

We call it *PANAK-ITE*
[Tabular Summary of Laboratory Tests
Concerning Mineral Content of *Montmorillonite*
From Panaca, Nevada Quarry]

CAVEAT: This summary is not comprehensive. There are several more tests on file that corroborate the findings published herein, and fill-in the gaps. Also, please bear in mind that this presentation does not delve into the minerals per se (in the chemistry and geological sense of the word), found in the deposit, but merely lists the individual elements that make up minerals. Neither are isotopes and ions separately identified herein.

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FOREWORD: Everybody likes, and has a right to know, which particular elements--and in what proportions--appear in our natural sedimentary deposit. Because of the unrelenting inquiries over years that have consumed a considerable amount of time relaying this same information piecemeal by e-mail, I have decided to publish a more thorough series of tables once and for all on the INTERNET, at our retail domain, www.montmorillonite.biz.

The main mineral (*Montmorillonite*), an edible clay, is correctly termed an aluminosilicate. This leafy structure forms the matrix that was stratified with humates, and adsorbed to its exterior, all the other minerals and elements present with their diverse properties. I have capitalized the names of the individual elements to distinguish them from names for rocks, actual minerals, certain compounds and other substances. The charts that follow depict an impressive array of 78 distinct elements identified to date that appear in many different combinations--chiefly with Oxygen. The essential chemistry evidently took place within a fresh water deposit, as the complete absence of the mineral compound NaCl, sodium chloride (salt) within the colloidal clay, attests. This lacustrine environment was the home for millennia to trillions and trillions of diatoms and other forms of plankton. These tiny organisms, along with diverse animal and plant life, particularly the bio-friendly bacteria feeding upon the decomposing vegetable matter that washed into a caldera, or lake, chelated the elements during their metabolism of nutrients. The remarkable fulvic acid content of the deposit, as a bi-product of thriving pro-biotic bacteria, further evidences the organic processes that were in play. After this aquatic life expired, its skeletal remains and their precipitates, became the phyllosilicate building blocks of a living clay--enriched with trace elements including catalytic properties important for so many functions within higher life forms.

The lab test results disclosed in the charts that follow are representative of the available reports on file. Over time they have established the classical parameters of what the consumer or formulator may expect in his or her shipment from our quarry. The "min-max" indications are highlighted to designate more clearly the absolute ranges detected so far. All ratios are stated in parts per million for consistency. Simply divide the parts per million figures by 10,000 to arrive at an equivalent percentage for each element. The accuracy of the reports is presumed, and they have been reproduced conscientiously disclose what dedicated research has revealed.

The first table lists the major elements in descending order that are found in the *PANAK-ITE* deposit. Members of this group have unquestionable nutritive, structural or regulatory properties, or are simply amongst the most common in the earth's crust; so, it is no surprise to find them here also, albeit not necessarily in their metallic, elemental, free or "pure" form. As aforesaid, more often than not, a given element has adhered to one or more others forming a mineral. Because the labs generating the reports were able to recognize each actual mineral quite readily, they automatically knew what portion of it was identified with its constituent elements.

The “Big 16”

These are most of the main elements that either formulators are interested in for their supplementary or remineralization properties, including certain “macro minerals” (that are readily detectable), and/or typically occur in many deposits. The laboratories consulted, both university and professional, are some of the most prestigious in the nation, stretching from Ohio to California. Note, however, that some of the earlier studies often show dramatically higher percentages of certain of these elements. Bear in mind that technology has improved substantially, and that different labs will conduct their individual tests subject to varying protocols and systems. It is further possible that some of the reports may contain typos such as an error in placing the decimal, or confusion between parts per million and a % figure, inter alia.

In any event it is easy to appreciate that *PANAK-ITE* is not a homogeneous material. The [MEFAS report](#) especially illustrates this, as four distinct readings were obtained from as many areas of the same, approximately, one-ounce sample. Since we have no data concerning from what precise coordinates the various samples were taken in former years, it is also possible that in the last ten years significantly different strata have been quarried, contrasted with what was the case 40 years ago. Nevertheless, it is comforting to know that in all subsequent test results (except for non-toxic Silicon), have come in substantially below what was established as a maximum long ago. Background colors used in highlighting different parts of each table, are for convenience in following data visually, and otherwise have no bearing on the presentation.

TABLE I.

Element	MEFAS, INC. Lake Forest, CA JUN 2007	<i>Spectrum Analytic, Inc.</i> Washington, OH JAN 2007	Servi-Tech Labs. Amarillo, TX AUG 2006	ALS Chemex Sparks, NV AUG 2004	<i>Chemtech -Ford</i> SLC, UT DEC 2002	Chemex Labs, Inc. Sparks, NV FEB 1992	THE UNIV. of Arizona Tucson OCT 1981	NEVADA TESTING LABS., LTD. Las Vegas, NV JUN 1974	Geo. W. Gooch Labs., Ltd. # Los Angeles, CA APR 1968
O	>550,000	n/a	n/a	n/a	n/a	*	n/a	n/a	n/a
Si	337,500	n/a	n/a	n/a	n/a	*650,000	250,000	260,000	230,000
Al	37,300	n/a	n/a	36,300	9,300	*67,200	93,000	91,000	88,000
Fe	14,250	8,400	52	12,200	8,700	13,200	16,000	16,000	32,000
Ca	12,500	15,700	4,407	18,800	20,000	*44,800	41,000	30,000	21,000
Mg	11,675	3,500	458	5,600	3,900	*11,100	8,300	9,200	6,000
K	9,700	*340	237	15,600	2,600	*16,200	48,000	81,000	84,000
Na	5,400	n/a	266	5,600	910	8,800	12,000	34,000	24,000
S	4,325	8,000	2,286	9,100	14,000	*9,210	16,000	n/a	*112,000
Ti	1,950	n/a	n/a	1,800	300	*3,100	2,300	2,800	7,800
Cu	1,075	<100	<1	9	<6	<15	<3	56	72
N	n/a	1,100	48	n/a	n/a	n/a	n/a	790	n/a
Mn	n/a	<100	<1	118	49	*150	150	350	350
Zn	n/a	<100	1	30	24	31	20	n/a	n/a
P	n/a	*200	24	290	270	*1200	n/a	*203	n/a
B	n/a	n/a	<1	n/a	10	35	7	<30	36

*Asterisked figures represent various oxides in combination with mineralized individual elements.

The table that follows is an attempt to summarize the data set forth above. Due to the often wide differences amongst the data derived from the forgoing table, an average computation is desirable. Note that the stated average is not that of the minimum and maximum, but that of all the figures from the corresponding line in the above table, excluding those numbers classified as oxides (which only appear for informational purposes).

TABLE II.
Min-Max and Ave. for Big 16 (in Table I)

Element	Minimum ppm	Maximum ppm	Average ppm	Element	Minimum ppm	Maximum ppm	Average ppm
Oxygen	550,000	550,000	550,000	Sulfur	2,286	16,000	8,951
Silicon	269,376	337,500	230,000	Titanium	300	7,800	2,825
Aluminum	9,300	93,000	70,980	Copper (Cu)	1	1,075	148
Iron (Fe)	52	32,000	13,422	Nitrogen	48	1,100	646
Calcium	4,407	41,000	20,425	Manganese	1	350	160
Magnesium	458	11,675	6,079	Zinc	1	31	21
Potassium (K)	340	84,000	30,185	Phosphorus	24	290	196
Sodium (Na)	266	24,000	11,372	Boron	1	36	20

In Table III that follows, it was decided to replace the three most modern tests with additional older ones from labs other than those appearing in Table I. The reason for this was simple. The most modern tests only tested for the 16 so-listed; did not attempt to corroborate findings of obscure trace elements; certain older tests did.

Table III, therefore, deals with a broad bouquet of micro elements that appear in diminutive, or trace amounts. During the mid years of the exploitation of the quarry, there was a tremendous interest in identifying the total number of trace elements discoverable, as a basis for a marketing edge, and to develop patentable formulations for "use patents", and so forth. You will see carryovers of this mentality in various and sundry products trademarked in the preceding two decades that still use the quarried material as the main ingredient. An interesting assortment of products persists, ranging from human to animal supplementation with prefixes or actual names bearing 72, 74, 76 and now 78, as if to proclaim to the world, the widest possible variety of trace elements attributed to a single deposit.

This may well be the actual case. However, of the hundred-odd elements occurring in nature, only a handful in fact are well studied as to their medicinal, nutritional, and metabolic properties. The emphasis of the current operators is to educate concerning the properties of the elements that are well-studied, rather than spend inordinate amounts of money testing for yet one more trace element, heretofore unknown, to be present in the deposit. The individual trace elements also have unique catalytic properties, and perhaps someday another amazing function of a particular trace element contained in the Panaca deposit, will be written up yet.

In the meantime there is enough misinformation to combat that our chosen mission of necessity, must be an educational one. For example, there are certain other clays on the market that should be declassified as edible. There exist many false impressions minimizing the importance of chelation and colloidal substances. Likewise, various myths and misstatements concerning so-called "ionic minerals" and "plant minerals", rock dust, and so forth versus clays need to be overcome. Only recently have sedimentologists and mineralogists been able to draw the line between true *Montmorillonite* and *Bentonite*, using distinct scientific classifications.

TABLE III.a
The Trace Elements

(Refer to http://www.chelatedtraceminerals.com/chelated_trace_minerals.html)
All Figures Stated in Parts Per Million (PPM)

Element	<i>Ford Chemical Laboratory, Inc.</i> SLC, UT JAN 1981	DIKKERS Biochemical Laboratory Los Angeles, CA 1970s	Melchior T. Dikkers PhD ScD Technical Report Tracemin 74 1980	ALS Chemex Sparks, NV AUG 2004	<i>Chemtech- Ford</i> SLC, UT DEC 2002	Chemex Labs, Inc. Sparks, NV FEB 1992	THE UNIV. of Arizona (Tucson) OCT 1981	NEVADA TESTING LABS., LTD. Las Vegas, NV JUN 1974	Geo. W. Gooch Labs., Ltd. # Los Angeles, CA APR 1968
Ag	.30	*trace	4.00	<.50	<2.40	.15	n/a	n/a	n/a
As	.20	*1	55.00	57.00	92.00	58.40	73.00	n/a	n/a
Au	.05	n/a	.25	n/a	n/a	<.01	.68	n/a	trace
Ba	22.3	*250.00	170.00	470.00	57.00	515.00	390.00	n/a	trace
Be	.10	n/a	1.70	2.30	1.60	2.80	n/a	n/a	n/a
Bi	14.8	n/a	.85	<2.00	n/a	.60	n/a	n/a	n/a
Br	3.50	n/a	2.50	n/a	n/a	4.50	5.20	n/a	n/a
C	.19	*6,300.00	n/a	n/a	n/a	12,800.00	n/a	n/a	n/a
Cd	1.12	n/a	.20	<.50	<.47	.10	n/a	n/a	n/a
Ce	<.01	n/a	21.00	3.00	n/a	42.00	40.00	n/a	n/a
Cl	*6,100.00	*2,000.00	250.00	n/a	n/a	n/a	n/a	n/a	n/a
Cs	<.01	n/a	21.00	n/a	n/a	n/a	183.00	n/a	n/a
Co	<.03	trace	4.80	n/a	3.00	3.00	4.80	25.00	n/a
Cr	4	100	25.00	36.00	23.00	150.00	70.00	260.00	280.00
Dy	n/a	n/a	2.50	n/a	n/a	1.00	4.00	n/a	n/a
Er	n/a	n/a	.80	n/a	n/a	<20.00	<2.00	n/a	n/a
Eu	n/a	n/a	2.00	n/a	n/a	<.50	.49	n/a	n/a
F	3.85	*200.00	8,000.00	n/a	n/a	*5,400.00	<1	n/a	n/a
Ga	.05	trace	3.00	n/a	n/a	12.00	25.00	33.00	94.00
Gd	n/a	n/a	9.00	n/a	n/a	<50.00	n/a	n/a	n/a
Ge	11.35	n/a	17.00	n/a	n/a	<5.00	25.00	n/a	50.00
H	.05	*1,936.00	n/a	n/a	n/a	1.00	n/a	n/a	n/a
Hf	n/a	n/a	.45	n/a	n/a	6.00	2.00	n/a	n/a
Hg	.17	n/a	.25	n/a	n/a	1.200	n/a	n/a	n/a
Ho	n/a	n/a	.25	n/a	n/a	1.00	1.10	n/a	20.00
In	.38	n/a	55.00	n/a	n/a	<1.00	n/a	n/a	n/a
I	.33	n/a	1.00	n/a	n/a	n/a	7.00	n/a	n/a
Ir	n/a	n/a	.25	n/a	n/a	n/a	.51	n/a	n/a
La	n/a	n/a	8.50	n/a	n/a	24.00	18.00	n/a	500.00
Li	1.44	*trace	2.50	n/a	20.00	27.00	n/a	n/a	n/a
Lu	n/a	n/a	.17	n/a	n/a	.30	.45	n/a	n/a
Mo	.25	*trace	34.00	24.00	29.00	<29.00	61.00	170.00	n/a
Nb	2.89	n/a	3.40	n/a	n/a	10.00	20.00	n/a	n/a
Nd	n/a	n/a	21.00	n/a	n/a	15.00	20.00	n/a	n/a
Ni	6.80	*trace	35.00	6.00	4.90	8.00	60.00	<40	26.00
Os	n/a	n/a	.25	n/a	n/a	n/a	n/a	n/a	n/a

*Asterisked figures represent various oxides in combination with mineralized individual elements.
As analyzed by Loma Linda University (January, 1969) together with supplemental data from Loma Linda University (January, 1969).

TABLE III.b
The Trace Elements

(Refer to http://www.chelatedtraceminerals.com/chelated_trace_minerals.html)
All Figures Stated in Parts Per Million (PPM)

Element	<i>Ford Chemical Laboratory, Inc.</i> SLC, UT JAN 1981	DIKKERS Biochemical Laboratory Los Angeles, CA 1970s	Melchior T. Dikkers PhD ScD Technical Report Tracemin 74 1980	ALS Chemex Sparks, NV AUG 2004	<i>Chemtech- Ford</i> SLC, UT 21 DEC 2002	Chemex Labs, Inc. Sparks, NV FEB 1992	THE UNIV. of Arizona (Tucson) OCT 1981	NEVADA TESTING LABS., LTD. Las Vegas, NV JUN 1974	Geo. W. Gooch Labs., Ltd. # Los Angeles, CA APR 1968
Pb	43.60	n/a	35.00	8.00	<6.60	6.00	14.00	n/a	trace
Pd	.74	n/a	1.50	n/a	n/a	<.01	n/a	n/a	n/a
Pr	n/a	n/a	2.50	n/a	n/a	<5.00	2.00	n/a	n/a
Pt	.03	n/a	.25	n/a	n/a	<.01	n/a	n/a	n/a
Rb	n/a	n/a	80.00	n/a	n/a	95.00	n/a	n/a	n/a
Re	n/a	n/a	.15	n/a	n/a	n/a	n/a	n/a	n/a
Rh	.44	n/a	.60	n/a	n/a	<.01	<1.00	n/a	n/a
Ru	36.50	n/a	2.00	n/a	n/a	95.00	7.80	n/a	500.00
Sb	<11	n/a	8.50	11.00	<19.00	5.20	29.00	n/a	n/a
Sc	n/a	n/a	10.00	n/a	n/a	5.00	3.7	n/a	n/a
Se	1.30	n/a	6.00	n/a	16.00	6.40	4.10	n/a	n/a
Sm	n/a	n/a	10.00	n/a	n/a	2.00	3.50	n/a	40.00
Sn	.44	*trace	1.70	n/a	<47.00	<2.00	n/a	n/a	n/a
Sr	120.00	250	180.00	248.00	150.00	¹ 414.00	240.00	37.00	350.00
Ta	.04	n/a	.50	n/a	n/a	<2.00	.50	n/a	n/a
Te	.10	n/a	.15	n/a	n/a	<.05	<1	n/a	n/a
Tb	n/a	n/a	.80	n/a	n/a	.60	.62	n/a	n/a
Th	.65	n/a	1.70	n/a	n/a	7.00	>100	n/a	n/a
Tl	n/a	n/a	1.70	n/a	<19.00	2.00	10.00	n/a	n/a
Tm	n/a	n/a	.25	n/a	n/a	<1.00	n/a	n/a	n/a
U	6.20	n/a	21.00	n/a	n/a	31.00	>100	n/a	n/a
V	8.00	*trace	80.00	119.00	87.00	119.00	n/a	190.00	190.00
W	1.50	n/a	8.50	10.00	n/a	<5.00	8.10	n/a	200.00
Y	1.20	n/a	5.10	n/a	n/a	15.00	n/a	n/a	n/a
Yb	n/a	n/a	.85	n/a	n/a	1.50	1.40	64.00	n/a
Zr	5.30	*200	.21	n/a	n/a	200.00	10.00	550.00	380.00

The import of Tables IIIa and IIIb is that they do corroborate and document what we have been saying all along, i.e., that the Panaca deposit does contain at least 78 of elements occurring in nature, most in trace amounts. How much is a trace amount? One definition could be anything under 1% (10,000 PPM). Hence the bulk of our elements are indeed trace elements. That is the good news because they are required only in tiny amounts. Some are essential and therefore, just as important as the macro elements, for without the synergy of the trace elements, the macro elements cannot perform their functions properly. [For further explanation, refer to www.montmorillonite.org]

¹ First test COA (A9210201) showed Sr at 414 ppm. In a second test with a different COA (A9210202), the measurement was slightly less, i.e., 360 ppm.