



>>Entry Name: Dithizone

Synonym(s): (Phenylazo)thioformic acid 2-phenylhydrazide, 8Cl. Phenyldiazinecarbothioic acid 2-phenylhydrazide, 9Cl. Diphenylthiocarbazone. *N*,2-Diphenyldiazene-carbohydrazonothioic acid. H₂D₂

CAS Registry Number: 60-10-6

Type of Compound Code(s): PA4950 PA1450 PA0400 PA2300 PA1750 PA2050 PA5010 PA3350 PA0600 PA3150 PA4600 PM6600
PhN=NCSNHNHPh

Molecular Formula: C₁₃H₁₂N₄S

Molecular Weight: 256.331

Accurate Mass: 256.078266

Percentage Composition: C 60.91%; H 4.72%; N 21.86%; S 12.51%

Use/Importance: Used in preconcentration and extraction separation of heavy metal ions; gives colour reactions with many metals; in extraction-photometric detn. of Ag ($\lambda_{\max}$ 462 nm, ϵ 31000), Bi, Pb, Zn ($\lambda_{\max}$ 538 nm, ϵ 93000), Cd, Cu, Pd, Hg ($\lambda_{\max}$ 485 nm, ϵ 71000), Tl and other elements

Physical Description: Bluish-black cryst. (EtOH aq.)

Melting Point: Mp 165-169 dec.°

Solubility: Sol. aq. alkaline solns; spar. sol. EtOH, CCl₄, CHCl₃, C₆H₆; insol. H₂O

pKa Value: pK_a 4.82

Other Data: Ethereal solutions are dark red in colour. Used mainly as 0.001-0.003% soln. in CCl₄

Hazard & Toxicity: Causes eye injury experimentally

Aldrich: 19483-2

Fluka: 43820

Sigma: D3158

References:

Aldrich Library of FT-IR Spectra, 1st edn., 1985, **2**, 418C, (*ir*)

Org. Synth., *Coll. Vol.*, **3**, 1955, 360, (*synth*)

Sandell, E.B., *Colorimetric Determination of Traces of Metals*, 3rd. ed., Interscience, New York, 1959

Iwantscheff, G., *Das Dithizon und Seine Anwendung in der Mikro und Spurenanalyse*, Verlag Chemie, Weinheim, 1972

Irving, H.M.N.H., *Dithizone*, Royal Society of Chemistry Analytical Monographs no. 5, 1977, (*rev*)

Laing, M., *J.C.S. Perkin 2*, 1977, 1248, (*cryst struct*)

Hutton, A.T. *et al.*, *Chem. Comm.*, 1981, 735, (*struct*)

Cheng, K.L. *et al.*, *Handbook of Organic Analytical Reagents*, CRC Press, Boca Raton, 1982, 363, (*use*)

Onishi, H., *Photometric Determination of Traces of Metals, Part Ila: Individual Metals. Aluminium to Lithium*, John Wiley, New York, 4th Ed., 1986, 262; 315; 529; 672; 824; *Part I Ib: Individual Metals. Magnesium to Zinc*, John Wiley, New York, 4th Ed., 1989, 66; 227; 253; 379; 426; 708

Marczenko, Z., *Separation and Spectrophotometric Determination of Elements*, Horwood, Chichester, 1986, 258; 373; 440; 524; 637

Lewis, R.J., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DWN200