



TECTORIA Products and technologies for the sustainable building

Tectoria

Products and technologies for the sustainable building

As part of the process of capitalising on its thirty-year experience in limes, and following years of research, Kimia is pleased to present the Tectoria range. A range of products that safeguard human **health** and the **environment**. The Tectoria range includes plaster and rendering mortars that can be used for both indoor and outdoor work, designed to safeguard human health and the environment. Tectoria mortars are based on natural hydraulic limes (NHL) that are CE-marked and comply with UNI EN 459.

The primary materials used in Tectoria are based on products compliant with EPA requirements for low environmental impact materials:

- reduced energy levels used in production and limited release of CO₂ into the atmosphere from production;
- lower impact on eutrophication processes and global warming;
- 100% recyclable;
- complete absence of compounds that are toxic for humans and hazardous for the environment;
- absence of waste and by-products of other industrial processes typical of concrete compounds.

A singular feature of Tectoria products is the absence of **radioactive emissions** (radon gas and gamma rays) in accordance with OSNORM S5200 and CP112/EC requirements.

As well as using CE-marked binders, products in the Tectoria range comply with UNI EN 998.

The Tectoria range: health and the environment

In recent years people's awareness of health and living conditions has grown. The lawmakers, especially those in European Community countries, are also working to promote the introduction of products which aim to safeguard man in his living space and the environment as much as possible.

According to the EPA's definition, a product's environmental sustainability is based on a series of parameters used to assess its impact on man in terms of its influence on the health of living spaces and the environment, for example: energy costs during production, recyclability, impact on eutrophication, on acid rain, and on global warming (CO₂ emissions during production).









Colori compositi



TECTORIA The Tectoria range: health and the environment



Man spends 90% of his time inside his living spaces.

RADIOATTIVO 7

All construction materials can emit gamma rays and radon gas.



Recent studies have highlighted that Western man spends 90% of his time inside his living spaces. These spaces are often characterised by the presence of materials and components which pollute indoor air. Studies on this topic (Indoor Air Quality) have shown that one of the most dangerous sources of pollution is the emission of radiation.

All materials naturally emit radiation given that the natural radionuclides responsible for this emission are present in varying percentages throughout the Earth's crust. All construction materials obtained by processing raw materials coming from the Earth's crust (plasters/renders, mortars, stones, clay bricks, etc.) are therefore capable of emitting radiation into the environment they are used in. The amount of radioactive emission varies greatly in different materials and it is a problem when the emission values are higher than the base value represented by the radiation coming to our planet from space.

In indoor environments the radiation emitted by materials (part radon and part gamma) interacts with man causing damage to health.

Gamma rays are pervasive and do not need air to reach man.

Radiation from radon gas, on the other hand, uses the diffusion of this gas and is particularly dangerous due to the fact that high concentrations of gases can be created in indoor environments which damage internal organs if inhaled by man

In order to limit this source of pollution, following Directive 89/106, the EC declared the need to limit pollution caused by construction materials coming from radioactive sources, and developed the pre-normative protocol CP112 aimed at defining the extent of the radioactive risk.

With OSNORM 5200 Austria is the only European country to have set out specific legislation which enables the acceptability of construction materials as regards radioactivity to be verified.

Control of emissions and therefore the acceptability of a product is particularly important: increasingly often materials used in our country exploit raw materials coming from other countries where the safeguarding of health and controls of possible radioactive pollution by the raw materials are almost entirely lacking.

The Tectoria range is the only line of products currently certified in Italy as regards non-emission of radiation (gamma rays and radon gas). Man spends 90% of his time inside his living spaces. All construction materials can emit gamma rays and radon gas.

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Tectoria

Products for safeguarding the environment

Buildings significantly change the environment. According to the Worldwatch Institute1 building construction is responsible for 40% of use of lithoid materials and 20% of use of wood worldwide. Buildings are responsible for 40% of the energy and 16% of the water used every year. A significant portion of the waste produced annually (50% of the total waste produced) comes from the processing of building materials or from the demolition of buildings made using non-recyclable materials. Lastly, it is estimated that 30% of the emission of pollutants into the atmosphere is directly or indirectly connected to building construction and use.

The Tectoria range has been designed taking into consideration the environmental impact of the product's entire life cycle by evaluating the environmental effects of a product at various stages of its life:

- production;
- transportation;
- installation;
- maintenance;
- demolition and recycling.

In particular, production processes have been designed which limit such harmful effects on the environment as the emission of substances which contribute to today's well-known planetary phenomena like global warming and acid rain. The first of these is caused by the absorption of solar radiation. This energy is redistributed by the atmosphere and re-radiated back towards space on a higher wavelength. Part of the radiation is absorbed by greenhouse gases (GHG) in the atmosphere, mainly water vapour but also carbon dioxide, methane, chlorofluorocarbons (CFCs) and ozone. As a result of this phenomenon the Earth's surface loses less heat than it would without the presence of greenhouse gases. Although this is a natural process, human activities tend to increase the amount of gases present in the atmosphere and alter the temperature of the atmosphere and the oceans, leading to changes in environmental conditions.

The second phenomenon is also connected to the emission of compounds into the atmosphere which cause the pH of rain to decrease.

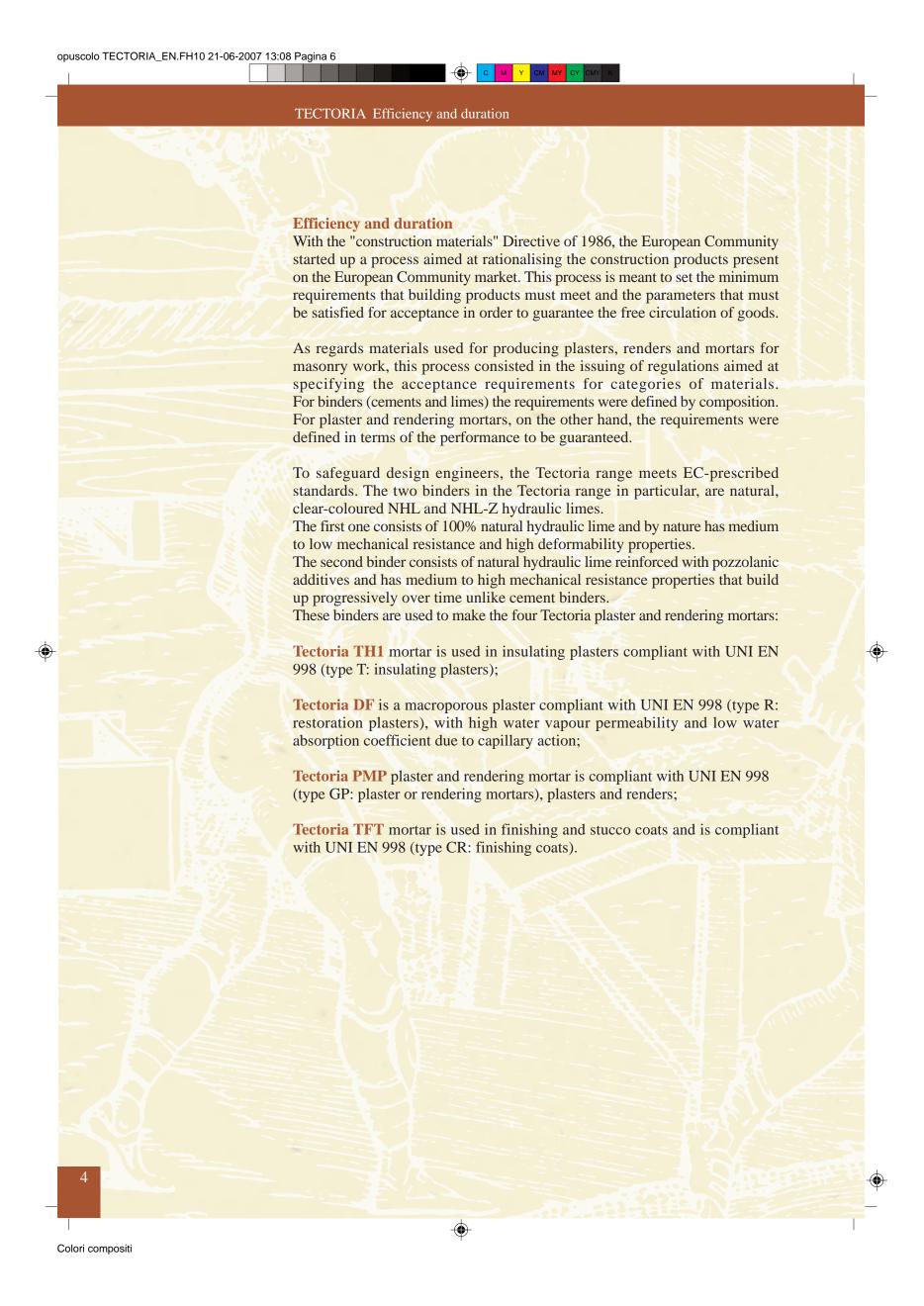
The products in the Tectoria range are all made from entirely recyclable materials.







1 D.M. Roodman and N. Lenssen, *A Building Revolution: How Ecology and Health Concerns are Transforming Construction*, Worldwatch Paper 124, Worldwatch Institute, Washington, DC, March 1995.



Colori compositi

Description

Tectoria PMP is a ready-to-use mortar designed specifically for plastering and pointing. The inert materials deriving from the grinding of bricks, roof tiles, marble and stone that are used in Tectoria PMP mean a variety of different colours can be requested: white with hazelnut tones, pink crushed brick, or other colours by special order. Tectoria PMP is compatible with health and safety requirements for both man and the environment given that:

- It does not contain any compounds that are toxic for humans and hazardous for the environment;
- It contains natural, 100% recyclable materials which in tests were shown not to release gamma rays and/or radon gas.
- It contains materials heated to low temperatures thereby limiting the emission of CO₂ into the atmosphere and reducing the amount of energy used in production.

Tectoria PMP is ideal for use in historical buildings as it contains the same natural materials with a low soluble salt content that are traditionally used in older buildings. It is also compliant with EC requirements for plasters and renders (UNI EN 998-1 type GP). The product consists of natural hydraulic lime NHL (UNI EN 459) obtained by heating marl and limestone at low temperatures. It contains no Chrome VI.

Benefits

- Non-toxic and 100% natural.
- Does not release gamma rays and radon gas (typical of many materials used in modern building).
- Extremely breathable.
- Not hazardous for users and for the environment throughout the entire product life cycle.
- The product remains stably mineral over time.
- Chemically compatible with materials used in historic buildings.
- Ready-to-use and easy to apply.

Uses

Tectoria PMP is ideal for use in plasters, to point terracotta or exposed stone surfaces, and in break-fill work.

Application

Mix Tectoria PMP with approx. 22% drinking water (5.3-5.9 l for each 25 kg bag). We recommend you put 3/4 of the water required in the mixer then gradually add the remaining amount until the right consistency forms. Mix carefully to form a smooth mixture. No other binders must ever be added to the mixture during preparation and laying. Apply with normal manual or mechanical tools. Do not remix by adding water to the product when it has already started to set. Tectoria PMP must be applied to clean, dust-free surfaces with no loose parts or traces of paint, grease or any other material that may impair the quality of the bond.

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UNI EN 998-1 SPECIFICATIONS (plaster and rendering mortars):

Technical specifications	Average value
Appearance	Powder
Colour	Standard colours: white with hazelnut tones;
	pink crushed brick
pH in water solution	> 11
Application temperature	+2°C ~ +35°C
Granulometric distribution	Not-sieved at 3 mm 100%
UNI EN 1015-1	
Apparent volumetric mass of wet mortar	$1,940 \pm 50 \text{ kg/m}^3$
UNI EN 1015-6	
Consistency of wet mortar	127 mm
UNI EN 1015-3	5
Compressive strength	after 28 days: > 6 N/mm ² (Class CS IV)
UNI EN 1015-12	
Water absorption due to capillary action	$0.16 \text{ kg/m}^2 \text{ min}^{0.5}$
UNI-EN1015-18	
Water vapour permeability	μ < 18
UNI-EN 1015-19	
Fire reaction class UNI EN 13501-1	F

Packaging

25 kg multilayer paper bags. 1,500 kg pallets.

Coverage

17 kg/m² per cm thickness.

Storage

Protect from humidity. Store in a dry, sheltered place. Stored in these conditions and in unopened containers, the product remains stable for 12 months.

Warning

Only use enough water to obtain the right mix. Before using, check bags have not been damaged, and do not use the product if there are any lumps. Use the entire contents once the bag has been opened. Do not apply Tectoria PMP to surfaces with loose, flaky parts: contact our technical support service for assistance. Do not apply at temperatures under +2 °C or above +35 °C, to surfaces in direct sunlight, when it is about to rain, or on windy or misty days. The technical specifications and application methods recommended herein are based on our current knowledge and experience and do not represent any form of guarantee of the final results obtainable with the product. It is the customer's responsibility to check that this data sheet is still effective and has not been replaced with a more recent version, and that the product is suitable for the intended use.

TECTORIA PIMIF

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Description

Tectoria TFT is a white, ready-to-use mortar with hazelnut tones designed specifically for plastering and rendering. Tectoria TFT is compatible with health and safety requirements for both man and the environment given that:

- It does not contain any compounds that are toxic for humans and hazardous for the environment;
- It contains natural, 100% recyclable materials which in tests were shown not to release gamma rays and/or radon gas;
- It contains materials heated to low temperatures thereby limiting the emission of CO₂ into the atmosphere and reducing the amount of energy used in production.

Tectoria TFT is ideal for use in historical buildings as it contains the same natural materials with a low soluble salt content that are traditionally used in older buildings. It is also compliant with EC requirements for mortar finishing coats (UNI EN 998 type CR).

The product consists of natural hydraulic lime NHL (UNI EN 459) obtained by heating marl and limestone at low temperatures. It contains no Chrome VI.

Benefits

- Non-toxic and 100% natural.
- Does not release gamma rays and radon gas (typical of many materials used in modern building).
- Extremely breathable.
- Not hazardous for users and for the environment throughout the entire product life cycle.
- The product remains stably mineral over time.
- Chemically compatible with materials used in historic buildings.
- Ready-to-use and easy to apply.

Uses

- Finishing coat for traditional plasters and/or renders
- Finishing coat for internal/exterior walls plastered and/or rendered with Tectoria PMP
- Finishing coat for dehumidifying plasters with Tectoria DF
- Finishing coat for heat-insulating plasters with Tectoria TH1. In this case, apply the product using a Kimitech 350 or Kimitech 500 lath.

Application

Mix Tectoria TFT with approx. 25% drinking water (6-6.5 l for each 25 kg bag). We recommend you put 3/4 of the water required in the mixer then gradually add the remaining amount until the right consistency forms. Mix carefully to form a smooth mixture. No other binders must ever be added to the mixture during preparation and laying. Apply with normal manual or mechanical tools. Do not remix by adding water to the product when it has already started to set. Tectoria TFT must be applied to dry, cured surfaces that are level, compact, clean and dust-free, with no loose parts or traces of paint, grease or any other material that may impair the quality of the bond. Wet the substrate well then spread two coats of the product using a metal spreader, waiting until the first one has started to set before applying the second; smooth the top coat down with force until the surface is perfectly sealed and level. Do not apply the product in layers that are more than 3 mm thick.



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UNI EN 998-1 SPECIFICATIONS (plaster and rendering mortars):

Technical specifications	Average value
Appearance	Powder
Colour	White with hazelnut tones
pH in water solution	> 11
Application temperature	+2°C ~ +35°C
Granulometric distribution	Not-sieved at 1 mm 100 %
UNI EN 1015-1	
Apparent volumetric mass of wet mortar	$1,760 \pm 50 \text{ kg/m}^3$
UNI EN 1015-6	
Workability time of wet mortar	120 minutes
UNI EN 1015-9	
Consistency of wet mortar	130 mm
UNI EN 1015-3	
Compressive strength	after 28 days > 5 N/mm ²
UNI EN 1015-12	(Class CS III)
Water absorption due to capillary action UNI-	0.46 kg/m ² min ^{0,5}
EN 1015-18	μ < 18
Water vapour permeability UNI EN 1015-19	
Fire reaction class UNI EN 13501-1	F

Packaging

25 kg multilayer paper bags. 1,500 kg pallets.

Coverage

1.4 kg/m² per mm thickness.

Storage

Protect from humidity. Store in a dry, sheltered place. Stored in these conditions and in unopened containers, the product remains stable for 12 months.

Warning

Before using, check bags have not been damaged, and do not use the product if there are any lumps. Use the entire contents once the bag has been opened. Do not apply at temperatures under +2 °C or above +35 °C, to surfaces in direct sunlight, when it is about to rain, or on windy or misty days. The technical specifications and application methods recommended herein are based on our current knowledge and experience and do not represent any form of guarantee of the final results obtainable with the product. It is the customer's responsibility to check that this data sheet is still effective and has not been replaced with a more recent version, and that the product is suitable for the intended use.

TECTORIA TIFT

TECTORIA products

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Description

Tectoria DF is a white, ready-to-use mortar with hazelnut tones designed specifically for plastering and for restoring damp walls. Tectoria DF is compatible with health and safety requirements for both man and the environment given that:

- It does not contain any compounds that are toxic for humans and hazardous for the environment;
- It contains natural, 100% recyclable materials which in tests were shown not to release gamma rays and/or radon gas;
- It contains materials heated to low temperatures thereby limiting the emission of CO₂ into the atmosphere and reducing the amount of energy used in production. Tectoria DF is ideal for use in historical buildings as it contains the same natural materials with a low soluble salt content that are traditionally used in older buildings. It is also compliant with EC requirements for restoration plasters (UNI EN 998 type R). The product consists of natural hydraulic lime NHL (UNI EN 459) obtained by heating marl and limestone at low temperatures, and inert materials that give the product the porosity required to restore damp walls. It contains no Chrome VI. In contact with water, the hydraulic lime reacts to form hydrated products that are extremely unsoluble and very stable in terms of the chemical base.

Benefits

- 100% natural and not hazardous for users and for the environment.
- Does not release gamma rays and radon gas (typical of many materials used in modern building).
- Extremely porous, breathable mortar.
- Low content of water-soluble salts and high resistance to sulphates.
- Ready-mixed product, ready-to-use and easy to apply.

Uses

Tectoria DF is used together with Limepor RZ to restore masonry work subject to rising damp.

Application

Remove the plaster up to the highest point where the rising damp is still visible, plus two times the thickness of the wall; for exposed walls, the actual degree of humidity in the masonry must be completely analysed. Clean the surface by removing any flaking parts, grease, old paints and clean with a pressure washer. Mix Limepor RZ carefully using approx. 23% drinking water (5.5-6 l for every 25 kg bag) in a cement-mixer or with a low-rev mechanical stirring device until a smooth cream forms (mixing time of about 3-4 minutes). Apply the mix using a trowel, being careful to spread it evenly across the entire surface, and create a rough coat about 5 mm thick. Four or five days after applying the rough coat, cover with Tectoria DF to create a finish coat at least 2 cm thick. Mix Tectoria DF carefully using approx. 25% drinking water (6 - 6.5 l for each 25 kg bag) in a cement-mixer or with a low-rev mechanical stirring device until a smooth cream forms (mixing time of 3-5 minutes maximum). Spread by hand using a trowel, being careful not to overly compress the float finish. Apply a Tectoria lime-based finish with a spreader. The surface must be fully dried before top coats of paint (water vapour permeable only) can be applied. Limepor RZ and Tectoria DF must be applied to clean, dust-free surfaces with no loose parts or traces of paint, grease or any other material that may impair the quality of the bond.

UNI EN 998-1 SPECIFICATIONS (plaster and rendering mortars):

Average value
Powder
White with hazelnut tones
> 11
+2°C ~ +35°C
Not-sieved at 3 mm 100%
$1,550 \pm 50 \text{ kg/m}^3$
6.2%
after 28 days > 1.5 N/mm ² , < 5 N/mm ²
(Class CS II)
> 0.3 kg/m ² after 24 hours
< 5 mm
μ < 15
F

Packaging

25 kg multilayer paper bags. 1,500 kg pallets.

Coverage

11 kg/m² per cm thickness.

Storage

Protect from humidity. Store in a dry, sheltered place. Stored in these conditions and in unopened containers, the product remains stable for 12 months.

Warning

Only use enough water to obtain the right mix. Before using, check bags have not been damaged, and do not use the product if there are any lumps. Use the entire contents once the bag has been opened. When applying in poorly ventilated areas (caverns, underwater rooms, etc.), in order to allow the product to dry and eliminate any surface condensation within the time limits indicated in these specifications, sufficient air circulation must be generated using forced ventilation (which should remain permanently when the areas treated are in use). To apply Tectoria DF, do not use mechanical equipment which may crush the inert, expanded siliceous materials contained in the mortar. Do not apply at temperatures under +2 °C or above +35 °C, to surfaces in direct sunlight, when it is about to rain, or on windy or misty days. The technical specifications and application methods recommended herein are based on our current knowledge and experience and do not represent any form of guarantee of the final results obtainable with the product. It is the customer's responsibility to check that this data sheet is still effective and has not been replaced with a more recent version, and that the product is suitable for the intended use.

CTORIA

Description

Tectoria TH1 is a white, ready-to-use mortar with hazelnut tones designed specifically for creating insulating and sound-absorbent plaster coats. Tectoria TH1 is compatible with health and safety requirements for both man and the environment given that:

- It does not contain any compounds that are toxic for humans and hazardous for the environment;
- It contains natural, 100% recyclable materials which in tests were shown not to release gamma rays and/or radon gas;
- It contains materials heated to low temperatures thereby limiting the emission of CO₂ into the atmosphere and reducing the amount of energy used in production.

Tectoria TH1 is ideal for use in historical buildings as it contains the same natural materials with a low soluble salt content that are traditionally used in older buildings. It is also compliant with EC requirements for insulating plasters (UNI EN 998 type T). In the event of fire, Tectoria TH1 is totally fire-resistant and will not release any toxic gases. The product consists of natural hydraulic lime NHL (UNI EN 459) obtained by heating marl and limestone at low temperatures, and inert materials that confer the porosity making it a good insulator. It contains no Chrome VI. In contact with water, the hydraulic lime reacts to form hydrated products that are extremely unsoluble and very stable in terms of the chemical base.

Benefits

- Non-toxic and 100% natural.
- Does not release gamma rays and radon gas (typical of many materials used in modern building).
- Extremely breathable.
- Excellent thermal insulator.
- Does not contain synthetic materials derived from petroleum (e.g. expanded polystyrene).
- Very light: will not add extra weight to wooden roofs/ceilings.
- Withstands mechanical strain.
- Totally fire-resistant.
- Not hazardous for users and for the environment throughout the entire product life cycle.
- The product remains stably mineral over time.
- Chemically compatible with materials used in historic buildings.
- Ready-to-use and easy to apply.

Uses

Tectoria TH1 is for use as a thermal insulating, sound-absorbent plaster and as an undertile concrete layer. Main applications:

- Insulating plasters for breathable indoor and exterior thermal insulation that is easy to apply.
- To eliminate thermal bridges.
- Integrated insulation and ground-bearing concrete layers on sloping wood-framed roofs with minimum load.

Application

ST1-105

Clean the surface by removing any flaking parts, grease, old paints and clean with a pressure washer. Mix each 20 kg bag of Tectoria TH1 with approx. 10-11 l of drinking water in a concrete or continuous mixer for about 2 minutes (max. 4 minutes) until a smooth cream forms, being careful not to crush any lighter density inert materials.

Laying undertile concrete layers

Once mixed, spread the mixture onto the laying surface, adjusting thickness using a standard aluminium or wood screed, bearing in mind the working interval of 60 minutes. Substrates must be free of dust and dampened to saturation point but without any water stagnation. When laying Tectoria TH1, be careful not to overly compress the product. It can be applied with a trowel or with appropriate automatic plastering machinery.

Applying plaster

Walls to be plastered with Tectoria TH1 must be compact hence must be washed and cleaned to remove any flaking or loose parts. The rough coat can then be applied using Limepor LGS binder, washed inert materials of 3-5 mm granulometry and adhesion promoters. Three or four days later, the Tectoria TH1 plaster coat can be applied with a trowel or appropriate plastering machinery. For insulating plasters only, after leaving the base coats to cure for at least 40 days, apply a finish coat of Tectoria TFT, inserting Kimitech 350 or Kimitech 500 reinforcing lath.

Thickness

The minimum recommended thickness when laying Tectoria TH1 is 2 cm. Thicknesses from 3-5 cm generally provide ideal insulation. Average coverage is 4.8 kg/m² per centimetre thickness.

FECTORIA TH

UNI EN 998-1 SPECIFICATIONS (Plasters/Renders)

Technical specifications	Average value
Appearance	Powder
Colour	White with hazelnut tones
pH in water solution	> 11
Application temperature	+2°C ~ +35°C
Granulometric distribution	Not-sieved at 3 mm 100 %
UNI EN 1015-1	
Apparent volumetric mass of wet mortar	$750 \pm 50 \text{ kg/m}^3$
UNI EN 1015-6	



TECTORIA products

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Average value
after 28 days $> 1.5 \text{ N/mm}^2$, < 5
N/mm² (Class CS II)
4.7 mg/cm ² ·s ^{0,5}
μ < 15
$\lambda < 0.1 \text{ W/m}^{\circ}\text{K (type T1)}$
F

TORIA

Packaging

20 kg multilayer paper bags. 800 kg pallets.

Coverage

5 kg/m² per cm thickness.

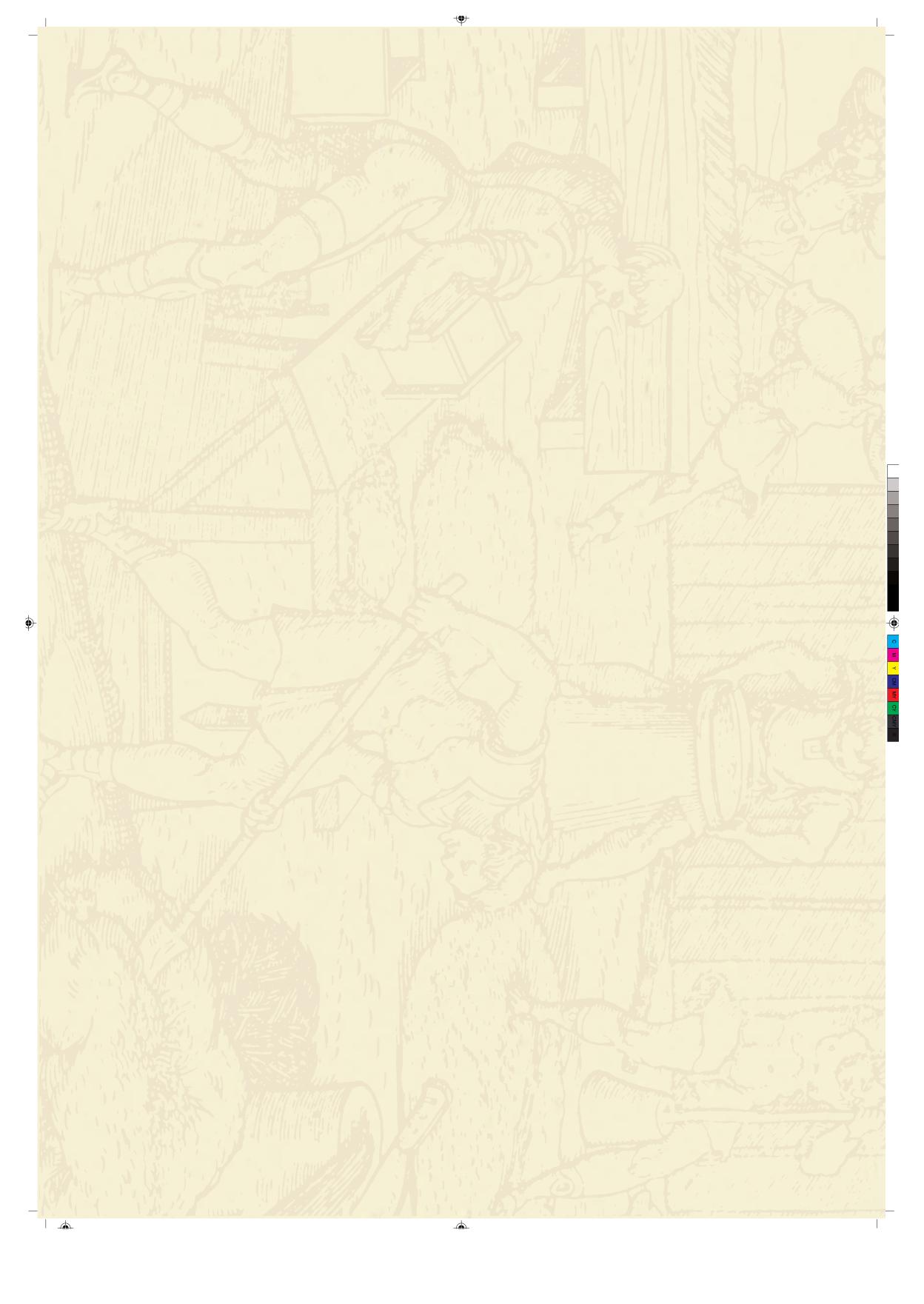
Storage

Protect from humidity. Store in a dry, sheltered place. Stored in these conditions and in unopened containers, the product remains stable for 12 months.

Warning

Before using, check bags have not been damaged, and do not use the product if there are any lumps. Use the entire contents once the bag has been opened. To apply Tectoria TH1, do not use mechanical equipment which may crush the inert, expanded siliceous materials contained in the mortar. Do not apply at temperatures under +2 °C or above +35 °C, to surfaces in direct sunlight, when it is about to rain, or on windy or misty days. The technical specifications and application methods recommended herein are based on our current knowledge and experience and do not represent any form of guarantee of the final results obtainable with the product. It is the customer's responsibility to check that this data sheet is still effective and has not been replaced with a more recent version, and that the product is suitable for the intended use.





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The Colour of Materials



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Products and technologies for the sustainable building