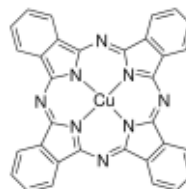


## Certificate of Analysis

Product Name:

Copper(II) phthalocyanine - sublimed grade, Dye content 99 %

**Product Number:** 546674  
**Batch Number:** MKBQ8501V  
**Brand:** ALDRICH  
**CAS Number:** 147-14-8  
**MDL Number:** MFCD00010719  
**Formula:** C<sub>32</sub>H<sub>16</sub>CuN<sub>8</sub>  
**Formula Weight:** 576.07 g/mol  
**Quality Release Date:** 04 JUN 2014



Test	Specification	Result
Appearance (Color) Purple	Conforms to Requirements	Purple
Appearance (Form) Needles and/or Powder	Conforms to Requirements	Powder
Infrared Spectrum	Conforms to Structure	Conforms
Melting point by DSC		438.3 °C
Wavelength c = 0.005g/L; Chloronaphthalene	675 - 681 nm	678 nm
Extinction Coefficient	≥ 11000	46767
Carbon	65.7 - 68.4 %	67.7 %
Nitrogen	19.2 - 19.9 %	19.7 %
Titration by AgNO <sub>3</sub> With AgNO <sub>3</sub> After Oxygen Combustion	≤ 1.0 %	0.1 %
Water (by Karl Fischer)	≤ 0.5 %	0.0 %
Thermogravimetric Analysis 0.5% Weight Loss		456.8 °C
ICP Major Analysis Confirms Copper Component	Confirmed	Conforms
Aluminum (Al)		0.7 ppm
Boron (B)		0.1 ppm
Barium (Ba)		0.2 ppm
Calcium (Ca)		18.9 ppm
Cobalt (Co)		0.7 ppm
Chromium (Cr)		0.6 ppm

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. 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.

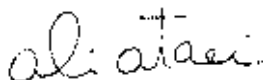
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## Certificate of Analysis

**Product Number:** 546674  
**Batch Number:** MKBQ8501V

Test	Specification	Result
Iron (Fe)		45.9 ppm
Potassium (K)		0.8 ppm
Magnesium (Mg)		36.1 ppm
Manganese (Mn)		0.4 ppm
Molybdenum (Mo)		5.1 ppm
Sodium (Na)		4.7 ppm
Nickel (Ni)		6.5 ppm
Lead (Pb)		0.2 ppm
Palladium (Pd)		0.1 ppm
Tin (Sn)		0.6 ppm
Zinc (Zn)		4.8 ppm



Ali Ataei, Manager  
Quality Control  
Milwaukee, WI US

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