

Certificate of Analysis

Clean Clay Soil

Catalog Number: CLN-SOIL
Lot Number: 230214
Manufacture Date: 02/14/2023

Expiration: 02/28/2028
Matrix: Clay/Sand
Hazards: Irritant

This certified reference material (CRM) was manufactured and certified by NSI Lab Solutions according to quality procedures meeting our accreditation requirements of ISO 17034:2016 and ISO/IEC 17025:2017. Our certificates and scopes of accreditation may be viewed at www.anab.org.

Packaging, Storage, Instructions For Use

This CRM is packaged in an amber bottle and must be stored at 15°C to 30°C. Open the bottle and withdraw an aliquot appropriate for your application.

Traceability Information

Analyte Source Materials: The highest purity analyte source materials are used in the manufacture of this CRM.

Method: This CRM was verified Gravimetrically and Analytically.

Balance: All analytical balances are calibrated on a semiannual basis by an ISO 17025 accredited calibration laboratory and are traceable to NIST. Traceable Calibration Certificate available upon request.

All balances are checked daily by an in-house standard operating procedure. The weights used for this daily verification are calibrated annually by an ISO 17025 accredited calibration laboratory and are certified traceable to NIST. Certificate of Calibration and Traceability available upon request.

Intended Uses

- Calibration of analytical instruments
- Validation of analytical methods
- Preparation of working level reference materials, i.e. "check standards"
- Detection limit studies

Homogeneity

This CRM was thoroughly mixed in production and is guaranteed homogenous.



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ORGANICS

Semi-Volatile Organics by GCMS

<u>Analyte</u>	<u>CAS#</u>	<u>RL</u> (ug/kg)	<u>Value</u> (ug/kg)
Acenaphthylene	208-96-8	5.0	ND
Hexachlorocyclopentadiene	77-47-4	5.0	ND
Acenaphthene	83-32-9	5.0	ND
Anthracene	120-12-7	5.0	ND
Benzo(a)anthracene	56-55-3	5.0	ND
Benzo(a)pyrene	50-32-8	5.0	ND
Benzo(b)fluoranthene	205-99-2	5.0	ND
Benzo(k)fluoranthene	207-08-9	5.0	ND
Benzo(g,h,i)perylene	191-24-2	5.0	ND
Chrysene	218-01-9	5.0	ND
Dibenz(a,h)anthracene	53-70-3	5.0	ND
Fluoranthene	206-44-0	5.0	ND
Fluorene	86-73-7	5.0	ND
Indeno(1,2,3-c,d)pyrene	193-39-5	5.0	ND
Naphthalene	91-20-3	5.0	ND
Phenanthrene	85-01-8	5.0	ND
Pyrene	129-00-0	5.0	ND
Butyl benzyl phthalate	85-68-7	5.0	ND
Di-n-octyl phthalate	117-84-0	5.0	ND
bis(2-Ethylhexyl)phthalate	117-81-7	5.0	ND
2-Chloronaphthalene	91-58-7	5.0	ND
2,4-Dinitrotoluene	121-14-2	5.0	ND
2,6-Dinitrotoluene	606-20-2	5.0	ND
Hexachlorobenzene	118-74-1	5.0	ND
Hexachloroethane	67-72-1	5.0	ND
Nitrobenzene	98-95-3	5.0	ND
Isophorone	78-59-1	5.0	ND
Hexachlorobutadiene	87-68-3	5.0	ND
Dibutyl phthalate	84-74-2	5.0	ND
Dimethyl phthalate	131-11-3	5.0	ND
Diethyl phthalate	84-66-2	5.0	ND
4-Chlorodiphenyl ether	7005-72-3	5.0	ND
2,2'-Oxybis(1-chloropropane)	108-60-1	5.0	ND
bis(2-Chloroethyl)ether	111-44-4	5.0	ND
bis(2-Chloroethoxy)methane	111-91-1	5.0	ND
4-Bromophenyl phenyl ether	101-55-3	5.0	ND
Azobenzene (Diphenyldiazene)	103-33-3	5.0	ND
Carbazole	86-74-8	5.0	ND





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<u>Analyte</u>	<u>CAS#</u>	<u>RL</u> (ug/kg)	<u>Value</u> (ug/kg)
4-Chloroaniline	106-47-8	5.0	ND
Dibenzofuran	132-64-9	5.0	ND
1,4-Dichlorobenzene	106-46-7	5.0	ND
2-Methylnaphthalene	91-57-6	5.0	ND
1,2-Dinitrobenzene	528-29-0	5.0	ND
1,3-Dinitrobenzene	99-65-0	5.0	ND
1,4-Dinitrobenzene	100-25-4	5.0	ND
Diphenylamine	122-39-4	5.0	ND
Pyridine	110-86-1	5.0	ND
N-Nitrosodi-n-propylamine	621-64-7	5.0	ND
N-Nitrosodimethylamine	62-75-9	5.0	ND
bis(2-Ethylhexyl)adipate	103-23-1	5.0	ND
1-Methylnaphthalene	90-12-0	5.0	ND
1,2,4-Trichlorobenzene	120-82-1	5.0	ND
1,3-Dichlorobenzene	541-73-1	5.0	ND
1,2-Dichlorobenzene	95-50-1	5.0	ND
Benzyl alcohol	100-51-6	5.0	ND
Aniline	62-53-3	5.0	ND
4-Chloro-3-methylphenol	59-50-7	5.0	ND
o-Cresol	95-48-7	5.0	ND
p-Cresol	106-44-5	5.0	ND
2,4-Dichlorophenol	120-83-2	5.0	ND
4,6-Dinitro-2-methylphenol	534-52-1	5.0	ND
2,4-Dinitrophenol	51-28-5	5.0	ND
2-Nitrophenol	88-75-5	5.0	ND
4-Nitrophenol	100-02-7	5.0	ND
Pentachlorophenol	87-86-5	5.0	ND
Phenol	108-95-2	5.0	ND
2,4,5-Trichlorophenol	95-95-4	5.0	ND
2,4,6-Trichlorophenol	88-06-2	5.0	ND
m-Cresol	108-39-4	5.0	ND
2,4-Dimethylphenol	105-67-9	5.0	ND
2-Chlorophenol	95-57-8	5.0	ND
2-Nitroaniline	88-74-4	5.0	ND
3-Nitroaniline	99-09-2	5.0	ND
4-Nitroaniline	100-01-6	5.0	ND
2,3,4,6-Tetrachlorophenol	58-90-2	5.0	ND
2,3,5,6-Tetrachlorophenol	935-95-5	5.0	ND



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Volatile Organics by GCMS

Analyte	CAS#	RL (ug/kg)	Value (ug/kg)
Fluorotrichloromethane	75-69-4	5.0	ND
Methyl tert-butyl ether	1634-04-4	5.0	ND
1,1,1,2-Tetrachloroethane	630-20-6	5.0	ND
1,1-Dichloro-1-propene	563-58-6	5.0	ND
1,2,3-Trichlorobenzene	87-61-6	5.0	ND
1,2,3-Trichloropropane	96-18-4	5.0	ND
1,2,4-Trichlorobenzene	120-82-1	5.0	ND
1,2,4-Trimethylbenzene	95-63-6	5.0	ND
1,2-Dibromo-3-chloropropane	96-12-8	5.0	ND
1,2-Dibromoethane	106-93-4	5.0	ND
1,3,5-Trimethylbenzene	108-67-8	5.0	ND
1,3-Dichloropropane	142-28-9	5.0	ND
2,2-Dichloropropane	594-20-7	5.0	ND
2-Chlorotoluene	95-49-8	5.0	ND
4-Chlorotoluene	106-43-4	5.0	ND
4-Isopropyltoluene	99-87-6	5.0	ND
Benzene	71-43-2	5.0	ND
Bromobenzene	108-86-1	5.0	ND
Bromochloromethane	74-97-5	5.0	ND
cis-1,2-Dichloroethylene	156-59-2	5.0	ND
Dibromomethane	74-95-3	5.0	ND
Ethylbenzene	100-41-4	5.0	ND
Hexachlorobutadiene	87-68-3	5.0	ND
Isopropylbenzene (Cumene)	98-82-8	5.0	ND
m-Xylene	108-38-3	5.0	ND
Naphthalene	91-20-3	5.0	ND
n-Butylbenzene	104-51-8	5.0	ND
n-Propylbenzene	103-65-1	5.0	ND
o-Xylene	95-47-6	5.0	ND
p-Xylene	106-42-3	5.0	ND
sec-Butylbenzene	135-98-8	5.0	ND
tert-Butylbenzene	98-06-6	5.0	ND
Toluene	108-88-3	5.0	ND
1,1,1-Trichloroethane	71-55-6	5.0	ND
1,1,2,2-Tetrachloroethane	79-34-5	5.0	ND
1,1,2-Trichloroethane	79-00-5	5.0	ND
1,1-Dichloroethane	75-34-3	5.0	ND
1,1-Dichloroethylene	75-35-4	5.0	ND
1,2-Dichlorobenzene	95-50-1	5.0	ND
1,2-Dichloroethane	107-06-2	5.0	ND
1,2-Dichloropropane	78-87-5	5.0	ND



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1,3-Dichlorobenzene	541-73-1	5.0	ND
1,4-Dichlorobenzene	106-46-7	5.0	ND
Dichlorobromomethane	75-27-4	5.0	ND
Bromoform	75-25-2	5.0	ND
Carbon tetrachloride	56-23-5	5.0	ND
Chlorobenzene	108-90-7	5.0	ND
Chloroform	67-66-3	5.0	ND
cis-1,3-Dichloropropylene	10061-01-5	5.0	ND
Chlorodibromomethane	124-48-1	5.0	ND
Dichloromethane	75-09-2	5.0	ND
Tetrachloroethylene	127-18-4	5.0	ND
trans-1,2-Dichloroethylene	156-60-5	5.0	ND
trans-1,3-Dichloropropylene	10061-02-6	5.0	ND
Trichloroethylene	79-01-6	5.0	ND
Acetone	67-64-1	5.0	ND
Styrene	100-42-5	5.0	ND
Chloroethane	75-00-3	5.0	ND
Bromomethane	74-83-9	5.0	ND
Vinyl Chloride	75-01-4	5.0	ND
Chloromethane	74-87-3	5.0	ND
Dichlorodifluoromethane	75-71-8	5.0	ND

Herbicides by HPLC

Analyte	CAS#	RL (ug/kg)	Value (ug/kg)
Acifluorfen	50594-66-6	3.1	ND
2,4-D	94-75-7	3.1	ND
2,4-D Butyl ester	94-80-4	3.1	ND
Dalapon	75-99-0	3.1	ND
Dicamba	1918-00-9	3.1	ND
Dinoseb	88-85-7	3.1	ND
Pentachlorophenol	87-86-5	3.1	ND
Picloram	1918-02-1	3.1	ND
2,4,5-TP (Silvex)	93-72-1	3.1	ND
2,4,5-T	93-76-5	3.1	ND
Bentazon	25057-89-0	3.1	ND
Chloramben	133-90-4	3.1	ND
TCTA	2136-79-0	3.1	ND
3,5-Dichlorobenzoic acid	51-36-5	3.1	ND
Dichlorprop	120-36-5	3.1	ND
2,4-DB	94-82-6	3.1	ND





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Chlorinated Pesticides by GC-ECD

Analyte	CAS#	RL (ug/kg)	Value (ug/kg)
Aldrin	309-00-2	1.25	ND
alpha-BHC	319-84-6	1.25	ND
beta-BHC	319-85-7	1.25	ND
delta-BHC	319-86-8	1.25	ND
gamma-BHC	58-89-9	1.25	ND
DDD	72-54-8	1.25	ND
DDE	72-55-9	1.25	ND
DDT	50-29-3	1.25	ND
Dieldrin	60-57-1	1.25	ND
Endosulfan 1	959-98-8	1.25	ND
Endosulfan 2	33213-65-9	1.25	ND
Endosulfan sulfate	1031-07-8	1.25	ND
Endrin	72-20-8	1.25	ND
Endrin aldehyde	7421-93-4	1.25	ND
Heptachlor	76-44-8	1.25	ND
Heptachlor epoxide	1024-57-3	1.25	ND
Methoxychlor	72-43-5	1.25	ND
Endrin ketone	53494-70-5	1.25	ND
alpha-Chlordane	5103-71-9	1.25	ND
gamma-Chlordane	5103-74-2	1.25	ND
Toxaphene	8001-35-2	1.25	ND

Additional Pesticides by LCMS

Analyte	CAS#	RL (ug/kg)	Value (ug/kg)
Chlordane	57-74-9	0.10	ND
Thiacloprid	111988-49-9	0.10	ND
Propoxur (Baygon)	114-26-1	0.10	ND
Aldicarb	116-06-3	0.10	ND
Imidacloprid	138261-41-3	0.10	ND
Thiamethoxam	153719-23-4	0.10	ND
Carbofuran	1563-66-2	0.10	ND
Methomyl	16752-77-5	0.10	ND
Methiocarb	2032-65-7	0.10	ND
Oxamyl (Vydate)	23135-22-0	0.10	ND
Carbaryl	63-25-2	0.10	ND
Fenoxycarb	72490-01-8	0.10	ND
Fipronil	120068-37-3	0.10	ND
Chlorphenapyr	122453-73-0	0.10	ND
Fludioxonil	131341-86-1	0.10	ND





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<u>Analyte</u>	<u>CAS#</u>	<u>RL</u> (ug/kg)	<u>Value</u> (ug/kg)
Captan	133-06-2	0.10	ND
Naled (Dibrom)	300-76-5	0.10	ND
Imazalil	35554-44-0	0.10	ND
Chlorantraniliprole	500008-45-7	0.10	ND
Dichlorvos	62-73-7	0.10	ND
Mevinphos (Phosdrin)	7786-34-7	0.10	ND
Pentachloronitrobenzene	82-68-8	0.10	ND
Malathion	121-75-5	0.10	ND
Ethoprophos (Prophos)	13194-48-4	0.10	ND
Etoxazole	153233-91-1	0.10	ND
Chlorpyrifos	2921-88-2	0.10	ND
Methyl parathion	298-00-0	0.10	ND
Acephate	30560-19-1	0.10	ND
Diazinon	333-41-5	0.10	ND
Dimethoate	60-51-5	0.10	ND
Phosmet (Imidan)	732-11-6	0.10	ND
Etofenprox	80844-07-1	0.10	ND
Pyridaben	96489-71-3	0.10	ND
Piperonyl butoxide	51-03-6	0.10	ND
Bifenazate	149877-41-8	0.10	ND
Prallethrin	23031-36-9	0.10	ND
Cypermethrin	52315-07-8	0.10	ND
Permethrin	52645-53-1	0.10	ND
Coumaphos	56-72-4	0.10	ND
Cyfluthrin (Baythroid)	68359-37-5	0.10	ND
Pyrethrins	8003-34-7	0.10	ND
Bifenthrin	82657-04-3	0.10	ND
Tebuconazole	107534-96-3	0.10	ND
Dimethomorph	110488-70-5	0.10	ND
Fenpyroximate	111812-58-9	0.10	ND
Spiroxamine	118134-30-8	0.10	ND
Fenhexamid	126833-17-8	0.10	ND
Azoxystrobin	131860-33-8	0.10	ND
Spinosad	131929-60-7,131929-63-0	0.10	ND
Acetamiprid	135410-20-7	0.10	ND
Trifloxystrobin	141517-21-7	0.10	ND
Kresoxim-methyl	143390-89-0	0.10	ND
Flonicamid	158062-67-0	0.10	ND
Daminozide	1596-84-5	0.10	ND
Spinetoram	187166-15-0,187166-40-1	0.10	ND
Boscalid	188425-85-6	0.10	ND



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Analyte	CAS#	RL (ug/kg)	Value (ug/kg)
Spirotetramat	203313-25-1	0.10	ND
Spiromesifen	283594-90-1	0.10	ND
Metalaxyl	57837-19-1	0.10	ND
Acequinocyl	57960-19-7	0.10	ND
Propiconazole (Tilt)	60207-90-1	0.10	ND
Abamectin	71751-41-2	0.10	ND
Clofentezine	74115-24-5	0.10	ND
Paclobutrazol	76738-62-0	0.10	ND
Hexythiazox	78587-05-0	0.10	ND
Myclobutanil	88671-89-0	0.10	ND

INORGANIC and PHYSICAL PROPERTIES

Metals by ICP

Analyte	RL (mg/kg)	Value (mg/kg)
Aluminum (Al)	1	735
Arsenic (As)	4	ND
Barium (Ba)	5	10.8
Beryllium (Be)	1	ND
Boron (B)	1	ND
Cadmium (Cd)	0.1	ND
Calcium (Ca)	1	419
Chromium (Cr)	0.1	4.03
Copper (Cu)	0.1	3.95
Cobalt (Co)	0.1	ND
Antimony (Sb)	5	ND
Lead (Pb)	1	ND
Lithium (Li)	6	ND
Magnesium (Mg)	2	88.4
Mercury (Hg)	2	ND
Manganese (Mn)	0.1	5.72
Molybdenum (Mo)	1	ND
Nickel (Ni)	0.1	2.25
Iron (Fe)	1	1122
Potassium (K)	1	309
Phosphorus (P)	1	16.8
Selenium (Se)	5	ND
Silver (Ag)	2	ND
Sodium (Na)	5	21.2



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Strontium (Sr)	0.1	4.96
Sulfur (S)	0.1	48.7
Thallium (Tl)	2	ND
Vanadium (V)	0.1	8.07
Zinc (Zn)	0.1	0.52

Anions by IC

<u>Analyte</u>	<u>RL</u> (mg/kg)	<u>Value</u> (mg/kg)
Chloride	2	10.6
Fluoride	1.5	5.72
Nitrate as N	1	ND
Sulfate	10	15.1

Soil Analysis

<u>Analyte</u>	<u>RL</u> (mg/kg)	<u>Value</u> (mg/kg)
Cyanide, reactive	0.5	ND
Sulfide, reactive	2	ND
Conductivity @ 25°C	1	45.8 µS/cm
pH	0.1	6.96
Solids, percent	1	100%
Nitrogen, ammonia	1	ND
Nitrogen, total Kjeldahl	0.1	ND

Ken Grzybowski

Ken Grzybowski, Organics Department Manager

Ewart Morris

Ewart Morris, Inorganics Department Manager

