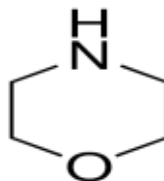


## Certificate of Analysis

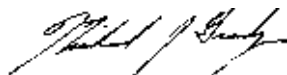
Product Name:

Morpholine – ACS reagent, ≥99.0%

**Product Number:** 252360  
**Batch Number:** MKCM6935  
**Brand:** SIAL  
**CAS Number:** 110-91-8  
**MDL Number:** MFCD00005972  
**Formula:** C<sub>4</sub>H<sub>9</sub>NO  
**Formula Weight:** 87.12 g/mol  
**Quality Release Date:** 11 AUG 2020



Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
Infrared Spectrum	Conforms to Structure	Conforms
Titration by HCL	99.0 - 101.0 %	100.3 %
Purity (GC)	≥ 99.0 %	99.9 %
Initial Boiling Point	≥ 126.0 °C	128.6 °C
Final Boiling Point	≤ 130.0 °C	129.4 °C
At 760 mm Hg		
Color Test	≤ 15 APHA	< 10 APHA
Meets ACS Requirements	Current ACS Specification	Conforms



Michael Grady, Manager  
Quality Control  
Milwaukee, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at [Sigma-Aldrich.com](http://Sigma-Aldrich.com). For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

