

ESI

Appendix 1 – Certificates of Purity for L-, D- and LD-Histidine

Certificate Of Analysis

Page 1 of 1

Certificate of Analysis

SIGMA-ALDRICH

Product Name L-Histidine,
ReagentPlus[®], ≥99% (TLC)
Product Number H8000
Product Brand SIAL
CAS Number 71-00-1
Molecular Formula C₆H₉N₃O₂
Molecular Weight 155.15

TEST	SPECIFICATION	LOT 128K0073 RESULTS
APPEARANCE	WHITE TO OFF-WHITE POWDER	WHITE POWDER
SOLUBILITY	CLEAR COLORLESS SOLUTION AT 50MG/ML IN 0.5M HYDROCHLORIC ACID	CONFORMS
SPECIFIC ROTATION	+12.8 TO +14.0 DEG (C=11 IN 8M HYDROCHLORIC ACID AT 25DEGC)	+12.6 DEG
CARBON	45.9 TO 47.4%	46.7%
NITROGEN	26.8 TO 27.3%	27.0%
PURITY BY THIN LAYER CHROMATOGRAPHY	NLT 99%	100%
RECOMMENDED RETEST	5 YEARS	DECEMBER 2013
QC RELEASE DATE		DECEMBER 2008



Rodney Burbach, Manager
Quality Control
St. Louis, Missouri USA

Certificate of Analysis

SIGMA-ALDRICH

Product Name D-Histidine,
≥98% (TLC)
Product Number H3751
Product Brand SIGMA
CAS Number 351-50-8
Molecular Formula C₆H₉N₃O₂
Molecular Weight 155.15

TEST

APPEARANCE

SOLUBILITY

IR SPECTRUM

ELEMENTAL ANALYSIS

SPECIFIC ROTATION

PURITY BY THIN LAYER

CHROMATOGRAPHY

QC RELEASE DATE

LOT 098K1229 RESULTS

WHITE POWDER

CLEAR COLORLESS SOLUTION AT 250 MG PLUS 5 ML OF 1 M HYDROCHLORIC ACID

CONSISTENT WITH STRUCTURE

46.4% CARBON 26.9% NITROGEN

-13.3 DEG (C = 1 IN 5 M HYDROCHLORIC ACID AT 25 DEG CENTIGRADE)

> 99%

SEPTEMBER 2008



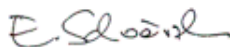
Rodney Burbeck, Manager
Quality Control
St. Louis, Missouri USA

Certificate of Analysis

SIGMA-ALDRICH

Product Name	DL-Histidine, puriss., ≥99.0% (NT)
Product Number	53330
Product Brand	FLUKA
CAS Number	4998-57-6
Molecular Formula	C ₆ H ₉ N ₃ O ₂
Molecular Weight	155.15

TEST	LOT 1327208 RESULTS
APPEARANCE (COLOR)	WHITE
APPEARANCE (FORM)	POWDER
ARGENTOMETR. TITRATION	DL-HISTIDINE MONOHYDROCHLORIDE 0.1%
TITRATION (NT) HClO ₄ 0.1N	100.0%
PURITY (TLC AREA %)	100.0 % rel
MELTING POINT (DEC.)	278 C
SOLUBILITY (COLOR)	COLORLESS
SOLUBILITY (TURBIDITY)	CLEAR (<3.5 NTU)
SOLUBILITY (METHOD)	0.5G IN 10ML H ₂ O (HEAT)
RESIDUE ON IGNITION	< 0.05 %
NMR SPECTRUM 1H	CORRESPONDS
DATE OF QC-RELEASE	20/FEB/07



Edeltraud Schwärzler, Manager
Quality Control
Buchs, Switzerland