

**Manganese Nodule Nano-Pellet, pressed pellet diameter 20 mm (Standard for solid-state microanalysis)**

Art. ID	MY-NOD-A1-NP-LA-ICP-MS-LIBS-20MM
Unit	each (pressed pellet)
Deliverydetails	No Dangerous Good /not restricted

**Description**

Pellet for LA-ICP-MS and LIBS application /// The principle behind LA-ICP-MS (Laser Ablation - Inductively Coupled Plasma - Mass Spectrometry) involves a laser beam removing (ablating) material from a sample and analysing its chemical composition in a mass spectrometer /// LIBS (Laser-Induced Breakdown Spectroscopy) uses a laser beam to interact with the sample. Due to the extreme heat of the laser (10,000 K and more) a plasma is formed. A plasma is a cloud of ions (charged atoms) and electrons (negatively charged particles). When this plasma collapses it emits light. Light is a mixture of different wavelengths. This light is then transferred through a fiberoptic cable to a spectrometer, which can precisely split the light into its respective wavelengths. The working principle of the LIBS-spectrometer is similar to a prism as it disperses the incoming light. Each element has several characteristic wavelengths. A detector is able to attribute an intensity to each of them.

Text/Information	Analyte/Parameter	CAS number	Concentration/Value	Unit	Method	Source
	Na <sub>2</sub> O		1,02 ± 0,08	g/100g		
	MgO	[1309-48-4]	4,57 ± 0,29	g/100g		
	Al <sub>2</sub> O <sub>3</sub>		3,78 ± 0,14	g/100g		
	SiO <sub>2</sub>		4,02 ± 0,03	g/100g		
	P <sub>2</sub> O <sub>5</sub>		1,21 ± 0,04	g/100g		
	CaO		15,3 ± 0,6	g/100g		
	TiO <sub>2</sub>		0,48 ± 0,02	g/100g		
	MnO		23,25 ± 0,76	g/100g		
	Fe <sub>2</sub> O <sub>3</sub> (T)		15,29 ± 0,51	g/100g		
	SO <sub>3</sub>		0,71 ± 0,06	g/100g		
	Lithium (Li)	[7439-93-2]	72 ± 5	µg/g		
	Beryllium (Be)	[7440-41-7]	5,3 ± 0,7	µg/g		
	Vanadium (V)	[7440-62-2]	590 ± 28	µg/g		
	Cobalt (Co)	[7440-48-4]	3016 ± 119	µg/g		
	Nickel (Ni)	[7440-02-0]	5990 ± 333	µg/g		
	Copper (Cu)	[7440-50-8]	1062 ± 33	µg/g		
	Zinc (Zn)	[7440-66-6]	565 ± 41	µg/g		
	Arsenic (As)	[7440-38-2]	282 ± 30	µg/g		
	Rubidium (Rb)	[7440-17-7]	10,2 ± 0,6	µg/g		
	Strontium (Sr)	[7440-24-6]	1565 ± 256	µg/g		
	Yttrium (Y)	[7440-65-5]	121 ± 13	µg/g		
	Zirconium (Zr)	[7440-67-7]	288 ± 65	µg/g		
	Niobium (Nb)	[7440-03-1]	47 ± 6	µg/g		

Molybdenum (Mo)	[7439-98-7]	364 ± 59	µg/g
Antimony (Sb)	[7440-36-0]	35,7 ± 2,9	µg/g
Tellurium (Te)	[13494-80-9]	36,1 ± 5,8	µg/g
Caesium (Cs)	[7440-46-2]	0,6 ± 0,2	µg/g
Barium (Ba)	[7440-39-3]	1457 ± 44	µg/g
Lanthanum (La)	[7439-91-0]	116 ± 21	µg/g
Cerium (Ce)	[7440-45-1]	746 ± 40	µg/g
Neodymium (Nd)	[7440-00-8]	102 ± 5	µg/g
Samarium (Sm)	[7440-19-9]	22,7 ± 2,1	µg/g
Europium (Eu)	[7440-53-1]	5,3 ± 0,3	µg/g
Gadolinium (Gd)	[7440-54-2]	25 ± 0,6	µg/g
Terbium (Tb)	[7440-27-9]	3,7 ± 0,3	µg/g
Dysprosium (Dy)	[7429-91-6]	23,4 ± 1,5	µg/g
Holmium (Ho)	[7440-60-0]	4,9 ± 0,5	µg/g
Erbium (Er)	[7440-52-0]	14,5 ± 1,5	µg/g
Thulium (Tm)	[7440-30-4]	2,1 ± 0,3	µg/g
Ytterbium (Yb)	[7440-64-4]	13,9 ± 0,6	µg/g
Lutetium (Lu)	[7439-94-3]	2,2 ± 0,2	µg/g
Hafnium (Hf)	[7440-58-6]	5,9 ± 1,6	µg/g
Tungsten (W)	[7440-33-7]	79 ± 12	µg/g
Thallium (Tl)	[7440-28-0]	108 ± 12	µg/g
Lead (Pb)	[7439-92-1]	808 ± 26	µg/g
Bismuth (Bi)	[7440-69-9]	9,3 ± 1	µg/g
Thorium (Th)	[7440-29-1]	23 ± 1	µg/g
Uranium (U)	[7440-61-1]	7 ± 0,8	µg/g