

### Chemical Information:

Name: 1,4-Piperazinediethanol  
 CAS No.: 122-96-3 Supplier: Sigma Aldrich  
 Tox21\_ID No.: Tox21\_200471 Lot No.: 06507PH  
 NTP\_CID No.: 3598 MW: 174.24 g/mol

Date of Analysis: 17 July 2015

### Purity and Identity Results:

Peak Identity	Retention Time (min)	Purity (% Total Area) <sup>a</sup>
Ethanol	1.50	Not applicable
Unknown	4.00	2.03
1,4-Piperazinediethanol	25.71	96.35
Unknown	32.67	1.62

<sup>a</sup> Peaks comprising  $\geq 0.5\%$  of total area.

### GC/MS Instrument Parameters:

Instrument / Ionization	Gas Chromatograph / Mass Spectrometer / Electron Impact
Solvent	Ethanol (~ 400 µg/mL)
Column	Restek Rtx-5MS with Integra-Guard, 30 m x 0.25 mm ID, 1-µm film thickness
Carrier Gas	Helium at 2 mL/min
Oven Program	50°C, hold 2 min; ramp @ 5°C/min to 320°C, hold 5 min
Source Temperature	230°C
Auxiliary Temperature	250°C
Scan Range	40 – 600 amu
Injector Temperature	250°C
Injection Volume / Mode	1 µL / Split (10:1)
Run Time	59 minutes
Data Analysis Software	MassHunter GC/MS Acquisition B.07.02.1938 / Chemstation Enhanced Data Analysis F.01.01.2317 / NIST Library Version 2.2 Build 2014

