

Natural Mineral Sources of Negative Ions

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Abstract

Minerals have been interesting to study. Especially are represented in objects for housing. Clay's ones mineral plaster was again introduced because of many of its advantages. Because it doesn't exist pen reaction which takes place when the clay "hardens", her sculptural textures and forms are preserved. Maintains optimal conditions for pleasant temperature and relative humidity. Porous nature makes excellent traps and openings for moisture. On that one the way will be able to reduce the quantity of moisture and wake up It is beneficial in places like tables bathrooms and kitchens, which produces a lot of money as a result of the use of water. The majority of negative effects on health, stated, can be prevented by maintenance of relative humidity in the house between 40 and 60 per cent. For this reason, clay mortars can be safe to absorb. They keep steam moisture inside of their molecular structures during high relative humidity and then release it back into the atmosphere during low relative humidity. Because of molecular movement moisture because of hysteresis occurrence clay mineral mortars produce negative ions. This ensures a fresh breath of air. Indoor humidity space, fungi and human health are connected with all bigger quantity evidence.

Natural unbaked clay is used in the production of natural clay plaster. The difference from some other Species mortar, this one does not require so much energy for production because it does not include resin or other chemical ingredients.

Since clay mortars do not contain synthetic chemicals, they produce less carbon emissions during extraction, production and construction rather than the second construction materials.

Keywords: Energy for Production; Mineral Sources; Negative Ions

Introduction

Sources of negative ions are based on one of two basic processes: formation of negative ions by atomic and/or molecular processes in gas discharge and induced emission of negative ions from surfaces (sputtering, desorption, double charge exchange of reflected positive ions). The first is called a volume source and finds its main application in the production of negative hydrogen ion beams for fusion and high-energy accelerators. In this paper, we will pay attention to natural sources of negative ions on the surface of clay mortars by sorption.

Interaction between particles that have sufficient energy and a low work function surface can result in the formation of a negative ion. This effect can be enhanced by alkaline coatings on bombarded surfaces. There are two processes, namely thermodynamic-equilibrium surface ionization, where a slow atom or molecule striking the surface is emitted as a positive or negative ion after a mean residence time, and non-thermodynamic atom-surface interaction, where negative ions are produced by sputtering the material in the presence of an alkali metal coating.

More and more work is being done on the production of negative ions by coating the walls with clay mineral plasters with straw reinforcement. Clay mineral plasters with straw reinforcement are non-toxic, making them ideal for those who are sensitive to chemicals. They absorb toxins from other materials and bind odours, such as cigarette smoke, to reduce indoor pollution levels. In a word, they breathe with their hysteresis properties.

Earth mortars are porous, which means they allow the building structure to breathe. They have a thirst for moisture, which means they can function to regulate relative humidity levels in the atmosphere, improving air quality and resisting mould growth. In excess, they release moisture making the air atmosphere suitable for breathing.

Minerals are crystals of chemical compounds that consist of pairs of positive and negative ions in a regular sequence. Silicates are ionic compounds in which the silicate groups are negative ions. In quartz and silicon dioxide, the oxygen atoms are in the negative oxide form.

The importance of negative ions for human health

Negative ions in the air help people absorb oxygen and feel more energized. The fresh country air is filled with negative ions; computers, televisions and synthetic plastics, on the other hand, emit positive ions. When in contact with water, clay releases negatively charged particles into the air thanks to its ion exchange and diffusion properties. So, when bentonite clay walls breathe, they help make the atmosphere in the room healthier, even reducing the effects of electronics in the office.

In addition, negative ions are associated with several benefits for mood, mental clarity and creativity. When they enter our bloodstream, negative ions are believed to produce biochemical reactions that increase levels of the mood chemical serotonin, helping to alleviate depression, relieve stress, and boost our daily energy [1]. Based wall finishes can also be positive for psychological well-being. They are inherently sensual, which means that being around them can literally revive our senses and indirectly put us back in touch with the natural world. These finishes are inherently dynamic and constantly changing, sensitive to the environment and can respond to seasonal and diurnal changes in temperature humidity and atmospheric levels. In this way, staying in a building with these materials can serve as an extension of ourselves, breathing and breathing as we do.

Some particles are positively charged and some are negatively charged. Simply put, positive ions are molecules that have lost one or more electrons, while negative ions are atoms of elements with extra-negatively charged electrons. Negative ions in the air are abundant in nature, especially around waterfalls, at the ocean, at the beach, and after storms. They are widespread in mountains and forests [2].

Negative ions are present in the air we breathe, and they are also present in our bodies. The degree to which negative ions contribute to general well-being and health has been scientifically proven:

- They neutralize free radicals.
- They revitalize cellular metabolism.
- They improve immune function.

- They clean the blood.
- They balance the autonomic nervous system, promoting deep sleep and healthy digestion.

The most important benefit of negative ions is that they clean the air of airborne allergens such as pollen, mould spores, bacteria and viruses. In addition, they clean the air from dust, pet dander and cigarette smoke. Negative ions perform this function by binding to positively charged particles in large numbers and making those particles negatively charged. As a result, these viruses, bacteria and pollen spores become too heavy to stay in the air and are thus prevented from entering your respiratory passage where they can make you sick. In other words, negative ions form a protective circle around you.

Negative ion air purifiers based on mineral plasters with organic substances in the bedroom help you breathe cleaner, healthier air and protect yourself from exposure to allergens and viruses. A constant flow of negative ions will help ward off viruses, mites, and other contaminants that can make you sick [3].

Air the bedding in the sun and fresh air to enrich it with negative ions. Washing bedding with clay particles containing silicon intensifies the production of negative ions.

Negative ions work to protect cells from damage caused by free radicals by protecting the body from oxidative stress that can lead to health conditions such as cardiovascular disease and autoimmune diseases such as eczema.

Some important uses of negative ions:

- 1) Negative ions increase your sense of well-being and mental clarity by removing the debilitating effects of excessive positive ions in your environment. They are often described as natural antidepressants [4].
- 2) Natural ionizers have been proven to clean the air of dust, pollen, pet dander, mould spores and other potential allergens.
- 3) A good natural mineral negative ion generator can significantly reduce viruses and bacteria in your home.
- 4) Improves the function of the cilia in your respiratory tract that protects your lungs from irritation and inflammation, leading to fewer cases of respiratory illnesses like colds and flu, and even hay fever and asthma.
- 5) They have a relaxing effect and have been reported to normalize breathing rate, lower blood pressure and relieve tension.
- 6) They are absorbed directly into the bloodstream and can help fight harmful free radicals in your body.
- 7) Improved energy levels and focus. They normalize serotonin levels in the brain, potentially improving a person's positive outlook, better sleep and mood.
- 8) Reduced cases of reported headaches and illnesses by 78% and are also routinely used in hospitals in Europe due to their beneficial effects on patient health and treatment areas.
- 9) Increased mental concentration and performance. High levels of negative ions perform better on mentally challenging tasks than those who breathe air with dense positive ions [5].
- 10) The freshness in the air and the feeling you get on the beach, near the waterfall, your body is saturated with the benefits of negative ions.
- 11) Your shower with its stream of hot water and steam is a good producer of negative ions. That's probably part of why so many people need a shower to wake up in the morning.

It is well established that particles of opposite electrical charge attract each other. And particles with similar charges repel each other.

How do we maximize our exposure to negative ions?

Since the largest organ in our body is our skin, we can effectively absorb large amounts of negative ions through our skin by wearing appropriate clothing. By immersing the body in water with a bath based on clay, sea salt and baking soda, we intensify the introduction of negative ions into the body [6,9].

Negative ions are produced by the friction of natural clothes against our bodies. However, not all fabrics generate negative ions when rubbed together. For example, wool created a positive charge when friction occurred.

Natural fabrics are water permeable, meaning they absorb minimal water, keeping wearers dry and fresh. From bedding to wearable clothing, there is a wide variety of negative ion products that you can incorporate into your daily life. By massaging the body with clay-based biomass, we supply the body with negative ions.

Negative ions are oxygen atoms charged with an extra electron. They are created in nature under the influence of water, air, sunlight and the Earth's radiation [7].

Modern ionizers work using a method called 'corona discharge', which is modelled after the way lightning occurs in nature.

A tiny stream of electrons flows down the needle to its point. The closer the electrons get to the point of the needle, the closer they are to each other. Since electrons are naturally repelled, when they reach the very tip of the needle, they are pushed into the nearest air molecule and become negative ions. Negative ions are also repelled, so as more and more are produced, they are emitted further and further into the room they are in. The stronger the ionizer, the more useful ions they can produce and the greater their range. The time interval of the existence of these ions is significantly shorter than ions formed naturally [8].

How can the loss of electrons, which requires an input of energy, make an ion "more stable"?

Electron affinity is the energy released when an electron is added to an atom. Except for the halogens, most elements have low electron affinities. The addition of an electron results in an anion with a -1 charge. Ions claimed to have a charge of -2 or -3 are certainly not more stable because energy is needed to "push" the second or third electron onto the already negatively charged ion.

Negative ions can kill bacteria. For that matter, even positive ions can kill bacteria or better yet, the absolute absence of any ions can also kill bacteria. This phenomenon is based solely on the relative concentration of ions (either positive or negative) on the outside compared to the inside of the bacterial cells. A higher concentration of ions from the outside causes the bacterial cells to lose water to the surrounding environment and therefore die of dehydration. Thus, drying salt or sugar-based fruits protects food from microbial contamination. Similarly, water without any ions can also cause a rapid influx of water into the bacteria, causing them to burst and thus kill the bacterial cell. Therefore, waters with few minerals are often temporarily favoured [9].

This antimicrobial effect is thought to be mainly due to the electric field of these ions causing electrostatic disruption of the bacterial cell wall and ultimately leading to the death of the bacterial cell. However, there are doubts as to whether commercially available negative ion generators can achieve the concentration of negatively charged ions over the long period required to see these effects. It turned out that - the sensitivity of bacterial strains to negative air ions (NAI) varies depending on the type of strain, their physiological state, and the distance/orientation relative to the source [10]. Although the application of NAIs to reduce the ambient microbial load is a valid option; prolonged exposure may be required to control physiologically different cells such as exponential phase cells and/or starved cells.

Negative ions are generally considered safe and may even have some health benefits, such as improving mood, reducing stress, and improving cognitive performance. Negative ions are naturally present in the air around us, especially in outdoor environments such as near waterfalls, ocean waves and forests [11,12].

Although negative ions are generally safe, exposure to high levels of negative ions (such as those produced by ionizing air purifiers) over long periods can potentially cause some negative health effects. Some studies suggest that exposure to high levels of negative ions can cause respiratory irritation, headaches and other symptoms in sensitive individuals.

It is important to note, however, that exposure levels to negative ions from natural sources are usually much lower than those generated by ionizing air purifiers, and are generally considered safe. If you're considering using an air purifier that generates negative ions, it's a good idea to consult with a healthcare professional or air quality expert to make sure you're using the device safely and effectively.

Healthy building benefits of clay mortar

The ability of clay to quickly absorb moisture from the air and store it in its porous structure is its most distinctive feature. Therefore, clay mortars are hydrophilic (they love water) and hygroscopic (they can safely retain this moisture).

Furthermore, the clay molecules swell as they take up water, which further locks in moisture. With this, you can create a barrier that is impermeable to water. Despite allowing moisture to escape, its self-sealing feature can prevent moisture from penetrating the wall substrate. However, its function will be cancelled if a constant stream of liquid water hits the surface.

Clay plasters provide a moisture barrier without compromising the breathability of the building. At high humidity, clays absorb water and store it without damage; at low humidity, they release water back into the air. They maintain a constant humidity level to prevent condensation and mould growth [9].

However, gypsum is not permeable because it does not allow moisture to leave after absorbing it. Because of this, it tolerates damage such as mould growth and the possibility of plaster peeling. Even when the clay is used on top of another fabric, the airiness of the clay is maintained.

Clay's malleability makes it able to bend like lime without breaking, making it a good choice for older homes that may experience small shifts in the ground.

In contrast, plaster casts are inflexible and can crack with the slightest movement [10].

The clay protects wood by chemically attracting moisture, while lime absorbs it by capillary action. Clay's excellent moisture-absorbing properties mean it can be used to quickly dry a building's timber, preventing problems such as rot, mould and insects.

Due to its ability to absorb water, clay also acts as a waterproofing material for buildings. Moisture is retained and then released as the air around it dries.

Clay and negative charge

A clay particle carries a net negative charge due to the presence of negatively charged ions, such as silicon and aluminium, on its surface. These ions attract and hold positively charged ions, creating an overall negative charge on the particle. This phenomenon is known as the cation exchange capacity (CEC) of clay particles.

Clays consist of two types of molecular plates. One type is a slab of silicon and oxygen molecules. Silicon has 4 electrons to donate, and the basic molecule is one silicon to two oxygens, silicon dioxide, also known as quartz. But in clay sheets, one silicon shares electrons with four oxygen atoms, which take other electrons from other silicon atoms, creating a layer of octahedral molecules [13,14].

Trees absorb radon through groundwater and release it into the air through natural transpiration. They also found that areas with trees with particularly deep root systems had even more radon, which peaked in the middle of the day when photosynthesis and transpiration were at their peak. This is an example of Niška Banja in Serbia.

Another type of clay layer consists of aluminium and oxygen. Again, aluminium coordinates with oxygen atoms but forms a sheet of tetrahedral molecules. Aluminum has three electrons to share. If all these were perfectly constructed, the clay would have no charge. It would just be a bunch of tiny particles like sand and silt, only smaller. The ground would be much less dynamic.

Fortunately, the layers are imperfect. Sometimes an aluminium atom (+3) accidentally replaces a silicon atom (+4) in the octahedral sheet, leaving an unmatched negative charge. This location can attract and retain a nutrient cation and is called a cation exchange site.

The most common cause of negative charge is the isomorphic substitution of magnesium (+2) for aluminium (+3) in the octahedral layer. Potassium, calcium and magnesium are important nutrient cations. Plants can release protons or hydronium ions to push nutrient cations into the soil solution where plants can absorb them through their roots [15,16].

The interaction between particles that have sufficient energy and a low work function surface can result in the formation of a negative ion. This effect can be enhanced by alkaline coatings on bombarded surfaces. There are two principle processes, namely thermodynamic equilibrium surface ionization, where a slow atom or molecule striking a surface is emitted as a positive or negative ion after a mean residence time, and non-thermodynamic atom-surface interaction, where negative ions are produced by sputtering a material in the presence of alkali metal coatings. and healthier we will feel. Negative ions, therefore, have a beneficial effect on respiratory levels [17,18].

Some people are more receptive than others to a lack of negative ions. They may have various disorders, for example, insomnia, fatigue, irritability, lack of concentration, dark thoughts, headache and respiratory discomfort.

Negative ions significantly improve all physiological conditions, especially during the period of rest. Negative ions improve heart function by adjusting heart rate and blood flow rate, improving sleep quality, relieving angina and normalizing blood pressure [19].

Conclusion

Making clay mortars requires few resources (easy mixing) and waste (nothing to throw away) during the production process. Because clay mortars do not contain synthetic chemicals, they produce less carbon emissions during extraction, production and construction than other building materials.

Clay plasters are like miracle materials; I can fix almost anything. They are the intersection of health, aesthetics and science. They can now potentially revolutionize the interior wall-covering industry.

The rare elements containing radon are known. Against this background, patents and applications were made for gypsum compositions, compositions that have both antibacterial and deodorant properties of negative ions, and photocatalytic functional materials that can be deodorized and antibacterial under the influence of sunlight. By combining bentonite clay, and tourmaline with organic matter and straw, it is possible to excite negative ions from the moist porous wall surface with a mild piezoelectric field.

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