

Ülker

farbe

BIOTECH

Sanitizing hydro paint for interiors

MTT  **Italia**
PRODOTTI PER EDILIZIA E RESTAURO

Air is essential for the overall balance of our planet. Its chemical composition is of paramount importance in the interaction between the earth and the sun and for the development of all living things.

Pollution is at its peak in urban and industrial landscapes, especially in areas where natural barriers prevent free air circulation.



Air composition persisted unaltered for millions of years, until industrial development and urbanisation came about and air pollution started growing steadily.

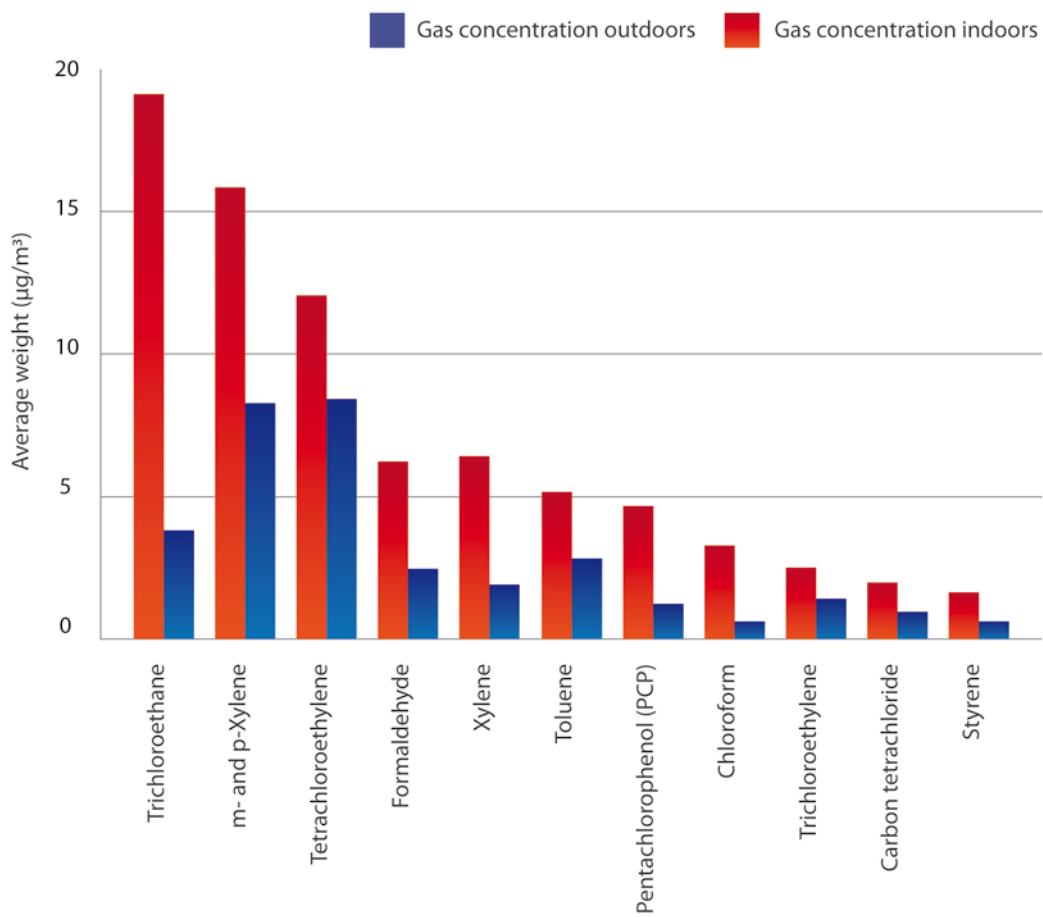
AIR OUR MOST PRECIOUS RESOURCE

Air is a resource being polluted by our cities and contaminated from right inside our homes.

MTT Italia turned to prominent research institutes to carry out a series of studies on the levels of pollution inside living spaces such as houses, schools, public offices and hospitals. Findings showed that in 100% of the cases the levels of pollution inside the premises were higher than those registered in the open air.

Indoor pollution is caused by several chemical substances.

Tests on a sample of 250 buildings show the presence of the following pollutants:



The pollutants most commonly found in our homes can be really harmful for our health.

Volatile organic compounds (VOCs) - They are found in the air and originate from varnishes, sealers, chipboard, fibreglass insulating material, plastic coverings, polyurethane foams (paraffins, terpenes, aromatic hydrocarbons, organochlorides, aldehydes). These compounds can cause skin irritations, neurological imbalance, liver poisoning and, in high concentrations, can lead to the development of cancer.

Formaldehyde - It is contained in chemical resins used to glue together chipboard and plywood as well as in insulating foams, paper glues, coverings and synthetic fibres. It provokes eyes, lung and skin irritations.

Pentachlorophenol - This compound is used as a fungicide for wood and is found in furniture, paper and leather goods. It causes mucosal and skin irritations and can affect neurological balance.

Radon - A radioactive gas which accumulates inside buildings and attaches to airborne dust particles making them radioactive. It is considered one of the main contributors to the development of lung cancer.

Microparticles - i.e. relatively small solid and liquid particles suspended in the air, released during combustion or produced by human activities. The medical conditions linked to particulate pollution are mainly asthma, cardiopulmonary disorders and pulmonary inefficiency.

In the presence of heat bridges, condensation and high humidity allow the proliferation of leavens and moulds, which cause allergic reactions such as bronchial asthma, conjunctivitis, eye infections, rhinitis (cold symptoms due to allergy) and dermatitis (skin blotches and rashes).

Following the conspicuous increase in toxic chemicals present in the environment, sensitization has become one the main objects of study in environmental medicine.

Due to biochemical individuality, each human being has a personal threshold determining the limit of polluting substances that can be tolerated by their body.



A physiological reaction to the pollutant often occurs, in which the body adapts to the substance and develops a tolerance which increases with each exposure until the physical capabilities of adaptation reach a limit.

IMMUNOLOGICAL SENSITIZATION

The pathology of environmental pollution.

Sensitization is a reaction to the toxic chemical substances existing in the environment in levels generally not considered harmful or hazardous to physical health. This phenomenon is linked to particular chemicals and their concentration in relation to individual predisposition. A sensitized person can progressively become more and more vulnerable, to the point of reacting even to minimum quantities or to short-term exposure.

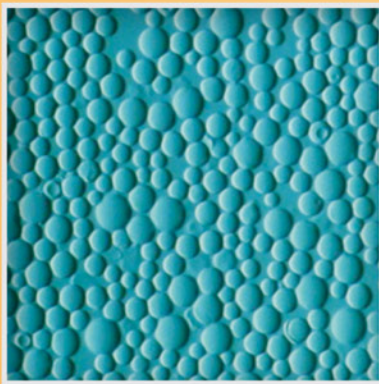
The maximum quantity of pollutants that can be tolerated by the human body is variable and can be lowered by stress, infections, lack of sleep or insufficient physical exercise.

Pollution.

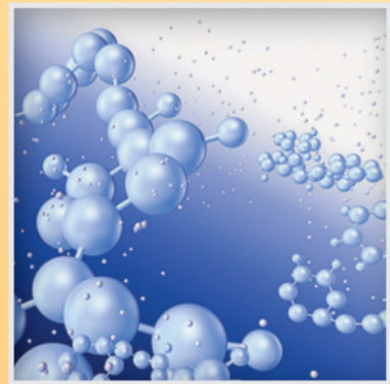
Source of stress for our immune system.

The natural reaction of the body to a pollutant is known as bipolarity, and consists of the activation of its natural defence system. Firstly, an increase in the metabolic rate occurs in the attempt to expel the pollutant; later on, this rate progressively decreases, causing the weakening of the immune system. If this bipolar reaction is maintained over time, it leads to the depletion of nutrients essential to the immune system, thus provoking the onset of disease.

Its particular micro alveolar structure uses the natural humidity of the environment to produce water ionised with silver ions, which have antibacterial properties.



Ülkerfarbe Biotech eliminates most polluting gases through a natural chemical-free process.



Ülkerfarbe Biotech is the only sanitizing water-based paint capable of effectively improving indoor air quality thanks to its internationally patented active ingredient.

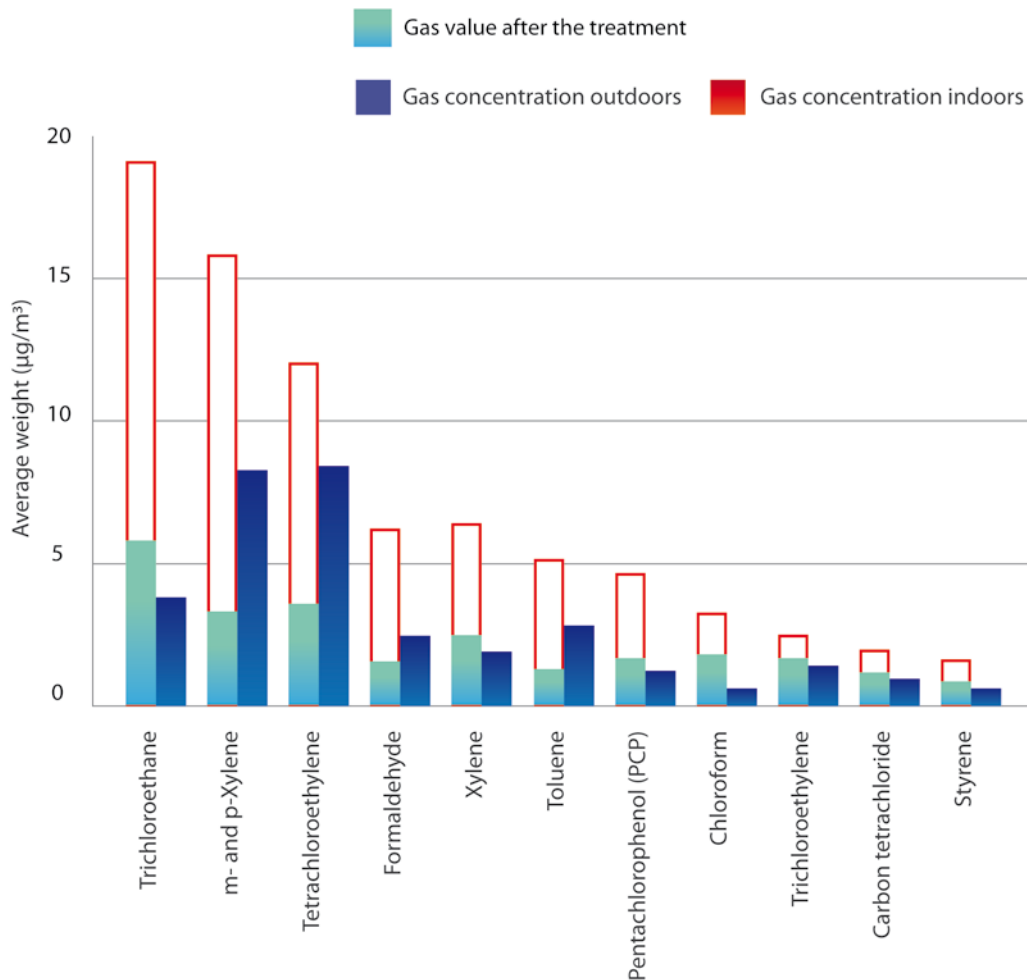
ÜLKERFARBE BIOTECH CLEAN AIR FROM OUR WALLS

In order to solve the most frequent pollution problems within indoor environments, MTT Italia developed Ülkerfarbe Biotech, the next-generation paint which, thanks to nanotechnology, transforms our walls into “natural filters”, making them active components in the indoor environmental sanitation process.

Technologically advanced sanitizing paint.

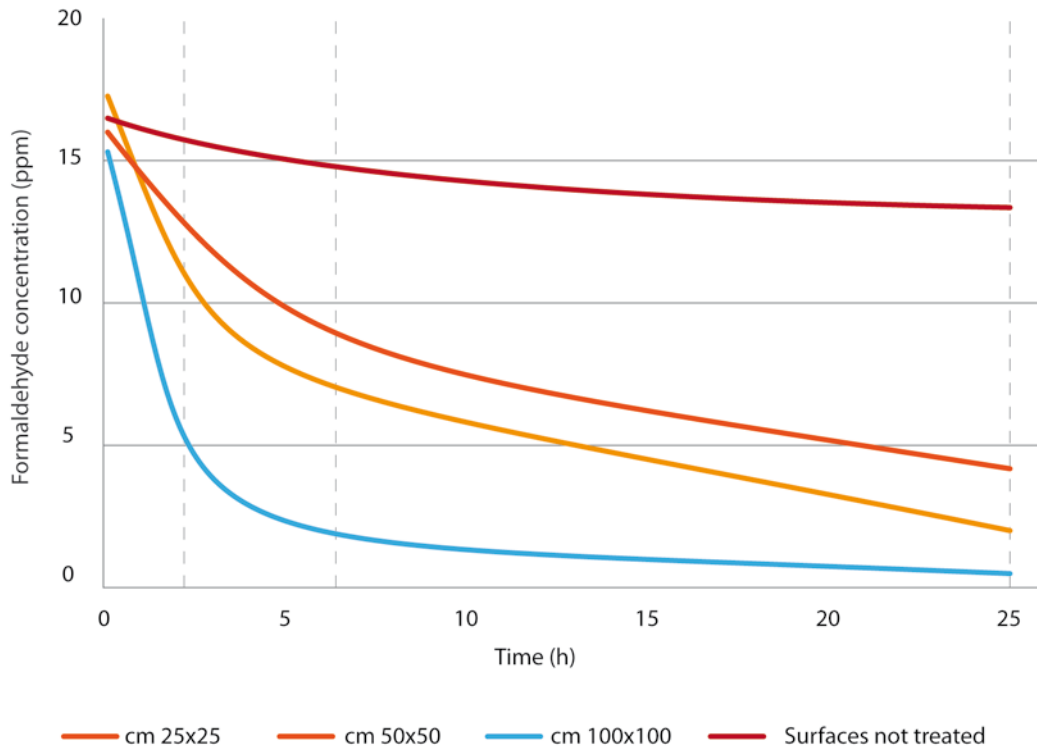
Ülkerfarbe Biotech consists of silver and glass-ceramic nanoparticles, hollow glass microspheres and colloidal silicas, and has a modified potassium silicate binder. Through a specific mixing process a stabilised foam compound is obtained, consisting of very thin intercommunicating microbubbles, thanks to which the surfaces of walls become microporous and acquire hygroscopic properties. Ülkerfarbe contains a specific patented active ingredient which emits negative ions equivalent to an energy of 0,05 mA. Through the particular micro alveolar structure of the paint, the humidity in the environment comes into contact with the silver nanoparticles, and forms molecules of water ionised with silver ions, which possess antibacterial properties. This water constitutes the main component of the sanitation process, creating a self-cleaning surface capable of removing organic impurities from the walls.

Ülkerfarbe Biotech.
Efficiently eliminates pollutants.



The gases were detected thanks to traditional multifunctional four-sensor tools, and a photo-ionisation detector was used to monitor the concentration of polluting gases. Test results show that Ülkerfarbe is proficient in the elimination of several toxic pollutants, as it will significantly reduce their concentration in the air. The measurements were made using precision electronic tools. Thanks to the microscope the functionality of the self-cleaning system and its effectiveness over time were verified. Thanks to a laser system for the measurement of particulate levels it was possible to verify the efficacy of Ülkerfarbe Biotech in reducing the concentration of PM10, PM 0.5 and PM 0.3 micron.

Experimental trial.
Formaldehyde abatement measurement carried out in a laboratory inside a sealed chamber.

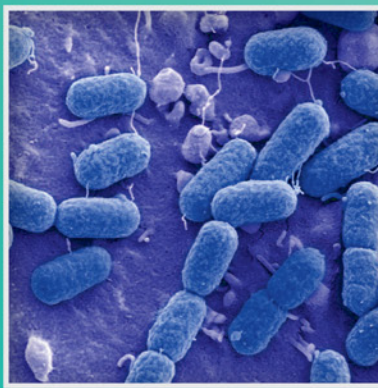


The data provided in the chart above shows the abatement of formaldehyde levels after applying Ülkerfarbe Biotech on various different-size panels, inserted in a volume of 1 m³ saturated with formaldehyde (15-18 ppm). Through specific tests it was possible to quantify the time necessary to reduce formaldehyde concentration to nearly zero.

Traditional anti-mould paints contain antibacterial chemicals that are harmful to health.



Ülkerfarbe Biotech prevents the proliferation of moulds, bacteria and spores in a natural way.



Ülkerfarbe Biotech can guarantee an effective anti-mould action without the use of chemical antibacterial agents.

AN EFFECTIVE ACTION AGAINST MOULD GROWTH

Ülkerfarbe Biotech - a barrier against moulds, bacteria and spores.

Traditional anti-mould paints contain an antibacterial chemical that is harmful to health.

Ülkerfarbe Biotech creates a strong antibacterial barrier preventing the bonding of organic particles to the substrate, and therefore sanitizing indoor environments.

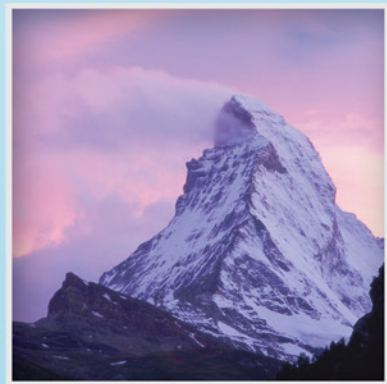
Ionisation makes the air cleaner and purer, while silver replaces the usual anti-algae and anti-mould products, which are often toxic.

Ülkerfarbe Biotech guarantees effective action against moulds without chemical antibacterial agents.

It spreads heat homogeneously and keeps surfaces dry, preventing the proliferation of moulds.

In order for Ülkerfarbe Biotech to be effective, it is always necessary to clean and treat the support before applying the product.

High concentrations of negative ions in the air have been detected mostly in mountain woodlands, near waterfalls and along shorelines.



Medical research has found that anions absorbed through our lungs have beneficial effects on health and wellbeing.

Ülkerfarbe Biotech was designed to improve air quality by recreating indoors the optimal air conditions occurring in nature.

ANIONS

NATURE AND TECHNOLOGY

Anions (negative ions) are atoms or molecules that have gained a negative charge through gaining electrons.

Every living organism is closely linked to anions, as although their charge only lasts for a few moments it has an important role in all biological processes.

The presence of anions affects the biochemical balance of every living organism. Anions occur naturally in the air thanks to the action of ultraviolet rays from the sun, plant chlorophyll and lightning.

High concentrations of negative ions in nature have been detected mostly in mountain woodlands, near waterfalls and along shorelines, and Ülkerfarbe Biotech can recreate this type of environment inside your house.

Measurements recorded inside households show vast quantities of potentially harmful positive ions, which are present due to the many electromagnetic fields in our cities.

Number of anions per cubic centimetre in the air within different environments:

After a storm: approx. 2,000

In the mountains: approx. 1,500

In the countryside: approx. 750

In small towns: approx. 250

In large towns: approx. 50

The beneficial effects of anions on health.

The beneficial effects of anions were discovered in 1932 by Doc. C.W. Hansell in the RCA laboratories. Hansell was struck by the abrupt mood change in a colleague of his who was sitting next to an electrostatic generator. He continued to observe this phenomenon and noticed how his colleague showed signs of excitement as the machine produced negative ions (anions), and apathy as it produced positive ions. If there are too many positive ions in the air, symptoms such as drowsiness, dizzy spells, migraine, depression and breathlessness may occur.

Negative ions, on the other hand, have beneficial effects on our body. Substantiated research found that negative ions modify the capability of the human body to assimilate oxygen; the ionised air absorbed by the lungs induces a notable increase in haemoglobin levels, thereby increasing cell oxygenation. The flow of oxygen to the brain grows, thus improving brain activity, reducing drowsiness and extending the attention span.



Anions have an effect on the nervous system; they are able to reduce neurosis, anxiety, depressive states and neurovegetative imbalances.



The anions absorbed by the lungs have beneficial effects on health, reducing asthma- and other respiratory disorders.

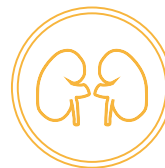
**Benefits derived from anions.
How they help prevent respiratory diseases.**

The anions primary effect is the elimination of fumes, microparticles and other toxic substances polluting the air. Anions in the air attract the polluting particles and transfer their electric charge to them. These particles then try to reach the earth's surface electric potential, thus falling to the ground and keeping the air clean. The quality of the air we breathe is linked to the quantity of anions it contains. The anions primary effect is to neutralise most pollutants and bacteria, viruses, pollens, spores, microparticles, smells, tobacco smoke and exhaust gases, which are the main cause of allergies and respiratory disorders.

Smoking tobacco slows down the beating of cilia, microscopic hair-like structures lining the trachea, which, through their movement, prevent pollutants and toxins from reaching vulnerable areas of the respiratory tract. It has been proven that high levels of negative ions in the air accelerate ciliary beat frequency. Medical research has found that anions absorbed through our lungs have beneficial effects on health, reducing asthma- and other respiratory disorders.



The ionised air absorbed by the lungs induces a notable increase in haemoglobin levels, therefore increasing cell oxygenation.



Immune system defences are boosted, metabolic rate is increased and excretory system activity improves.

Anions act positively on oedematous inflammations, and reduce insomnia, muscular pain, depressive states and neurovegetative imbalances; they alleviate asthma-related disorders, improve microcirculation through restoring normal blood pressure, boost immune system defences, increase metabolic rate and improve the emunctory activity of excretory organs.

Over the years, several tests showed that anions can alleviate symptoms in weather-sensitive subjects. They can heal physical and mental imbalances occurring under certain weather conditions and variations, such as irritability, nervousness, insomnia, weakness, apathy and depression. Tests carried out inside school buildings have shown that children are particularly sensitive to anions. Children's mental functions and behaviour can be improved by anions, which can also reduce cases of childhood hyperactivity.

Scientific studies found that anions also have an effect on the nervous system; they are able to reduce neurosis and anxiety, and act on the capability of the human body to assimilate and use oxygen. Negative ions in the blood stream speed up oxygen release to cells and tissues, and it has been proven that this has beneficial effects on mood, pain perception and sexuality, consequently inducing a state of well being characterised by lower levels of stress and depression as well as an increase in physical energy levels.



With this portable tool *MTT Italia* can measure the number of negative ions per cm³ inside households before and after using *Ülkerfarbe Biotech*.

By counting the ions in the air, MTT Italia can develop personalised solutions for any type of house, producing paints that can release specific anion concentrations.

MTT Italia has developed Ülkerfarbe Biotech in order to recreate indoors the optimal air conditions occurring in nature. It was designed to improve quality of life in houses, offices, schools and hospitals. Ülkerfarbe Biotech solves the main problems stemming from pollution within closed environments and creates a sensation of well-being and cleanliness.

Ülkerfarbe Biotech PLUS is also available, a version containing a higher concentration of the active ingredient.

Ülkerfarbe Biotech has been developed in laboratories at MTT Italia and tested by international certification bodies.

Ülkerfarbe Biotech

Technical data sheet

GENERAL INFORMATION AND OPERATING INSTRUCTIONS

Ülkerfarbe Biotech is a mineral paint made of hollow glass, glass-ceramic and colloidal silicas. It chemically reacts with mineral structures through a process called "silicification", which guarantees a perfect adhesion to the substrate.

- It is not classified as paint, but as foam.
- It is composed of nanotechnological particles.
- It makes the substrate highly breathable.
- It allows a pleasant indoor climate in every building.
- It cuts costs related to heating and air conditioning, and protects surfaces from harmful agents.

The product has self-cleaning properties, tackles the organic matter adhering to the wall, removes bad smells and neutralises pollutants such as airborne formaldehydes and solvents.

Il prodotto emette ioni negativi in tre concentrazioni:

The product releases negative ions in three concentrations:

- Ülkerfarbe Biotech STANDARD CONCENTRATION
- Ülkerfarbe Biotech HIGH CONCENTRATION
- Ülkerfarbe Biotech SPECIFIC CONCENTRATION (tailored to the specific conditions of the indoor environment in which the product is to be used)

Operating instructions: Ideal substrates include lime plaster, lime-cement plaster, two-coat plaster made of lime-cement mortar, gypsum and plasterboard. The product is also ideal for use in the presence of old coats of organic paints (water-based washable paints or quartz-based paints).

Ülkerfarbe Biotech complies with DIN 18262 standards.

PRODUCT FEATURES

Resin type: modified stabilised silicates

Material composition: glass-ceramic, hollow glass and colloidal silica particles

Specific gravity UNI 8910: 0.9 + 0.2 kg/l

Viscosity: (Ford cup no. 8) at 25° C: 16 sec ± 3 sec.

Kinematic viscosity at 25° C using the Brookfield RVT viscometer, spindles no. 4 at a speed of 20 rpm: 44000 cps ± 3200 cps

Capillary water absorption (DIN 52617) $w^{24} = <0.2\text{kg} / \text{m}^2 \text{ h } 0.5$

Moisture Vapour Permeability (DIN 52615) SD < 0.11 m

Flammability class: A1

Heat transfer coefficient: $\lambda = 0.07$

Concentration and emission of negative ions: 2000-10000 / cm^3

Environmentally-friendly product: VOC levels almost zero.

Curing times (at 25°C and 65% R.H.): surface dry approx. 1 hour, full dry after 16 hours

Colours available: white or MTT catalogue selection

APPLICATION INSTRUCTIONS

Room and substrate operating limits and conditions:

Room temperature: min. 5° C - max. 35° C

Room relative humidity: max. 80%

Substrate temperature: min. 5° C max. 35° C

Max. alkalinity for wall substrates: PH 8

Max. substrate humidity: 30%

To maximise the anti-mould effect, clean the substrate with specific sanitizing (sterilizing) products and wait at least 18-24 hours before applying Ülkerfarbe Biotech.

Being an inorganic product, Ülkerfarbe Biotech is highly sensitive to room and substrate conditions. It is therefore advisable to follow the application guidelines provided.

Minimum wall substrate preparation: remove dust and, if necessary, scrape off all non adherent paint remains.

Make sure 28 days curing time is allowed and then check the substrate condition; the surface has to be solid, if otherwise reapply the paint or consolidate with specific products.

With old adhesive synthetic paints apply a coating of siloxane fixative to allow low vapour permeability. Apply Ülkerfarbe Biotech according to the application instructions.

The insulating fluid dilution ratio depends on the absorption properties of the substrate.

Mix the product before application, then apply homogeneously on the substrate with a paint brush or roller.

During application, protect (screen) glass and ceramic surfaces, plastic materials and natural stone.

Clean the tools with water immediately after use.

Application with paint brush or roller:

Paint thinner: WATER

Recommended coverage per coating: 7-8 sqm/l per coating on medium-porosity substrates.

Dilution: approx. 200 g of water per litre of product.

For best results the film of paint applied must have a thickness of no less than 200 micron.

Curing time or hardening at 23°C and 65% relative humidity

Curing time - surface dry to the touch: 1 hour

Can be painted over: after 4 hours

STORAGE INSTRUCTIONS

Max. storing temperature: 30° C

Min. storing temperature: 5° C

Available storage container size: 15 l

In optimum storage conditions (in original containers and at the recommended temperatures) the product will be suitable for use for 1 year.

GENERAL SAFETY INSTRUCTIONS

Keep out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Always protect eyes and face upon use.

The product must be transported and used according to the applicable hygiene and health and safety regulations.

Ülkerfarbe Biotech

Safety Data Sheet

PRODUCT AND COMPANY INFORMATION

Product trade name: Ülkerfarbe Biotech.

Product category and use: Thermal wall hydro paint - self-cleaning - sanitizing

Supplier: MTT Italia, property of Mr Stefano Antonio Mottin.

Supplier address: Via E. Segrè no. 5, 36066 Sandrigo (VI), Italy

Emergency phone number and official contact:

Landline no. +39 0444 750379 - Fax no. +39 0444 758224 - Mobile no. +39 338 4497211

COMPOSITION AND INGREDIENTS INFORMATION

The product does not contain any substances with acknowledged exposure limits or that are considered hazardous according to EU Directive 67/548/EEC (as amended).

RISK IDENTIFICATION

No specific risk during normal use.

FIRST AID MEASURES

Contact with skin: wash with soap and water.

Contact with eyes: rinse immediately with water for at least 10 min.

If swallowed: induce vomiting. Immediately seek medical advice, showing product safety data sheet.

In this case, activated carbon suspended in water or medicinal white mineral oil can be used.

If inhaled: not toxic.

FIRE SAFETY MEASURES

Fire class A1.

ACCIDENTAL SPILLAGE MEASURES

Individual precautions: wear gloves and protective clothing.

Environmental protection: contain the leaks with soil or sand.

If the product has entered a water source or the sewage system, or has contaminated soil or vegetation, report to the relevant authorities.

Cleaning methods: if the product is in liquid form, ensure it does not seep into the sewage system.

Collect any excess product after use. Reuse where possible, alternatively dispose of safely.

Any excess product can be absorbed with inert material.

Following collection of excess product, wash the area and materials used with water.

HANDLING AND STORAGE

Handling precautions: do not eat or drink during use.

Storage conditions: the product is frost sensitive.

Storage temperatures should not be less than 5°C.

Store at temperatures between 5° and 30°C.

Storage space specifications: the area must not be exposed to direct sunlight.

Product exposure limits: none.

EXPOSURE CONTROL/PERSONAL PROTECTION

Respiratory protection: not necessary under normal use.

Hand protection: not necessary under normal use.

Eyes protection: not necessary under normal use.

Operate according to good working practices.

CHEMICAL AND PHYSICAL PROPERTIES

Appearance and colour: thick white liquid. Smell: typical PH: 8.5-9

PRODUCT STABILITY AND REACTIVITY

Conditions to be avoided: the product is stable under normal conditions.

Substances to be avoided: none in particular.

Decomposition risk: none.

Product content: no substances of particular toxicological relevance.

ENVIRONMENTAL INFORMATION

Use according to good working practices, avoiding product dispersal in the environment.

CONSIDERATIONS ON DISPOSAL

Reclaim if possible. Operate according to the relevant local and national regulations.

TRANSPORT INFORMATION

Road and rail transport (ADR/RID): N.A.

EU REGULATIONS INFORMATION

VOCs 0 limit value established by the EU: (Directive 88/379/EEC)

The product is not to be considered hazardous, in accordance with Directive 88/379/EEC (as amended).

Where applicable, refer to the following regulations:

- DPR [Decree of the President of the Republic] no. 303/56 (health inspections).
- Ministerial Circulars no. 46 and 61 (aromatic amines).
- Law no. 136/83 (biodegradability of detergents).
- DPR no. 175/88 (Seveso Directive), Annex II°, III° and IV°.
- DPR no. 250/89 (labelling of detergents).

The information provided in this sheet is based on the most up to date information available to the manufacturer at the time of writing. The information provided refers exclusively to this product; the manufacturer does not guarantee the suitability of the information for any specific purpose. The user must ensure this information is complete and appropriate in relation to their specific use.



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