Restoration today makes up a very significant percentage of the work carried out in the building industry. Restoration and rehabilitation also mean safeguarding our enormous historical and cultural heritage, and these operations therefore take on considerable importance.

Among the various causes of deterioration, the most important to examine in its various forms is surely damp. Undoing the serious damage which results from it forms one of the most important categories of liability costs in restoring public and residential buildings of historic and artistic importance.

Before starting any kind of work on these structures, it is advisable to ascertain the nature of the phenomena which cause damp and the extent of damp contained in the walls, as the methods of dealing with it can be very different depending on the individual case and the type of damp present.

We classify a wall as "dry" if it has a moisture content of between 3% and 5% (normal moisture), we call it damp if it contains between 5% and 10%, and wet if the moisture level exceeds 10%.

To ensure that the work will have good results, it is also necessary to analyse the composition of the masonry structure and establish what salts it contains and in what quantities.

The next point to consider is the choice of dehumidifying systems, which must be assessed on the basis of surveys carried out. This is a very important stage as a wrong choice can have a drastic impact on the final result. Dehumidification and rehabilitation is almost always carried out with a system based on the application of various products with specific functions, which together form a rehabilitation treatment "made-to-measure" for the particular building.
• RESIDUAL DAMP
Residual damp is the result of hasty decision-making at the construction stage and manifests itself by creating problems when the concrete and the rendering and plaster transmit the water used in mixing them to the surrounding environment.
We do not recommend the use of waterproofing paints, or fixing timber frameworks to supporting masonry that is still damp.

• DAMP FROM LEAKS OR FAILURES
This is caused by damage to pipes and water systems. It can be eliminated by direct work on the leak.

• DAMP FROM DRIVING RAIN
The problems arise from water penetration following particularly heavy rain. Surfaces can be treated with suitably waterproofed plasters such as IDROPLAN or with water-repellent treatments such as IDROCOAT or HYDROSEAL.

• DAMP FROM SURFACE CONDENSATION
Very frequently confused with penetrating damp, it is most often met at the coldest points of the building.
It appears especially in the warm months when air masses contain a high percentage of humidity and, on meeting colder points, create condensation; even in the winter months, in rooms where heat and vapour are produced (such as bathrooms, kitchens and bedrooms), condensation can occur at the coldest and least well-ventilated points.
This problem causes the formation of moulds and damage to finishes.
Curing this situation requires ventilating the rooms and treating cold walls and thermal bridges with an all-over insulating coating.

• CAPILLARY RISING DAMP
This is a fault which very frequently affects the walls of buildings, especially old buildings, causing irreversible damage to rendering and plaster.
It is caused by absorption through capillarity, to which porous building materials are prone when in contact with water in the subsoil.
The effects are devastating: damp walls and crumbling plaster because of salts which are transported through the capillaries in the masonry and crystallise on the external surfaces giving rise to efflorescence, until they cause the plaster to crumble and fall off due to the increase in volume of the crystals themselves inside the micropores of the plaster.
These curative treatments are the subject of our specifications which are described below: A - B - C (above-ground masonry).

• PENETRATING DAMP
Caused by the ingress of water or more or less serious seepage into the inside of walls in contact with the soil and not adequately protected.
All this will lead in a short time to making the rooms uninhabitable.
When it is impossible to take remedial action externally, internal waterproofing systems can be applied using osmotic cements such as OSMOSEAL. See specification section D (walls in contact with the ground).
• **MECHANICAL CUTTING**
This consists of making mostly horizontal cuts through the entire thickness of the wall using special mechanical chainsaws and inserting metal sheet or strips of synthetic material along the full length of the cut.
The operation is completed by sealing with epoxy products or liquid mortar.
It is an effective solution as a bar to rising damp but in some cases it can compromise the stability of the building.

• **“PATCHWORK” SYSTEM**
This ancient technique was introduced by the Venetians, who used to repair buildings damaged by damp by making openings at the base of the walls where they inserted a sheet of lead as a damp-proof course.
After this the demolished masonry was rebuilt with new bricks.
Later, the operation was repeated until the entire perimeter of the building had been replaced, giving good results.
Today, this technique is too costly and slow and is used only in special cases.

• **SYPHONING OR DRAINAGE**
This consists of inserting special tubes into the damp wall which, by increasing aeration, facilitate the disposal of the moisture.
The holes are spaced about 50 cm apart.
It is a quick and fairly cheap solution; it is not, however, sufficient for radically solving the problem.

• **ACTIVE ELECTRO-Osmosis**
This exploits the principle by which the water particles inside a capillary duct under the influence of direct current flow towards the negative pole. The electrodes are located at a lower point than the masonry to be treated, and attract the water particles downwards, together with the salts which they contain.

• **CONTINUOUS CHEMICAL BARRIER**
This is a treatment which aims to prevent damp from rising by creating a barrier of waterproofing resins. It is an operation which in concept is reminiscent of mechanical cutting, but unlike that method it does not profoundly affect the static integrity of the building.
The operation consists of drilling holes into which waterproofing resins are injected.
Different treatments are used depending on the type of masonry and the chemical substance used.
It is however essential that the masonry should be homogeneous, compact and not excessively damp.
It is often combined with the macroporous plaster system.

• **DEHUMIDIFYING PLASTERS**
This is the field of application of the INDEX products entitled POROVENT, DEUMISAN and IDROPLAN.
These are macroporous plasters for curing rising damp.
The evaporation mechanism makes use of the considerable specific surface area created by the pores inside the plaster.
This surface area is more than twenty times the specific surface area of a normal cement-based plaster.
These conditions allow the plaster to evaporate the water from rising damp at a faster rate than the speed at which humidification takes place.
Another important characteristic of the product is its low water absorbency and its physical and chemical compatibility with the substrates in old walls.

Note. Dehumidifying plaster is a natural and inexpensive system which has no contra-indications and can always be used, including in combination with other systems. The plastered wall to be treated are invariably in very poor condition and need the old plaster to be stripped off.
At this point the difference in cost of the work between a system using a normal plaster and a special dehumidifying plaster becomes negligible.
**Problem:**
CAPILLARY RISING DAMP AND SEVERE SALINE EFFLORESCENCE

**Solution:** POROVENT FONDO PRONTO Based on the application of a macroporous dehumidifying plaster whose the evaporation mechanism is due to the considerable surface area of the macropores in the plaster. This surface area is more than twenty times the specific surface area of a normal plaster. These aerating conditions allow the plaster to evaporate the water due to rising damp, at a faster rate than the speed at which humidification takes place, without the degradation caused by saline efflorescence.

**LAYERS**
1. Masonry
2. DEUMISAL anti-saline treatment
3. POROVENT FONDO PRONTO anti-saline undercoat
4. POROVENT INTONACO PRONTO macroporous plaster
5. Finish

**APPLICATION PROCEDURE**

**PREPARING THE MASONRY**
- Strip off the old plaster for about 1 metre past the mark showing the maximum level reached by the damp over the course of the seasons.
- Brush the surface vigorously, removing all loose and flaking material, oils, release agents, salts, dust and dirt in general by descaling, brushing and washing with water. Fill any cavities with fragments of brick and cement lime mortar.
- For masonry heavily impregnated with salts and oily substances, wash with a 10% solution of alcohol in water, applied with a brush.

**ANTI-SALINE IMPREGNATION**
Carry out an anti-saline treatment by impregnating with DEUMISAL over all surfaces involved in the operation. Coverage about 0.5 litre/m².
**APPLICATION PROCEDURE**

**PREPARING THE MIX – POROVENT FONDO PRONTO ANTI-SALINE UNDERCOAT**

The mortar is obtained by mixing 4.5 - 5 litres of clean water with a 25 kg bag of POROVENT FONDO PRONTO for as long as it takes to reach a homogeneous mix.

**APPLICATION**

Apply “fresh on fresh” on a surface treated with DEUMISAL, a bonding coat of POROVENT FONDO PRONTO anti-saline undercoat, about 0.5 cm thick to create the ideal support for applying the subsequent coat of dehumidifying plaster.

Coverage: 7-8 kg/m²

**PREPARING THE MIX – POROVENT INTONACO PRONTO MACROPOROUS PLASTER**

The mortar is obtained by mixing 5 litres of water with a 25 kg bag of POROVENT INTONACO PRONTO. The mixing time when using a mixer should not be over three minutes.

**APPLICATION**

Proceed with applying the plaster. The minimum recommended thickness is 2 cm. The plaster can be applied by hand with a trowel or mechanically with an ordinary plastering machine by following the normal application instructions for plaster. For manual application use about 20% clean water and avoid prolonging mixing beyond 3 - 4 minutes. Its handling time is such as to allow laying on any architectural surface.

Coverage: 12 kg/m² x cm

**LAYING THE FINISHING COAT**

Wait for the plaster to dry fully. For painting we recommend using highly breathable wall paints based on silicates or lime, such as CALCECOLOR, SILICOLOR, or decorative mineral coatings such as DECORFINE.
Walls above ground level affected by rising damp. Rehabilitation with “DEUMISAN” dehumidifying plaster

Problem:
CAPILLARY RISING DAMP

Solution:

POROVENT FONDO PRONTO. Premix in powder form, based on hydraulic binders, selected aggregates and various additives. The function of the base coat is to improve the grip of the subsequent coat of macroporous plaster and to put the two layers in communication with an adequate network of capillaries. It also creates an anti-saline barrier.

DEUMISAN PRONTO. Premix in powder form, based on hydraulic lime, aggregates with a selected grain-size curve, additives which improve handling time, pore-creating agents and reinforcing fibres. Mixed with water, it provides a plaster particularly suitable for rehabilitating masonry degraded by damp because it facilitates the evaporation of water. This is due to its high and homogeneous porosity. The problem of dehumidifying a wall affected by rising damp is resolved thanks to the remarkable speed of evaporation, which in the case of the plaster DEUMISAN PRONTO is greater than the speed of humidification.

LAYERS
1. Masonry
2. DEUMISAL anti-saline treatment
3. POROVENT FONDO PRONTO anti-saline undercoat
4. DEUMISAN dehumidifying plaster
5. Finish

APPLICATION PROCEDURE

PREPARING THE MASONRY
- Strip off the old plaster for about 1 metre past the mark showing the maximum level reached by the damp over the course of the seasons.
- Brush the surface vigorously, removing all loose and flaking material, oils, release agents, salts, dust and dirt in general by descaling, brushing and washing with water. Fill any cavities with fragments of brick and cement lime mortar.
- For masonry heavily impregnated with salts and oily substances, wash with a 10% solution of alcohol in water, applied with a brush.

ANTI-SALINE IMPREGNATION
Carry out an anti-saline treatment by impregnating with DEUMISAL over all surfaces involved in the operation.
Coverage about 0.5 litre/m².
APPLICATION PROCEDURE

3

PREPARING THE MIX – POROVENT FONDO PRONTO ANTI-SALINE UNDERCOAT
The mortar is obtained by mixing 4.5 - 5 litres of clean water with a 25 kg bag of POROVENT FONDO PRONTO for as long as it takes to reach a homogeneous mix.

APPLICATION
Apply “fresh on fresh” on a surface treated with DEUMISAL, a bonding coat of POROVENT FONDO PRONTO anti-saline undercoat, about 0.5 cm thick to create the ideal support for applying the subsequent coat of dehumidifying plaster.
Coverage: 7-8 kg/m²

4

PREPARING THE MIX – DEUMISAN PRONTO DEHUMIDIFYING PLASTER
The mortar is obtained by mixing 4.5 litres of clean water with a 25 kg bag of DEUMISAN PRONTO. The mixing time when using a mixer should not be over three minutes.

APPLICATION
Proceed with applying DEUMISAN PRONTO in one or more coats until the minimum recommended thickness of 2 cm is reached. The plaster can be applied by hand with a trowel or mechanically with an ordinary plastering machine by following the normal application instructions for plaster.
Laying it does not require particular precautions beyond those normally followed for laying normal plaster. Its workable time is such as to allow laying on any architectural surface.
Coverage: 14 kg/m² x cm

5

LAYING THE FINISHING COAT
Wait for the plaster to dry fully. For painting we recommend using highly breathable wall paints based on silicates or lime, such as CALCECOLOR, SILICOLOR, or decorative mineral coatings such as DECORFINE.
Masonry above ground level affected by the high moisture content caused by rising damp and subject to driving rain. Rehabilitation with “IDROPLAN” dehumidifying water-repellent plaster

**Solution:**

**POROVENT FONDO PRONTO.** Premix in powder form, based on hydraulic binders, selected aggregates and various additives. The function of the base coat is to improve the grip of the subsequent coat of macroporous plaster and to put the two layers in communication with an adequate network of capillaries. It also creates an anti-saline barrier.

**IDROPLAN.** A premixed plaster in powder form, based on lime, hydraulic binders, calcareous aggregates with a selected grain size curve and additives which confer a high degree of workability, porosity, water-repellence and adhesion to various types of substrate. It prevents the migration of atmospheric water into the masonry and enables excessive moisture to be eliminated in the form of water vapour, as a result of its high porosity, universally distributed. The problem of dehumidifying a wall affected by rising damp is resolved thanks to the considerable speed of evaporation, greater than the speed of humidification.

**APPLICATION PROCEDURE**

**PREPARING THE MASONRY**
- Strip off the old plaster for about 1 metre past the mark showing the maximum level reached by the damp over the course of the seasons.
- Brush the surface vigorously, removing all loose and flaking material, oils, release agents, salts, dust and dirt in general by descaling, brushing and washing with water. Fill any cavities with fragments of brick and cement lime mortar.
- For masonry heavily impregnated with salts and oily substances, wash with a 10% solution of alcohol in water, applied with a brush.

**ANTI-SALINE IMPREGNATION**
Carry out an anti-saline treatment by impregnating with DEUMISAL over all surfaces involved in the operation. Coverage about 0.5 litre/m².

**LAYERS**
1. Masonry
2. DEUMISAL anti-saline treatment
3. POROVENT FONDO PRONTO anti-saline undercoat
4. IDROPLAN macroporous water-repellent plaster
5. Finish
APPLICATION PROCEDURE

3

PREPARING THE MIX – POROVENT FONDO PRONTO ANTI-SALINE UNDERCOAT

The mortar is obtained by mixing 4.5 - 5 litres of clean water with a 25 kg bag of POROVENT FONDO PRONTO for as long as it takes to reach a homogeneous mix.

APPLICATION
Apply “fresh on fresh” on a surface treated with DEUMISAL, a bonding coat of POROVENT FONDO PRONTO anti-saline undercoat, about 0.5 cm thick to create the ideal support for applying the subsequent coat of dehumidifying plaster.
Coverage: 7-8 kg/m²
In the case of masonry where the anti-saline treatment is not necessary, the undercoat can be missed out, passing straight to the application of the plaster.

4

PREPARING THE MIX – IDROPLAN WATER-REPELLENT DEHUMIDIFYING PLASTER

The mortar is obtained by mixing 5 litres of clean water with a 25 kg bag of IDROPLAN. The mixing time must not be extended beyond 3 minutes.

APPLICATION
Proceed with applying IDROPLAN in one or more coats until the minimum recommended thickness of 2 cm is reached. The plaster can be applied by hand with a trowel or mechanically with an ordinary plastering machine by following the normal application instructions for plaster. Laying it does not require particular precautions beyond those normally followed for laying normal plaster. Its workable time is such as to allow laying on any architectural surface.
Coverage: 14 kg/m²/cm

5

LAYING THE FINISHING COAT

Wait for the plaster to dry fully. For painting we recommend using highly breathable wall paints based on silicates or lime, such as CALCΙΕCΟLΟΡ, SILΙCΟLΟΡ, or decorative mineral coatings such as DECΟRFΙΝΕ.
OSMOSEAL. Premix in powder form, based on high-strength hydraulic binders, water-repellent additives, powdered resins and selected aggregates. It comes as a powder for mixing with water at the time of use. OSMOSEAL is reactive with respect to calcium hydroxide, forming stable and insoluble compounds. OSMOSEAL provides the perfect supplement to the substrate, creating an insoluble crystal formation which blocks the capillaries by osmosis. The special additives which it contains form, with the cement, a double layer which is impermeable to water, maintaining a crystallising effect (osmotic healing) over time.

IDROPLAN. A premixed plaster in powder form, based on lime, hydraulic binders, calcareous aggregates with a selected grain size curve and additives which confer a high degree of workability, porosity, water-repellence and adhesion to various types of substrate. It prevents the migration of atmospheric water into the masonry and enables excessive moisture to be eliminated in the form of water vapour, as a result of its high porosity, universally distributed. The problem of dehumidifying a wall affected by rising damp is resolved thanks to the considerable speed of evaporation, greater than the speed of humidification.

APPLICATION PROCEDURE

PREPARING THE MASONRY
• Strip off the old plaster for about 1 metre past the mark showing the maximum level reached by the damp over the course of the seasons.
• Brush the surface vigorously, removing all loose and flaking material, oils, release agents, salts, dust and dirt in general by descaling, brushing and washing with water. Fill any cavities with fragments of brick and cement lime mortar.
• For masonry heavily impregnated with salts and oily substances, wash with a 10% solution of alcohol in water, applied with a brush.
• Any seepage which occurs is blocked in advance with BETONRAPID quick-setting hydraulic cement.
APPLICATION PROCEDURE

APPLYING IDROPLAN WATER-REPELLENT DEHUMIDIFYING PLASTER
After preparing the mix (see page 9), proceed with applying IDROPLAN plaster in one or more coats until the minimum recommended thickness of 2 cm is reached. The plaster can be applied by hand with a trowel or mechanically with an ordinary plastering machine by following the normal application instructions for plaster. Laying it does not require particular precautions beyond those normally followed for laying normal plaster. Its workable time is such as to allow laying on any architectural surface. Coverage: 14 kg/m²×cm

PREPARING OSMOSEAL OSMOTIC CEMENT MIX
The cement is made up by mixing 5 litres of clean water with a 25 kg bag of OSMOSEAL so as to obtain a brushable mortar of the consistency of honey by using a drill at low speed.

APPLICATION
Remix OSMOSEAL mortar during use without adding water, and apply within an hour of preparation, working from top to bottom, starting with the walls and finishing with the floor. OSMOSEAL mortar should be applied with a Tampico fibre brush or sprayed with suitable equipment. Spread a first coat on the substrate so as to achieve a uniform covering layer, then apply the second coat on top of the first as it hardens, following the same procedure. Coverage: 3 kg/m²

APPLYING IDROPLAN WATER-REPELLENT DEHUMIDIFYING PLASTER
After preparing the mix (see page 9), proceed with applying IDROPLAN plaster in one or more coats until the minimum recommended thickness of 2 cm is reached. The plaster can be applied by hand with a trowel or mechanically with an ordinary plastering machine by following the normal application instructions for plaster. Laying it does not require particular precautions beyond those normally followed for laying normal plaster. Its workable time is such as to allow laying on any architectural surface. Coverage: 14 kg/m²×cm

LAYING THE FINISHING COAT
Wait for the plaster to dry fully. For painting we recommend using highly breathable wall paints based on silicates or lime, such as CALCECOLOR, SILICOLOR, or decorative mineral coatings such as DECORFINE.
The data given here are indicative average data relating to current production, and may be changed and updated by INDEX S.p.A. at any time, at its discretion and without prior warning. The technical information and suggestions provided represent our best knowledge of the properties of the product in use. Considering the many possible uses and the possible interference of elements not under our control, we take no responsibility for the results. The Purchaser is responsible for establishing the suitability of the product for the use envisaged.