

**DI(2-ETHYLHEXYL) PHTHALATE**  
**See DIBUTYL PHTHALATE (Method 5020) for Procedure**

$C_6H_4(COOCH_2CH(C_2H_5)(CH_2)_3CH_3)_2$     MW: 390.56    CAS: 117-81-7    RTECS: TI0350000

**METHOD:** 5020, Issue 2

**EVALUATION:** PARTIAL

**Issue 1:** 15 May 1985

**Issue 2:** 15 August 1994

**OSHA :** 5 mg/m<sup>3</sup>; STEL 10 mg/m<sup>3</sup>  
**NIOSH:** 5 mg/m<sup>3</sup>; STEL 10 mg/m<sup>3</sup> (carcinogen)  
**ACGIH:** 5 mg/m<sup>3</sup>; STEL 10 mg/m<sup>3</sup> (suspect carcinogen)

**PROPERTIES:** oily liquid; d 0.983 g/mL @ 20 °C;  
 MP -50 °C; BP 386 °C; VP < 1 Pa  
 (0.01 mm Hg) @ 20 °C

**SYNONYMS:** bis(2-ethylhexyl) phthalate; dioctyl phthalate; DOP; DEHP (listed incorrectly as di-sec-octyl phthalate in 29 CFR 1910.23)

SAMPLING		MEASUREMENT	
<b>SAMPLER:</b>	FILTER (0.8 µm cellulose ester membrane)	<b>TECHNIQUE:</b>	GAS CHROMATOGRAPHY, FID
<b>FLOW RATE:</b>	1 to 3 L/min	<b>ANALYTE:</b>	di(2-ethylhexyl)phthalate
<b>VOL-MIN:</b>	6 L @ 5 mg/m <sup>3</sup>	<b>DESORPTION:</b>	2 mL CS <sub>2</sub> ; 30 min in ultrasonic bath
<b>-MAX:</b>	200 L	<b>INJECTION VOLUME:</b>	5 µL
<b>SHIPMENT:</b>	routine	<b>TEMPERATURE-INJECTION:</b>	300 °C
<b>SAMPLE STABILITY:</b>	unknown	<b>-DETECTOR:</b>	300 °C
<b>BLANKS:</b>	2 to 10 field blanks per set	<b>-COLUMN:</b>	200 to 250 °C
<b>ACCURACY</b>		<b>CARRIER GAS:</b>	He, 30 mL/min
<b>RANGE STUDIED:</b>	2 to 11 mg/m <sup>3</sup> [2] (32-L samples)	<b>COLUMN:</b>	2 m x 3-mm OD stainless steel, 5% OV-101 on 100/120 mesh Chromosorb W-HP
<b>BIAS:</b>	7.56%	<b>CALIBRATION:</b>	solutions of analytes in CS <sub>2</sub> with internal standard
<b>OVERALL PRECISION (<math>\hat{S}_{r,T}</math>):</b>	0.057 [1,2]	<b>RANGE:</b>	30 to 500 µg per sample
<b>ACCURACY:</b>	± 19.2%	<b>ESTIMATED LOD:</b>	10 µg per sample
		<b>PRECISION (<math>\hat{S}_r</math>):</b>	0.05 @ 0.07 to 0.3 mg per sample [2]

**APPLICABILITY:** The working range is 1 to 20 mg/m<sup>3</sup> for a 30-L air sample. Phthalates are widely used as plasticizers for many resins and elastomers.

**INTERFERENCES:** None identified. An alternate GC column is 10 m x 0.25-mm ID, 0.25-µm DB-1, fused silica capillary.

**OTHER METHODS:** This revises method S40 [4].