

Certificate of Analysis

1 Reagent Lane
 Fair Lawn, NJ 07410
 201.796.7100 tel
 201.796.1329 fax

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System
 Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120632

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

Catalog Number	A117	Quality Test / Release Date	09/25/2019
Lot Number	195095		
Description	FORMIC ACID, OPTIMA LC/MS GRADE		
Country of Origin	United States	Suggested Retest Date	Sep/2024
Chemical Origin	Synthetic		

N/A			
Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	Clear, colorless, fuming liquid
ASSAY	%	>= 99.0	99.6
CHLORIDE	ppm	<= 5	<5
COLOR	APHA	<= 10	<10
EVAPORATION RESIDUE	ppm	<= 1	<0.1
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
IONIC IMPURITY - ALUMINUM (Al)	ppb	<= 20	<1
IONIC IMPURITY - CALCIUM (Ca)	ppb	<= 50	<1
IONIC IMPURITY - COPPER (Cu)	ppb	<= 10	<1
IONIC IMPURITY - IRON (Fe)	ppb	<= 10	<1
IONIC IMPURITY - LEAD (Pb)	ppb	<= 10	<1
IONIC IMPURITY - MAGNESIUM (Mg)	ppb	<= 10	<1
IONIC IMPURITY - MANGANESE (Mn)	ppb	<= 10	<1
IONIC IMPURITY - NICKEL (Ni)	ppb	<= 10	<1
IONIC IMPURITY - POTASSIUM (K)	ppb	<= 20	1
IONIC IMPURITY - SILVER (Ag)	ppb	<= 10	1
IONIC IMPURITY - SODIUM (Na)	ppb	<= 50	2
IONIC IMPURITY - ZINC (Zn)	ppb	<= 20	<1
LC-MS GRADIENT SUITABILITY	PASS/FAIL	= PASS TEST	PASS TEST
LC-UV GRADIENT SUITABILITY	PASS/FAIL	= PASS TEST	PASS TEST
LCMS SUIT IN POS MODE (AS RESERPINE)	ppb	<= 50	<50
OPTICAL ABS AT 210 NM AT 0.1%	ABS. UNITS	<= 1.25	1.18
OPTICAL ABS AT 220 NM AT 0.1%	ABS. UNITS	<= 0.85	0.79
OPTICAL ABS AT 230 NM AT 0.1%	ABS. UNITS	<= 0.55	0.34
OPTICAL ABS AT 254 NM AT 0.1%	ABS. UNITS	<= 0.01	<0.01

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.
 If there are any questions with this certificate, please call at (800) 227-6701.

*Based on suggested storage condition.



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SULFATE (SO4)	ppm	<= 50	<50
SULFITE	ppm	<= 20	<20

Julian Burton - Quality Control Manager – Fair Lawn

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