

3050 Spruce Street, Saint Louis, MO 63103, USA

Website: www.sigmaaldrich.com

Email USA: techserv@sial.com

Outside USA: eurtechserv@sial.com

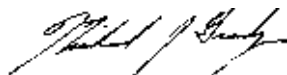
Certificate of Analysis

Product Name:

Orange oil - natural, cold-compressed, California origin, FG

Product Number: W282510
Batch Number: MKCD2985
 Brand: ALDRICH
 CAS Number: 8008-57-9
 Quality Release Date: 03 JUL 2017
 Expiration Date: MAY 2022

Test	Specification	Result
Appearance (Color)	Yellow to Orange	Dark Yellow
Appearance (Form)	Liquid	Liquid
Refractive index at 20 °C	1.472 - 1.474	1.473
Infrared Spectrum	Conforms to Structure	Conforms
Wavelength	327 - 333 nm	328 nm
Absorbance c = 250 mg/100 mL; Ethanol	≥ 0.130	0.520
BHT as Stabilizer	≤ 0.04 %	0.03 %
Stabilizer TBHQ	None Detected	None Detected
Assay as Decyl Aldehyde	1.2 - 2.5 %	2.2 %
Specific Gravity at 25 Degrees Celsius	0.842 - 0.846	0.843
Optical Rotation c = Neat	94.0 - 120.0 deg	97.7 deg
Arsenic (As)	≤ 3 ppm	< 1 ppm
Cadmium (Cd)	≤ 1 ppm	< 1 ppm
Mercury (Hg)	≤ 1 ppm	< 1 ppm
Lead (Pb)	≤ 10 ppm	< 1 ppm
Expiration Date Period 5 Years	-----	-----



Michael Grady, Manager

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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Batch Number: MKCD2985

Quality Control
Milwaukee, WI US

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