour	amine-like	Boiling point/boiling range	147 °C at 1 013 hPa
Flammability (solid, gas)	The substance or mixture is a flammable solid with the category 1	Ignition temperature	320 °C at 1 013 hPa
Explosive properties	Not explosive	Vapour pressure	0,4 hPa at 22,5 °C
Oxidizing properties	The substance or mixture is not classified as oxidizing	Relative vapour density	3,0
Water solubility	150 g/l at 20 °C	Density	1 110 kg/m <sup>3</sup> at 20 °C
		Relative density	1,1 at 20 °C
		Partition coefficient: n-octanol/water	log Pow: -1,24 at 25 °C
		Viscosity, dynamic	

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