

How ION-MIN Works

How Much is Too Much Mineral Supplementation?

Can you get too much of a good thing? Find out how much ION-MIN[®] is right for you.

How do I know ION-MIN[®] is giving me the right amounts of the minerals I need?

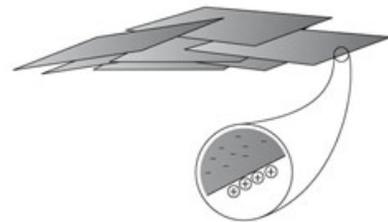
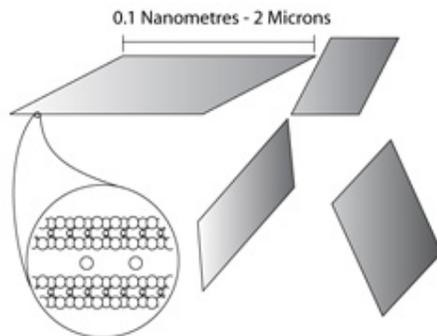
Structure & Function

ION-MIN, like all Calcium Montmorillonites, has a 2-in-1 action on the body. It is a special mineral delivery system and detox formula. The actual clay is separate from the other mineral molecules that attach to it.

Calcium Montmorillonite is made up of tiny crystals that are extremely flat. Some are only several nanometers in size. They are called anions (pronounced an-ions), which means they have a net negative ionic charge. Actually the crystals of Montmorillonites are double layered, and they swell a bit when wetted as water enters the crystal layers. Since most elements on the periodic table of elements are cations (pronounced (cat-ions), so they cling irresistibly to the clay crystal like a magnet. This creates a buffer for a sustained release mechanism when you take the clay internally.

Here are 3 illustrations of a clay particle:

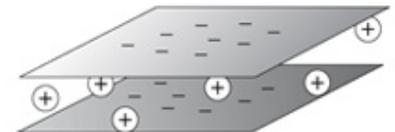
- Flat, dry showing negative surface charge and positive edge charge



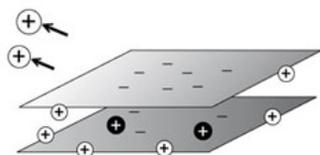
- Depiction of the molecular structure of the edge of a platelet

- Illustration of a hydrated double-layer with

cations within.



Follow the Minerals



- When the clay is ingested, the hydrochloric acids in your stomach lower the pH of the clay from 8.3 down to 2 or 3, along with everything else in your stomach. Hydrogen atoms from your stomach acids replace the minerals held

in place within this silicate “sandwich” in a process called ion-exchange. This is the same process that allows plants to access minerals in the soils. In the lower pH environment, the clay temporarily loses some of its ionic strength, so the mineral nutrients are released. This is a buffered process, so the minerals are released slowly and gently during the clay’s path through your digestive tract.

Your stomach doesn’t actually absorb the elements needed by your body; that function is reserved for the small intestine. So as the clay and newly released minerals enter your small intestine two things happen:

1. First, the pH rises, and the clay begins gain ionic power again. So it will begin to reabsorb some of the minerals it lost in the stomach. This prevents over-absorption.
2. Second, your body will begin actively and passively absorbing the free minerals it needs to remineralize your body.

Absorption

The way human and animal minerals are taken up into the body is through the intestine walls. This is normally a highly selective process called "active transport"; if your body needs minerals, it sends very special and mineral-type-specific proteins to the intestine wall where they wait opportunistically for an element to pass by from digested food, etc. These active transport binders act as shuttles, picking up the vitamin or mineral and taking it through the intestinal cell wall into the body, where it may be directly released or transferred to another transport molecule. For example if your body wants iron, a protein will be waiting to take it up (protein-mineral binding is called chelating). If it does not want iron, there will be few proteins waiting along the intestine walls, and the iron will not be absorbed. You are probably aware that positively charged ionic minerals of nanometric size are the most absorbable and readily bioavailable minerals... they are chelate-ready. Naturally cationic minerals are more absorbable than many plant-derived minerals, which contain inhibitors.

- This of course isn’t the whole story. Many minerals are over-absorbed because they are over-ingested and they may share the same transport channels as other minerals. There are some passive/open transports as well, as for example sodium. This is why we can easily get too much sodium. When this happens, a healthy/normal body decides to excrete them through the kidneys and liver. However, a toxic buildup of minerals in the body is not generally due to over-absorption or exposure, but to the wrong forms of the elements from man-made chemical processes, and from body compensation mechanisms due to shortages of minerals. For example, if you are starved for one mineral, the body may hoard a similarly structured mineral as compensation (silica and calcium act like this). Another reason for overload is simple body dysfunction. Your body may be sick, it can’t eliminate the bad minerals forms and they remain stuck to tissue cells.
- And of course, there are many reasons for the inability of a body to absorb minerals properly as well. In addition to mineral bio-availability such as ionically charged colloids, the body must be well and be able to produce the transport proteins. The lining of the intestines and colon must be healthy. Older people tend to produce less stomach acids, and this reduces mineral availability. And once again, vitamins and minerals interact and interfere with one another in specific ways.

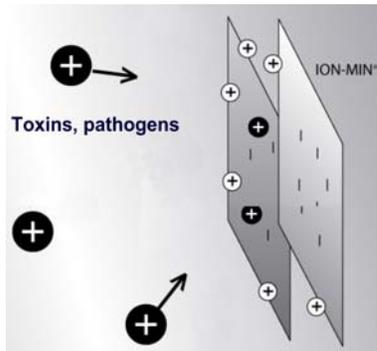
Mediation

Once in the intestines, our clay begins to compete with your body's natural absorption processes for the minerals again. This is why using clay is such a fantastic way to remineralize your body. ION-MIN gives you access to the minerals you are missing and mediates the mineral supplementation. Then it cleans up behind itself so certain minerals are not over-absorbed. If your body does not need the mineral, the clay reabsorbs it efficiently. By working together, your body along with the clay will not allow too much of these ionic mineral to enter your system. This is also why we advise not to take too much clay with your food, as it will compete with your body to absorb some of the food minerals. Wait at least 1 hour between meals.

In fact, some ION-MIN silicate particles are small enough to get into the blood stream. Once there, they help cells eliminate heavy metals and toxins bound to cells and awaiting disposal. The toxin-bound nanosilicates move to the kidney and pancreas for elimination.

As the majority of the clay moves into your colon (large intestine) it becomes even higher in pH. This is because of the bile that is slightly caustic (pH = 7.5 - 8.5). The ionic drawing power of the clay is reset to its original strongly anionic capacity or higher (depending on pH and the mineral inventory) and it begins to attract as many cationic elements as it can find.

- As it turns out, most minerals as well as toxins and pathogens are cations, so they irresistibly cling to the clay particles, and are excreted. The attraction of cations to the clay particle is called adsorption (with a d). Very few compounds adsorb well, and the best among them for a safe, gently colonics cleanse is Calcium Montmorillonite.



The body uses bile from the liver to eliminate excess minerals, heavy metals and toxins. But once in the colon, they often cannot be efficiently removed because of the compounds that over the years coat the colon. So as you age, your body needs help and the ionic power of the clay does a remarkable job of detoxifying and removing both excess minerals as well as the wrong types of minerals we often are exposed to, along with microbial matter and toxins from them.

Detox

This is why, if for any reason your body absorbed more of a mineral than it should, or the wrong kind of mineral molecular structure, TERRAMIN[®] clay will act as a powerful eliminating agent for those minerals. In fact, it is so powerful that if you ingested too much iron in the wrong form, such as ferrous sulfate (a bad form of iron often dumped onto the prescription drug market by chemical companies, which can be harmful to kids), taking TERRAMIN[®] would actually be an antidote, more effective even than activated charcoal. It would adsorb the iron and remove it. The same process occurs for mercury, aluminum poisoning, lead poisoning, etc. The same process is why Calcium Bentonite Montmorillonite

is used to remediate toxic waste spills...it adsorbs and absorbs toxic compounds. It is used in animal feeds to eliminate fungal toxins and in waterways to remove pollution.

Daily dose

But here's the real reason to take TERRAMIN® daily and not worry about how much of the elements you are taking in: there are [at least 50 mineral elements](#) that contribute somehow to human metabolism and health. All of them are in our clay compound in safe, balanced, ionic form. Most people in North America are chronically mineral-deficient in at least 20 of them. In fact the USDA



estimates that 25% of US children are deficient in iron! So, the best thing to do is to saturate your body with safe amounts of mineral-rich foods. But study after study proves that even if you ate a proper diet, you would not get the minerals you need. This is because our soils worldwide are depleted of these very trace elements that are so necessary for our survival. One apple, potato, or portion of broccoli contains perhaps 1/3rd of the nutrients that the same food did 100 years ago. Anyone who thinks you can get the nutrients you need from food isn't listening to the evidence. [See the studies here](#). And many of the most depleted and necessary minerals are not the ones the public is taught about. They are minerals like cobalt, strontium, vanadium, neodymium, nickel, rubidium, tin, etc. You need only tiny amounts, but the amount you need has nothing to do with their importance for survival. Your body is very likely not getting them in sufficient amounts. When this happens, degenerative illnesses result. Keep in mind that unlike vitamins, your body cannot manufacture minerals...you must ingest them.

So the goal is to add fairly significant doses of these minerals steadily to your diet and let your body select what it needs. The key is balance. Minerals are needed not just in raw amounts, but also in ratios. When you obtain too much of some mineral compounds...especially "salts", you need more of certain other minerals to compensate. A classic example of this is the group of "electrolytes": sodium vs. potassium, magnesium and calcium. Our bodies typically have too much sodium because of our modern diet (sodium is not selectively absorbed). But we are deficient in bioavailable forms of compensating elements, which really sickens us over time. The best insurance is a balanced, moderate dose taken every day. TERRAMIN can cost as little as 20 cents per day, giving you the nutrients you need to help build a strong, healthy body.

What do we really know about daily values?

The amount of iron and other minerals in a serving of TERRAMIN may seem high to you, but if you think the % of DV is too high, consider this. The AAP (American Association of Pediatricians) very recently (September, 2008) told Americans to [double their childrens' intake of vitamin D!](#) Double it!! That means 100% more! Yet in 2005, the FDA made many food companies take out their vitamin D fortification as being potentially toxic! After a 10-year controlled trial, the AAP found that US kids are at risk of disease from a lack of it! One day they're telling you you're wasting your money on supplements, and the next day they're telling you you're only getting half of what you need!! [See this article on vitamin D form](#)

[2005!](#) When do you suppose they'll raise the RDI or DV? You could literally die waiting for their advice to change.

Does it sound to you like the DV's are really accurate science? The FDA has almost no idea how much nutrients people should have, much less comprehend situational and regional and DNA variations unique to each person. I might need twice the selenium you need, and you might need 3 times the iron I need. Sadly, the FDA takes decades just to recognize the need for a mineral at all.

Here's a partial list of when they finally recognized some absolutely life-sustaining minerals as life-sustaining:

- **Molybdenum 1953**
- **Zinc 1974**
- **Tin 1975**
- **Vanadium 1975**
- **Nickel 1975**
- **Chromium 1977**
- **Selenium 1989**
- **Boron 1990**
- **Copper 1996** (widely recognized even in 1935 as mission-critical to human and animal survival...that's a 61-year delay, folks!)



Do you believe the FDA or USDA perfectly assessed how much every person on the planet needs in their DV's? Please note that while the FDA only recognizes 17 mineral elements as essential, it provides DV's for only 7 of them. Even worse, one day they don't admit that you need the mineral at all, and the next they have you worried about your daily intake. Selenium was added in the 1950's, completely removed from the list in the 1960's because they thought it was a poison, then re-added again in 1989 as absolutely vital! It would be wonderful to think our government is comprised of people who know what we need and can take care of us with "smart thinking", but our present knowledge of nutrition the many roles of minerals...and the FDA's acceptance of such knowledge are incredibly inadequate.

In fact, many of our customers take a teaspoon of TERRAMIN[®] every day. Are you sitting down? That's about 1200% of the DV for iron. But the dose is not the point, and I know that you understand that now.

What About Iron?

In addition to the safety and effectiveness of TERRAMIN based on the clay mineral-biochemistry outlined above, you should know one more thing about iron. Among all elements in the human body, iron is the most regulated and selectively absorbed. You simply cannot get too much of it in your blood, unless you have a specific and rare blood disorder due to a faulty gene. The most important thing for you to know is that you simply cannot get

too much iron or any other element from TERRAMIN. Get what you need from a good diet supplemented with TERRAMIN.

Now please note that the FDA requires supplement manufacturers to place an iron warning on their labels because of the cheap, derivative iron compounds that are in many supplements. They don't distinguish between sustained-release delivery systems or detox—2-in-1 supplements like ours, so we comply and place an iron warning on the label. But there's a story behind that warning...it has nothing to do with iron in your blood, or tissue. The warning requirement resulted from a problem with certain forms of iron in the stomach that deteriorate the lining of the stomach. And the story behind it will make you angry. See our FAQ on iron, [here](#).

Statements regarding dietary supplements are provided solely to offer our customers additional information about alternative medicine. No health claims for these products have been evaluated by the U.S. Food and Drug Administration (FDA), nor has the FDA approved these products to diagnose, cure or prevent disease. You should consult your healthcare provider before starting any course of treatment.