

**DIETHYLENETRIAMINE**  
**See ETHYLENEDIAMINE, Method 2540, for Procedure**

$H_2N(CH_2)_2NH(CH_2)_2NH_2$

MW: 103.2

CAS: 111-40-0

RTECS: IE1225000

**METHOD:** 2540, Issue 2

**EVALUATION:** UNRATED

**Issue 1:** 15 May 1989

**Issue 2:** 15 August 1994

**OSHA :** no PEL  
**NIOSH:** 1 ppm (skin)  
**ACGIH:** 1 ppm (skin)  
 (1 ppm = 4.21 mg/m<sup>3</sup>)

**PROPERTIES:** liquid; d 0.96 g/mL @ 20 °C;  
 BP 206.7 °C; VP 0.5 kPa (0.37 mm Hg);  
 flash point 98 °C

**SYNONYMS:** diethylenetriamine: DETA; aminoethylethandiamine; 3-azapentane-1,5-diamine; bis(2-aminoethyl)amine

SAMPLING	MEASUREMENT
<p><b>SAMPLER:</b> SOLID SORBENT TUBE            (1-naphthylisothiocyanate-coated XAD-2, 80 mg/40 mg)</p> <p><b>FLOW RATE:</b> 0.01 to 0.1 L/min [1]</p> <p><b>VOL-MIN:</b> 1 L @ 10 ppm  <b>-MAX:</b> 20 L</p> <p><b>SHIPMENT:</b> routine</p> <p><b>SAMPLE STABILITY:</b> &gt;30 days @ 20 °C [2]</p> <p><b>BLANKS:</b> 2 to 10 field blanks per set</p>	<p><b>TECHNIQUE:</b> HPLC, UV DETECTION</p> <p><b>ANALYTE:</b> naphthylisothiourea derivative of analytes</p> <p><b>DESORPTION:</b> 2 mL dimethylformamide (DMF),            ultrasonic 30 min</p> <p><b>INJECTION VOLUME:</b> 10 µL</p> <p><b>COLUMN:</b> 10-µm radial cyano, 10 cm x 8-mm ID in            Waters RCM-100 radial compression mode</p> <p><b>MOBILE PHASE:</b> 50/50 isooctane/isopropanol at            3 mL/min</p> <p><b>CALIBRATION:</b> standard solutions of derivatives in DMF</p> <p><b>RANGE:</b> 1 to 80 µg per sample</p> <p><b>ESTIMATED LOD:</b> 0.16 µg per sample</p> <p><b>PRECISION (<math>\hat{S}_r</math>):</b> 0.007</p>
ACCURACY	
<p><b>RANGE STUDIED:</b> 0.016 to 8 mg/m<sup>3</sup>;            (10-L samples)</p> <p><b>OVERALL PRECISION (<math>\hat{S}_{rT}</math>):</b> 0.06 [1]</p> <p><b>BIAS:</b> -1.9%</p> <p><b>ACCURACY:</b> ±13.5%</p>	

**APPLICABILITY:** The working range for DETA is 0.05 to 150 mg/m<sup>3</sup> for a 10-L air sample. This method is the result of evaluation [2] of OSHA Method #60 for DETA, EDA, TETA [1]. The theoretical capacity of each front section is 1.5 mg of DETA.

**INTERFERENCES:** Other primary or secondary amines may react with the sampler coating reagent, and thereby reduce the sampler capacity.

**OTHER METHODS:** This replaces NIOSH Method P&CAM 276 [3]. The method of Anderson, et al., for EDA [4] is an alternate method using thiourea derivatization and HPLC analysis.