

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

Email USA: techserv@sial.com

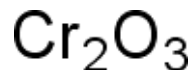
Outside USA: eurtechserv@sial.com

## Certificate of Analysis

Product Name:

Chromium(III) oxide - nanopowder, &lt;100 nm particle size (TEM), 99% trace metals basis

**Product Number:** 634239  
**Lot Number:** MKBH9969V  
**Brand:** ALDRICH  
**CAS Number:** 1308-38-9  
**MDL Number:** MFCD00010949  
**Formula:** Cr<sub>2</sub>O<sub>3</sub>  
**Formula Weight:** 151.99 g/mol  
**Quality Release Date:** 22 NOV 2011



Test	Specification	Result
Appearance (Color) Green	Conforms to Requirements	Green
Appearance (Form) Size	Powder Confirmed	Powder Conforms
ICP Major Analysis Confirms Chromium Component	Confirmed	Conforms
Trace Metal Analysis	≤ 20000.0 ppm	5475.0 ppm
Silver (Ag)		1.5 ppm
Aluminum (Al)		95.0 ppm
Arsenic (As)		< 10.0 ppm
Boron (B)		15.0 ppm
Barium (Ba)		4.5 ppm
Beryllium (Be)		< 0.1 ppm
Bismuth (Bi)		< 0.5 ppm
Calcium (Ca)		950.0 ppm
Cadmium (Cd)		< 1.0 ppm
Cerium (Ce)		< 0.5 ppm
Cobalt (Co)		12.0 ppm
Cesium (Cs)		< 0.5 ppm
Copper (Cu)		14.0 ppm
Iron (Fe)		975.0 ppm
Gallium (Ga)		< 5.0 ppm
Germanium (Ge)		< 1.0 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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Hafnium (Hf)		< 0.5 ppm
Mercury (Hg)		< 1.0 ppm
Indium (In)		< 1.0 ppm
Potassium (K)		34.0 ppm
Lanthanum (La)		< 0.5 ppm
Lithium (Li)		1.8 ppm
Magnesium (Mg)		350.0 ppm
Manganese (Mn)		42.0 ppm
Molybdenum (Mo)		1.8 ppm
Sodium (Na)		2800.0 ppm
Nickel (Ni)		60.0 ppm
Lead (Pb)		1.0 ppm
Rubidium (Rb)		< 0.5 ppm
Rhenium (Re)		< 0.1 ppm
Antimony (Sb)		2.0 ppm
Scandium (Sc)		< 0.5 ppm
Selenium (Se)		< 10.0 ppm
Tin (Sn)		3.0 ppm
Strontium (Sr)		17.0 ppm
Tantalum (Ta)		< 5.0 ppm
Tellurium (Te)		< 5.0 ppm
Thorium (Th)		< 0.1 ppm
Titanium (Ti)		5.0 ppm
Thallium (Tl)		< 0.5 ppm
Uranium (U)		< 0.1 ppm
Vanadium (V)		5.6 ppm
Tungsten (W)		4.8 ppm
Yttrium (Y)		< 1.0 ppm
Zinc (Zn)		35.0 ppm
Zirconium (Zr)		0.6 ppm
Purity	Meets Requirements	Meets Requirements
99% Based on Trace Metals Analysis		

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Jamie Gleason, Manager  
Quality Control  
Milwaukee, Wisconsin US

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