CHIMICA® ITALIANA RESTAURI

CIR

TECHNOLOGIES FOR THE TREATMENT OF NATURAL STONE AND ARTIFACTS

Art meets the craft

CHEMISTRY SERVING THE WORK OF MAN IN RESPECT OF THE ENVIRONMENT

C.I.R. (CHIMICA ITALIANA RESTAURI) begins its career in the 80s and soon becomes a company of prestige and high reliability in the world of the Restoration.

To CIR have been entrusted restoration assignments of monuments and historic buildings of high prestige and visibility. Countless its flagships.

During over 30 years of activity, CIR has never stopped in the constant search for effective formulas and at the same time respectful of 'precious' materials that boasted of cleaning, curing, protecting.
Its range of products has grown together with customer requirements, understandably very demanding, without ever yielding to the temptation to offer formulations centered on profit rather than on the actual care of the treated material.
Thanks to its hard working search, CIR has developed cleaners, maintainers and protectives that rank today at the top of quality range worldwide.

From this range of formulas the current product lines are born: the one dedicated to the restructuring, cleaning and protection of the New, the lines dedicated to the in- and outdoor flooring, the one dedicated to the Cleaning of the Graffiti, till the last born, the Focus line, dedicated to the professional resolution of the cleaning, treatment and protection of the increasingly sophisticated materials that are in our homes.

Thus, by cleaning the facade and floor of a cathedral, CIR is prepared to clean the facade and floor of your home with the same care and effectiveness.

The soul of the Restoration remains intact, always active and reliable in all respects: site inspections, technical reports, ad hoc formulations, laboratory tests and comparisons, regulations to be respected, building sites to follow in their arising problems, advice and expertise to the need, training of technicians and professionals on the use of our products and anything else that is needed to CARE.

Yes, because CIR TAKES CARE OF IT

SOME OF OUR REFERENCES

BERGAMO MUNICIPALITY - cleaning and protection of the stone materials

AREZZO MUNICIPALITY - cleaning of the stone materials and of the crests of the pretorius building

AREZZO FACADE OF VASARI'S HOME - conservative restoration of the stone materials, consolidation, protection

S. GIMIGNANO COLLEGIATA - consolidation and protection of the stone materials

BERGAMO ANCIENT WALLS - cleaning and protection

TRIESTE PALAZZO STRATTI - cleaning of calcareous, aurisina and Vicenza stone

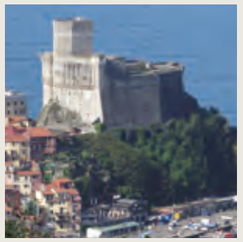
PIEVE DI ROMENA - conservative restoration

SIENA PALAZZO SANSEDONI - conservative restoration of the facade, face bricks and limestone, cleaning and water-repellent protection

SIENA PALAZZO SPANNOCCHI - cleaning and consolidation of the stone elements

RAGUSA MUNICIPALITY - cleaning of black crusts, consolidation and protection of the facade of the entire building in tufaceous limestone

VENEZIA CASINÒ MUNICIPALE IN CANAL GRANDE - restoration of the facade



LA SPEZIA CASTELLO DI LERICI - consolidation and protection of sandstone surfaces

CHIETI PORTALE DELLA LUNA - cleaning, consolidation and protection of the stone elements

CHIUSI DUOMO AND THE ADIACENT TOWER - restoration and consolidation

LUCCA DUOMO - consolidation and protection of sandstone and marble surfaces

CASERTA REGGIA DI CASERTA - cleaning, consolidation and protection

PIACENZA CHIESA DI SAN SAVINO - consolidation and conservative restoration

ENNA PIAZZA ARMERINA - cleaning from limescale of the municipality building, of the fountain and the channels

PISA PIAZZA DEI MIRACOLI - consolidation and protection of the walls

BRESCIA TORRE DEL VESCOVO IN PISOGNE - cleaning and protection of the stone materials

FIRENZE PALAZZO PITTI - consolidation and protection of the sandstone surfaces

FIRENZE PALAZZO DELLA SIGNORIA - consolidation and protection of the sandstone surfaces

FIRENZE FORTEZZA DA BASSO - consolidation and protection of external walls

LECCE CHIESA DEI TEATINI - cleaning and protection of tuff materials

LECCE EX CONVENT OLIVETIAN MONKS - cleaning, consolidation and protection of tuff materials

PORDENONE PALAZZO PERA - cleaning of the frescoes and decorations of artistic historical value

SIENA MAIN FACADE OF ROCCA SALIMBENI - conservative restoration, cleaning and protection

ROMA BASILICA DI S. MARIA MAGGIORE GOVERNATORATO VATICANO - protection of travertine materials

ROMA MONUMENTAL CEMETERY IN VERANO - cleaning from smog

ROMA PALAZZO BANCA D'ITALIA VIA NAZIONALE - cleaning from smog

LECCE DUOMO - protection of tuff materials

PIENZA PALAZZO PICCOLOMINI - consolidation and restoration of the plaster and of the stone elements of the cloister

MILANO PIAZZA DUOMO - cleaning of the paving

VICENZA STATUE OF GARIBALDI - marble cleaning

MONZA S.GERARDO - cleaning and consolidation of the granite and decorative concrete

ROMA PALAZZO TORLONIA - cleaning and consolidation of wall paraments in travertine and bricks

SALERNO CHIESA DI SAN GENNARO A PRAIANO - cleaning, consolidation and protection of the stone elements

VICENZA CHIESA DI SAN MARCO IN SAN GIROLAMO - conservative restoration of the facade

SAN VITTORE OLONA SS. MARTIRI VITTORE E SEBASTIANO - cleaning and protection of the facade

TORINO CHIESA M. AUSILIATRICE cleaning from smog

VENEZIA SS. GIOVANNI E PAOLO - cleaning, consolidation and protection

NAPOLI ARCHAEOLOGICAL EXCAVATIONS OF ERCOLANO - consolidation of walled paraments

NAPOLI PALAZZO REALE - cleaning, consolidation and protection

SIENA PALAZZO DELL'ACCADEMIA CHIGIANA - cleaning and protection

BRESCIA FACADE OF PALAZZO MARTINENGO - cleaning of the stone materials

SIENA BISHOP CURIA - conservative restoration of the facade, face bricks and limestone, cleaning and water-repellent protection

SPOLETO PALAZZO DRAGONI - cleaning and protection of the stone elements of the facade

SIENA ASCIANO ETRUSCAN TOMBS TUMULO DEL MOLINELLO - consolidation

CORTONA TOMBA DEL SODO - consolidation and conservative restoration of the stone elements

SIENA THE BELL TOWER OF DUOMO - cleaning and extraordinary maintenance

THE MATERIALS

LIMESTONE

The calcareous stones come from **sedimentary rocks**, both of chemical and of organic origin. Sedimentation of chemical origin implies that stagnant water, rich in calcium and hydrogen carbonate ions, can deposit calcium carbonate as a precipitate. An obvious example of this phenomenon is in the stalactitic and stalagmite formations, determined by groundwater which, by percolating under pressure, when they come into contact with the atmosphere or with air chambers, allow H2O to evaporate with consequent precipitation of CaCO3.
The sedimentation of organic origin consists in the accumulation of mainly calcareous skeleton marine animal remains, with the subsequent welding of the latter. The compound that clearly dominates the chemical composition of the calcareous rocks is therefore calcium carbonate. In addition to calcium carbonate, in the process of sedimentation, other elements that significantly affect the appearance and especially the color precipitate. The calcareous rocks are not stable either to chemical agents, such as weak acids or diluted strong acids, or to thermal agents. Also the resistance of the calcareous rocks to the mechanical agents is not particularly high due to the sedimentary nature of the material.

To this category belong:

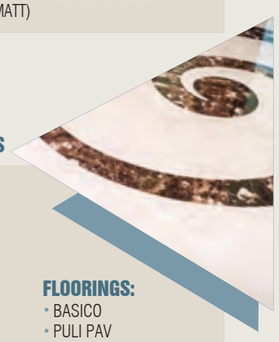
MARBLE - TRAVERTINE – CALCAREOUS TUFF – LECCE STONE- TRANI STONE - ALABASTER – VICENZA STONE - STONE OF ISTRIA

CIR PRODUCTS

FACADES:
- RP 110
- RP 108
- BIO C
- BIO T PLUS
- ACQUACONS
- BIO R-IPC 30
- CONSACRIL SIL S
- CONSOLIDA NANO
- IDROREPEL
- IDROREPEL TONO
- BIO PT 15
- PTO 10
- NO SMOG
- IDROSTOP NEW
- IDROREPEL ACQUA TONO
- ECO 7 G
- NO OMBRE
- ECO PMC 200
- ANTIGRAF PERMANENT

FLOORINGS:
- ACIDO
- BASICO
- CS
- IMPRESTONE
- IMPRESTONE TONO
- CIR WAX (LUX o MATT)
- CR 7
- PULI PAV
- IDRO BASE
- IDRO PTA
- IDRO PTA TONO

MARBLE



Marble is a rock much appreciated for: strength, aesthetic appearance, ability to be polished and resistance to atmospheric agents. It has a variety of uses and has been used in all civilizations for the most varied uses from sculpture to architecture. This material is available in a variety of textures depending on its composition and its genesis.
Marble is the type of **metamorphic rock** that is formed from limestone and dolomite, under certain conditions of heat and pressure. The metamorphism is the complex of chemical-physical reactions in the solid state with which a rock adapts to a new environment or to new conditions of pressure and temperature. It has a fine grain with small randomly oriented and welded crystals, with an appearance reminiscent of the most common sugar, sucrose, and therefore the structure of the marble is also called saccaroid. The marbles, from the chemical point of view, are made of calcium carbonate with a high degree of purity; like all calcareous rocks are corroded by acids.

The marbles are classified by aesthetic characteristics in:

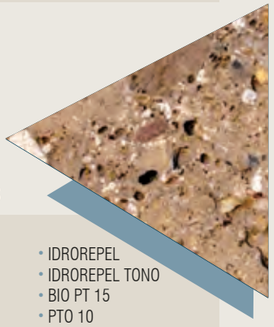
WHITE MARBLE (CARRARA) – BLUE MARBLE – RED MARBLE (VERONA) – YELLOW MARBLE – GREE MARBLE – BLACK MARBLE – POLYCHROME MARBLE

CIR PRODUCTS

FACADES:
- RP 108
- BIO C
- BIO T PLUS
- BIO R IPC 30
- ACQUACONS
- IDROREPEL
- BIO PT 15
- PTO 10
- ECO 7 G
- ECO PMC 2000

FLOORINGS:
- BASICO
- PULI PAV
- CIR WAX (LUX o MATT)
- IMPRESTONE
- CRISTALLIZZANTE

SILICEOUS STONE



The siliceous stones occur in complex mixtures of different minerals containing silica, aluminum, iron, alkaline and alkaline earth metals. Their acid character denotes the prevalence of acid oxides such as SiO_2 (SILICE). The percentage composition of the oxides present gives us the exact nature of the stone. The genesis of the siliceous stones is due to volcanic eruptions. This type of rocks is formed for cooling and subsequent crystallization of molten magma. The magmatic flow, due to the lower density compared to the rocks in which it is incorporated, tends to rise towards the surface (Principle of Archimedes) where it sometimes comes out and undergoes a sudden cooling, it quickly solidifies and gives rise to the **effusive rocks**. Magma does not always come to the surface and then slowly solidifies beneath it, becoming **intrusive rock**. This type of rock would never come to light if atmospheric agents did not erode its roof. The magma cooling mode determines the structure of the rocks. The siliceous rocks have appreciable mechanical properties, so that they are mainly used for the construction of supporting parts in buildings.

To this category belong:

GRANITE - PORPHY - BASALT - ARDESIA - POZZOLAN - PIPERNO – PIETRA SERENA

CIR PRODUCTS

FACADES:
- RP 103
- RP 108
- BIO C
- BIO T PLUS
- PULI AC
- CONSACRIL SIL A
- CONSACRIL SIL S
- ACQUACONS
- BIO CPA
- BIO R-IPC 30
- CONSOLIDA NANO
- IDROREPEL
- IDROREPEL TONO
- BIO PT 15
- PTO 10
- NO SMOG
- IDROSTOP NEW
- IDROREPEL ACQUA TONO
- ECO 7 G
- NO OMBRE
- ECO PMC 200
- ANTIGRAF PERMANENT

FLOORINGS:
- ACIDO
- BASICO
- CS
- IMPRESTONE
- IMPRESTONE TONO
- CIR WAX (LUX o MATT)
- CR 7
- PULI PAV
- IDRO BASE
- IDRO PTA
- IDRO PTA TONO

BRICKS

The **bricks** are artificial building materials, of pre-established dimensions, obtained from the cooking of clays with variable quantities of sand, iron oxide and calcium carbonate. The most known and universally used construction element is the “brick”. The bricks can be full or perforated, with a percentage of holes that can vary up to 25% in vacuum on the total volume of the piece. The term brick is often used improperly as a synonym of construction element, but is in itself one of the various ceramic materials classified under the name of porous bricks. Moreover, since the composition of the clay used for the mixture varies from area to area, the color of the bricks is a typical characteristic of the place of production. In the same furnace, with the same **clay mixture**, you can obtain bricks of yellow, pink, red, purple, bluish and black color, only by varying the level of oxygenation of the cooking chamber.
Solid brick: this category includes brick without holes or in any case with limited drilling, less than 15% of the total area. The most common are those with dimensions of 5.5 × 12 × 25 cm. This type of brick is produced by extrusion. Today it is practically in disuse as it is replaced by hollow brick, but it is still used in the renovation of classical buildings (load-bearing walls or facing walls).
Half full or perforated brick: It is a brick with a medium resistance. It too is produced by extrusion. The percentage of drilling varies between 15% and 45%. Its size of approximately 12 × 12 × 25 cm is essentially twice the size of the actual brick.

CIR PRODUCTS

FACADES:
- RP 102 S
- RP 108
- PULI AC
- BIO C
- BIO T PLUS
- CONSACRIL SIL A
- CONSACRIL SIL S
- ACQUACONS
- BIO CPA
- BIO R-IPC 30
- CONSOLIDA NANO
- IDROREPEL
- IDROREPEL TONO
- BIO PT 15
- PTO 10
- NO SMOG
- IDROSTOP NEW
- IDROREPEL ACQUA TONO
- ECO 7 G
- NO OMBRE
- ECO PMC 200
- ANTIGRAF PERMANENT

FLOORINGS:
- ACIDO
- BASICO
- CS
- PTA
- IDRO PTA
- IDRO PTA TONO
- PTA TONO
- PULI PAV
- IDRO BASE

PLASTER

Protective coating layer with aesthetic functions consisting of aerial lime, natural hydraulic lime or lime and pozzolan, mixed with sand. It is laid on the rough masonry to protect it from atmospheric agents. The first layer, directly in contact with the masonry, is called **rinzaffo**. The latter acts as an adhesion bridge between the plaster body and the masonry and is applied in an uneven manner. The second, and more full-bodied layer, is called **curling**. It has an average particle size (max 1.5 mm in diameter), and is applied in thicknesses ranging from 1.5 to 2 centimeters, thus coating the role of a real skeleton of the whole plaster system. Its main task is to standardize the surface of the walls. On the curl, well drawn straight edge, a third layer is placed, called **stabilization or civil plaster**, which generally has two functions: protect the plaster and make it aesthetically pleasing. It has a fine particle size, with a maximum diameter of less than 800 microns, and its application thickness is less than 3 millimeters. It requires greater application care since it is the layer on which the colored finish rests.

Based on the binder used, the plasters are distinguished in:

LIME BASED PLASTER – LIME- CONCRETE BASED PLASTER, where the binder is a mixture of hydrated lime and Portland concrete, with a prevalence of lime – CONCRETE-LIME BASED PLASTER, where the binder is a mixture of hydrated lime and Portland concrete, with a prevalence of concrete - GYPSUM BASED PLASTER, where the binder is exclusively gypsum.

CIR PRODUCTS

FACADES:
- CONSACRILIC
- ACQUACONS
- BIO C
- BIO T PLUS
- PULI AC

LIME

Lime is an **aerial binder** that is a binder which gives rise to the phenomenon of grasping and hardening only when exposed to air. Lime is one of the binders of which we have documentation of the use from the earliest date: it was in fact used in all ancient civilizations. From a chemical point of view, lime is calcium hydroxide $Ca(OH)_2$ which is obtained from calcium carbonate $CaCO_3$ which is the main constituent of calcareous stones. **Aerial lime** is obtained by cooking the limestone at a high temperature. The limestone is fired in furnaces where calcium carbonate is introduced for 8-10 cm. The calcium carbonate decomposes following a reaction that leads to the formation of lime. Subsequently, through hydration processes (quenching), the **lime called hydrate** (calcium hydroxide $Ca(OH)_2$) is obtained.

The hydrated lime, in relation to its composition in water, can be distinguished in:

HYDRATE LIME - SLAKED LIME - LIME MILK

CIR PRODUCTS

FACADES:
- CALCEFRESH
- BIO C
- BIO T PLUS

THE MATERIALS

FINISHES

The term finishes, in construction, means the materials used to protect the underlying plaster from the degrading action coming from outside. They also greatly improve the aesthetic effect of the underlying plasters.
The finishes or **paintings for facades** are classified on the basis of multiple aesthetic and technical aspects, indicated in the UNI EN 1062 Standard, namely: use, type of binder, solvent used and technical criteria such as:

- Brilliance
- Thickness
- Grain
- Steam permeability
- Water permeability

The most used paints in building are:
PAINTS IN ORGANIC DISPERSION - SILICATE PAINTS - SILOSATIC PAINTS IN EMULSION - POLYMER PAINTINGS - PHOTOCATALYTIC PAINTS

CIR PRODUCTS

FACADES:
- RP 103
- BIO C
- BIO T PLUS
- IDROREPEL
- BIO PT 15
- CONSACRILIC

CONCRETE

Concrete is a binder obtained by cooking **mixtures of limestone**, clay and sand, at temperatures between 1200 and 1500°C (Portland). This cooked product, called clinker, is ground until a very fine powder is obtained. Concrete is the most commonly used binder for construction in modern works, for the casting of concrete works, for the manufacture of artifacts, increasingly present on the market. The types of Concrete on the market are: blast furnace, pozzolanic, Portland, white. All these types of concrete are admixed with gypsum ($CaSO_4$), with a grip regulator function. Water and concrete mixed in suitable proportions give rise to a mixture (concrete paste) that undergoes, over time, the hydration processes of its constituents; as we proceed to hydration, free water decreases and plasticity is lost; after that the gripping has occurred, the process of continuous hydration with decreasing speed goes on for a period called hardening.

With this material in construction we can find:
ARCHITECTURAL CONCRETE - INDUSTRIAL FLOORS - DECORATIVE ELEMENTS IN FACADE - STRUCTURAL PARTS FACE TO VIEW - JOINTS BETWEEN COVERINGS - SELF-LOCKING

CIR PRODUCTS

FACADES:
- RP 110
- RP 103
- BIO C
- BIO T PLUS
- ACQUACONS
- IDROREPEL
- BIO PT 15
- PTO 10
- ECO 7 G
- NO OMBRE
- ECO PMC 2000
- ANTIGRAF PERMANENT

FLOORINGS:
- ACDO
- BASICO
- CS
- STOP CEM
- FINE CEM PLUS
- CIR ULTRA FINISH
- DEFENDER S
- IDRO BASE

COTTO

The cotto is obtained by cooking **clay** with variable amounts of **sand and oxides**. Its color depends solely on the **percentage of iron** present in the clay and on the variation in the **percentage of oxygen** during cooking. In the same furnace, with the same clay mixture it is possible to obtain elements of yellow, pink, red, purple, bluish and black color. Generally under normal conditions in the cooking chamber, ie with temperatures around 100° C and proper oxygenation, the terracotta turns red. The cotto can be used both indoors and outdoors. Most of the production of cotto is mechanical, through the extrusion of paste. In this way a strong cotto is obtained, with considerable specific weight and very low porosity and therefore of great strength and durability. However, there is no shortage of artisan firms that produce cotto for particularly valuable work or restoration work, in this case we obtain a material with a more porous mass and consequently a lower weight. For bricks pressed or extruded under vacuum the mass is much more compact and the weight increases.

CIR PRODUCTS

FLOORINGS:
- ACIDO
- BASICO
- CS
- PTA
- PTA TONO
- IDRO PTA
- IDRO PTA TONO
- CIR WAX (LUX o MATT)
- CR 7
- PULI PAV
- IDRO BASE
- PRATICOT

PORCELAIN GRES

It is a **non-metallic inorganic material** obtained by cooking, at high temperatures, mixtures of natural raw materials.
The constituents are: minerals, kaolin, feldspars and clay with low limestone content. To them are added (1%) colors of natural origin that complete the aesthetic yield. It has good mechanical characteristics and the compaction of the material takes place without the addition of adhesives or resins. The mechanical pressing of over 500 kg per cm^2 and cooking in ovens over 90 meters in length at a temperature of over 1,250 °C make the material homogeneous and compact.
Porcelain stoneware is a compact, resistant material characterized by the almost total absence of porosity (and therefore impregnability). Moreover the material guarantees a good resistance to chemical agents and in general to external agents.
The porcelain stoneware floors and walls can be anti-slip, resistant to abrasion and fireproof.
Ideal for installation in residential and public areas, even for high traffic.
Finally it is used as material for artistic objects.

CIR PRODUCTS

FACADES:
- RP 103
- IDROREPEL
- BIO PT 15
- PTO 10

FLOORINGS:
- DOPO POSA
- GRES PROTECTOR
- PAV LUX
- DEFENDER S

COCCIO PESTO

The cocciopesto is the result of **the grinding or crushing of old bricks or tiles reduced to sand**. The cocciopesto sand, being in fact a crushed brick (ie roasted clay), has good pozzolan characteristics. The cocciopesto, mixed with aerial lime and water, triggers a process of hydraulic grip between the calcium hydrate and the silico-aluminates of the roasted clay. The more the cocciopesto is thin, the more the phenomenon of hydraulicity is relevant. Be suspicious of supplies of cocciopesto mortar in paste. It's an absurd contradiction in terms: no hydraulic gripping product can be pre-packaged with water. The material would be susceptible to grip in its packaging. The cocciopesto obtained from bricks overcooked has no pozzolanic power.
The best bricks from cocciopesto are those cooked at low temperature, as they are more porous and more reactive to lime.

CIR PRODUCTS

FLOORINGS:
- BASICO
- IMPRESTONE
- CR 7
- CIR WAX (LUX o MATT)

METALS

Metallic materials are characterized by a compact and homogeneous crystalline structure. In the pure state they are very often not workable because they are either too hard or too malleable. They are then used in the form of alloys, or mixed with other metals and/or elements.

They are distinguished in **ferrous** and **non-ferrous**.
They are called **ferrous metal materials**, or iron and steel, the materials obtained from the blast furnace blasting of iron minerals and subsequent processing. Ferrous materials are generally composed of alloys composed almost exclusively of iron and carbon, in which iron is the main component. They have different characteristics depending on the elements present in the alloy (the alligators) and can be distinguished in: **cast iron**, obtained directly from the blast furnace blast, and **steels**, obtained by partial decarburization of the cast iron through various refining processes.

In construction, the most used metals are:
STEEL Large Structures - Coatings - Railings
TITANIUM Coatings
ALUMINIUM Coatings - Metalworks - Railings - Plants - Fixtures
COPPER Coverings - Metalworks - Piping
IRON Reinforced concrete - Railings

The majority of ferrous metals for construction are made of carbon steel or common steels made of iron alloys, carbon and modest quantities of other elements. The mechanical resistances (ultimate tensile stress and yield stress) vary with the carbon content.

CIR PRODUCTS

FACADES:
- CIRLAK

THE LAB

MISSION:
The search for high-tech raw materials and the development of finished products which incorporate their best features to offer the customer the ultimate expression of technology in the field of cleaning and treating stone materials and artifacts both in the Monumental restoration and in Civil Construction.

ACTIVITIES:
- Research & Development
- The quality control of the production according to the ISO 9001 Quality Certification standards
- Modification and updating of formulations based on the evolution of national and Community regulations in the field of safety and eco-compatibility.
- Qualitative and quantitative analysis:
  - measurement of solid contents of specific products
  - measurement of the chemical-physical characteristics of all types of products in the sector
  - measurement of water absorption by capillarity
  - measurement of resistance to UV rays
  - measurement of the contact angle of hydro/oleo repellence
  - measurement of resistance to washability
  - measurement of abrasion resistance
  - assessment of compliance with HACCP standards
  - colorimetric measurements
  - customized formulations and tests
  - customer services

CUSTOMER SERVICES:
- Technical/valuation reports on particular applications of their products and their performance
- Development of "customized" products based on special technical requirements and/or specific market requirements.
- Up-to-date technical and security documentation
- Conformity testing on production lots

SCIENTIFIC TECHNICAL SHEETS
For the highest technological products, CIR draws up specific technical data sheets. These documents argue the most peculiar features of products selected through performance tests performed in the laboratory in full compliance with the regulations UNI and NORMAL.

See example of technical-scientific sheet on page 56


CHIMICA' ITALIANA RESTAURI

Prove di Laboratorio
Test eseguiti su trattamento consolidante
CONSOLIDA NANO - CPA

Prodotto Utilizzato	ΔP_1	ΔP_2	ΔP_f	ΔP_f %
	g	g	g	%
CONSOLIDA NANO (25%)	0,18	0,16	0,02	2
CPA	0,18	0,11	0,07	7

I valori di **ΔP_f %** testimoniano come, anche a seguito del trattamento consolidante, la porosità del materiale non venga occlusa, ma venga alterata solo in maniera estremamente bassa, e come i campioni mantengano, quindi, buona traspirazione.

Tali valori, inoltre, corrispondono in maniera quasi esatta alle quantità di residuo secco depositato rispettivamente dai prodotti CONSOLIDA NANO e CPA all'interno dei campioni di pietra con cui sono stati trattati, testimoniando come riscontro l'esattezza nei valori e nei risultati finali ottenuti.

Grafico CONSOLIDA NANO: andamento dei valori **ΔP_1 e ΔP_2** in funzione del tempo.

Linea BLU: andamento dei valori di **ΔP**, in funzione del tempo, prima del trattamento consolidante.
Linea ROSSA: andamento dei valori di **ΔP**, in funzione del tempo, dopo il trattamento consolidante.

Divisione di Costantini S. p. A.

RESTAURO
CHIMICA' ITALIANA RESTAURI

IDROSTOP NEW

Descrizione generale:

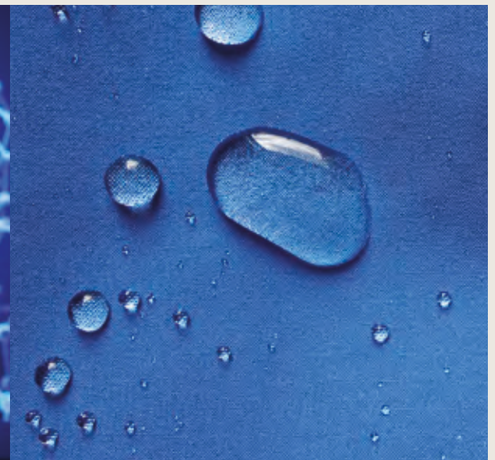
IDROSTOP NEW è un prodotto nano-tecnologico di nuova generazione.
IDROSTOP NEW è definibile come un protettivo idrorepellente traspirante basato su una nano-dispersione di polimeri silossanici oligomeri in soluzione acquosa, specificatamente formulato per il trattamento protettivo di tutti i tipi di pietre naturali e di manufatti.

La principale caratteristica di IDROSTOP NEW riguarda il diametro particellare dei polimeri che costituiscono la sua particolare resina silossanica: tali polimeri, infatti, sono caratterizzati da un diametro particellare estremamente ridotto e da un basso peso molecolare. Queste caratteristiche sono state ottenute mediante l'impiego di processi produttivi di nuova generazione, particolarmente avanzati ed innovativi, che rientrano nel mondo delle cosiddette nano-tecnologie.

Il diametro nano-metrico delle molecole costituenti la resina silossanica di IDROSTOP NEW permettono al protettivo di penetrare fino all'interno dei capillari più piccoli del supporto, anche su supporti particolarmente compatti, poco porosi o poco assorbenti, garantendo quindi elevata efficacia protettiva su tutti i tipi di materiali.

La totale assenza di solventi organici in formulazione fa di IDROSTOP NEW un prodotto totalmente ecologico, non tossico, sicuro per l'uomo e per gli operatori oltre che per l'ambiente. Inodore, non infiammabile e privo di simbologie, frasi ed etichettature/classificazioni di rischio. La sua natura a base di derivati organici del silicio e priva di solventi organici lo rende un prodotto classificato "VOC zero", cioè dalla totale assenza di emissioni di composti organici volatili nell'ambiente e nell'atmosfera.

Il trattamento con IDROSTOP NEW permette di mantenere inalterata la traspirazione dei materiali trattati, senza creare barriere al trasporto di vapore acqueo. IDROSTOP NEW possiede inoltre un'ottima resistenza agli agenti di degrado ambientale (pollutanti atmosferici, raggi UV, etc.) e non modifica l'aspetto cromatico dei materiali trattati.



TECHNICAL ASSISTANCE

Our Technical Support is available to customers with:

- Training courses for retailers, professionals and firms
- Study of the cycles and techniques of specific intervention
- Technical advice on the drafting of particular contract specifications
- On site assistance before, during and after the interventions

CIR offers its customers a true technical assistance in any phase of the intervention, both during the writing of the contract specifications and during execution.
Through its technical staff of highly qualified people, CIR is able to perform on-site inspections aimed at identifying application cycles suitable for the conservation of materials, to assist technicians and professionals from design to signature of work plans. Realizing diagnosis, testing and technical reports, CIR offers its customers a precise and detailed guide to choose specific systems and proper implementing methods, necessary to make an appropriate conservative intervention, both in terms of the materials from which facades are made and of the supports placed in flooring.

TECHNICAL TRAINING

CIR staff puts his know-how at disposal of companies and professionals, through training courses in which CIR is going to face all the problems of the construction site, from cleaning to consolidation and protection of all kinds of stone materials and artifacts. This technical training includes a first 'Theory' part where the characteristics of chemical formulations are deepened, followed by a second part of technical 'Practice' to gain experience of products and their use.
At the end of the course a certificate is issued, where participants are declared qualified to the treatment and conservation of stone materials.

CIR TRAINING COURSES:

CIR considers the technical training of its customers and partners as an element of primary importance in order to successfully develop its own philosophy of intervention:

- CIR provides training courses for managers and bankers, technicians and professionals in the industry, applying companies;
- Flexible courses tailored to the needs of the reseller client or to the problems of site and restoration companies;
- During training courses, theory and practice alternate, to reach maximum effectiveness in the short time.

ANALISI

L' umidità ascendente è dovuta essenzialmente ad un fenomeno fisico di vascolazione, ossia la capacità dell'acqua di penetrare nella muratura e di risalire verso l'alto attraverso i capillari presenti nei materiali costituenti le stesse.
Il fenomeno della risalita per capillarità si manifesta ogni volta che un liquido entra in contatto con un vaso di piccole dimensioni, chiamato capillare.
L'acqua infatti risale dal terreno nella muratura attraverso i capillari della stessa, fino a quando le forze in gioco non trovino equilibrio.
L'umidità di risalita viene poi smaltita tramite il normale processo di evaporazione attraverso la superficie della muratura, innescando un processo di dissalinizzazione degli elementi che la costituiscono, provocandone i seguenti danni:
1. presenza diffusa di macchie e di efflorescenze saline;
2. distacchi degli intonaci dalla muratura per la presenza di sali veicolati dall'acqua e provenienti dal terreno o dai materiali da costruzione che costituiscono la muratura.

I Sali sono i principali autori dei danni provocati dall'umidità di risalita.
I Sali, generalmente solfati, cloruri e, meno frequentemente, nitrati sciolti nell'acqua, vengono veicolati in superficie, dove, per effetto dell'evaporazione, si trasformano in stato solido ed aumentando di volume saturano i pori dei materiali con i quali è composta la muratura provocando il rigonfiamento ed il successivo distacco dell'intonaco.

SOLUZIONE

CIR, per la risoluzione del problema di umidità ascendente, mette a disposizione un sistema professionale, pratico e privo di rischi, BARRIER ACQUA PLUS - SISTEMA A GRAVITÀ, per la realizzazione di una barriera chimica idrofobizzante. La realizzazione della barriera chimica permette di interrompere la risalita dell'acqua nella muratura, introducendo i capillari dei materiali rendendo le forze di adesione che provocano la risalita nulle, così da impedire la risalita dell'acqua e con essa anche l'azione disgregativa dei Sali veicolati proprio dall'acqua proveniente dal terreno.

L'intervento consiste nel praticare dei fori nei quali viene introdotto il Barrier Acqua Plus costituito di ioduri principio attivo è in grado di impermeabilizzare il materiale trattato. Grazie al sistema predosato i tempi di esecuzione sono molto rapidi.

MODALITA' D'USO

DEMOLIZIONI
Asportare totalmente l'intonaco ammalorato scrostando la muratura fino a 50 _ 80 cm al di sopra del livello visibile dell'ascensione dell'umidità.
Su murature con malta di allettamento friabile, si consiglia di asportare tutte le parti incoerenti sulla muratura approfondendo le fughe di malta esistente per non meno di 2 cm.

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TRAINING MODULES

RS
RENOVATION OF FACADES

RECIPIENTS	Companies and Engineers
PURPOSE	To transmit the fundamental notions concerning conservative interventions on stone materials and not only, analyzing the various problems and practical and executive aspects
PROGRAM	**Theoretical Part** • Identification of materials • Types of alteration • The conservation cycle: cleaning - consolidation - protection - barriers • Application techniques and products used • Intervention cases: Problem - Solution **Practice Part**

RE
RESTORATION OF FACADES

RECIPIENTS	Companies and Engineers
PURPOSE	To deepen the application techniques and the modality of intervention in the buildings of historical and artistic interest. The course aims to provide all the notions concerning: regulations in force, diagnosis, assessment of problems, solutions, for conservative interventions on stone materials and not only
PROGRAM	**Theoretical Part** • Identification of materials • Types of alteration • Diagnosis and evaluations • The conservation cycle: cleaning - consolidation - protection - barriers • Application techniques and products used • Chemical cases • Practical examples of conservative intervention **Practice Part**

PAV
FLOOR TREATMENTS

RECIPIENTS	Companies
PURPOSE	To deepen all the practical and executive aspects concerning the interventions on all types of flooring
PROGRAM	**Theoretical Part** • Identification of materials • Types of treatment • Intervention cases: Problem - Solution **Practice Part** • Floor cleaning • Internal and external treatment of the various materials

RIV
COURSE FOR RETAILERS

RECIPIENTS	CIR Customers and related Bankers
PURPOSE	To transmit the fundamental notions concerning conservative interventions on stone materials and not only, both on the facade and on the paving, analyzing the various problems and the practical and executive aspects
PROGRAM	**Theoretical Part** • Identification of materials • Types of alteration • The conservation cycle: cleaning - consolidation - protection - barriers • Application techniques and products used • ntervention cases: Problem - Solution **Practice Part**

CIR TOWARDS FUTURE

In more than 30 years of its history, CIR understands the richness of its offer that is characterized by a constant and careful research on formulations that are effective but respectful of materials in an indisputable way.

CIR therefore understands that its mission can expand to the modern, to the new and the old, no longer only to the ancient.

Effectiveness and respect for materials are the right solution for the needs of the modern building sector; that is improving facade and flooring treatments in order to guarantee their effectiveness and durability over time.

This is the story of CIR: the experience in the Restoration world has grown over the years to become today a know-how that responds in a specific and timely manner not only to all the problems of intervention on buildings and historical and artistic artifacts, but as a complete offer of solutions for the world of stone materials, up to go further in the field of marble materials, glass, siliceous, metallic.

The nature of the CIR proposal has become twofold: that of the **care and preservation of the old** and that of the **care**, **prevention**, **restructuring and maintenance of the new and the old**, against organic dirt and vandal-leaking, the signs of time and smog, the consequences of usury and neglect.

Keeping up with the times has meant for CIR to learn the new language of materials and that of innovative materials, of their treatments, of manual and technological processes, from the lathe of the shop master to the highly computerized numerical control.

2014 marked CIR for a further step towards a market-oriented approach.

CIR decides to make its know-how available to the consumer world.

First of all CIR focuses its attention on the different language of this type of customer: the maximum complexity of the search for effective formulas that respect the materials and the environment must become the maximum simplicity of communication and use of the product.

This is how proposals are created with catchy names and multi-functional characteristics.

The guarantee of professionalism and effectiveness extends from the expert operator to the consumer of our times, although demanding even if often unaware user of sophisticated and often expensive materials that require the utmost care, eager to understand and do themselves, ready to procure products and tools suitable for his case.
However, his aim is always to act well and in a short time, today the most precious good.
Our latest line ‘focus’ is born from the desire to focus on what the consumer market is asking for and how we can offer direct, immediate solutions, communicated with clarity and simplicity.

We are at the beginning of a commercial adventure that we want to share with those who can understand the challenge.
The CIR look today is fresh, bright, communicative at first impact.
We have developed new marketing tools, and are always ready for new developments that adapt to any type of distribution channel more or less widespread.

Art has become a profession and today the profession has become professionalism of everyday life.

OUR STRONG POINTS

THESE THEN OUR STRENGHTS:

- **EXPERIENCE AND KNOW-HOW**
- **TECHNOLOGICAL PRODUCTS, EFFECTIVE AND RESPECTFUL FOR THE MATERIALS**
- **RESPECT FOR THE ENVIRONMENT AND THE OPERATOR**
- **TECHNICAL ASSISTANCE AND CUSTOMER TRAINING**

EXPERIENCE AND KNOW HOW:

In its more than 30 years of activity and research, CIR has never stopped learning, with humility and commitment. Many successes, because before taking a step CIR has thousand times experienced and learned from its mistakes. After all, the world of restoration does not allow mistakes in the field, but only in the laboratory. Today CIR is strong in its experience and in the concreteness of its offer, ready to learn from theoretical research and continuous experimentation.

TECHNOLOGICAL PRODUCTS:

Innovative products, highly performing and able to guarantee better results than generic products used in the sector. Among the others we can highlight the wide range of detergents with BIODEGRADABLE surfactants and the range of consolidating and protective agents in NANOTECHNOLOGY.

RESPECT FOR THE ENVIRONMENT

The wide range of products includes water-based, non-toxic, non-hazardous and no V.O.C.

V.O.C.

This acronym stands for Volatile Organic Compounds.

These are chemical compounds of various kinds (eg carbon and hydrocarbons), characterized by volatility, ie the ability to easily evaporate in the air at room temperature. They can be of natural origin or be generated by chemical synthesis.

The action of sunlight and the contact with other chemical compounds, such as those present in the smog, cause them to dissolve in the environment and produce tropospheric Ozone (O_3).

The latter, in high quantities, can cause damage to human health.

For years we have been carrying out our campaign to protect the environment and operators and we are committed to research for an environmentally sustainable development:

- Full range of detergents with **low environmental impact** and specific for all types of stones and artifacts. Contain highly surfactant **BIODEGRADABLE (over 95%)**
- Our products for cortical consolidation of natural stones and products are all inorganic and free of resins. **They are neither toxic nor harmful**
- Wide range of high-tech protective devices (NANO-TECHNOLOGIES) highly performant, for all types of stone and manufactures. The numerous water based protectors are **environmentally friendly and safe for operators**
- Anti-graffiti removers are proven to be effective, have a **low environmental impact, are biodegradable and safe for operators**

TECHNICAL ASSISTANCE AND TRAINING

We provide our customers with continuous technical assistance (diagnosis, testing, preliminary analysis, etc.) in order to support the professional in all the delicate operating phases according to his specific needs.
At the same time, CIR considers the technical training of its customers and partners as an element of primary importance to assist the correct and effective use of its products from the theoretical principles and in the various practical phases. The CIR training modules, intended for all categories of its interlocutors, are organized and managed with the utmost hospitality and professionalism.

OUR WINNING PHILOSOPHY

PROBLEM FINDING

- Deep understanding of the context of the problem
  (features of support, environment, and architectural context)

- Understanding the causes and effects of the problem
  (origin and type of risk factors, the nature of the harmful effects, the reactions to the environment and external agents)

PROBLEM SOLVING

- Enucleation of ANTIDOTE formulation for the treatment and / or prevention of the identified nature of the problem

- Realization of the correct formulation, always definitely in line with the following features:
  - respect for materials
  - guarantee of effectiveness
  - respect for the environment and the operator
  - Information available to the customer

PRESENTATION OF NEW PRODUCT/SOLUTION

To date CIR offers a solution to the following issues:

- Efflorescences
- Mold, lichens, microalgae and bacteria
- Rising Damp
- Smog
- Graffiti
- Consolidation of materials
- Waterproofing of materials
- Bleaching of lime
- Consolidation of plaster
- Slippery surfaces
- Surfaces to be degreased
- Materials to be renewed
- Cleaning and treatment of tile joints
- Cleaning, treatment and protection of all surfaces made of: cotto, stone, marble, gres, concrete, glass
- Conservative restoration of artistic and architectural materials

COMPLETE CYCLES

For the cleaning, protection and preservation of vertical and horizontal surfaces made of: natural and agglomerated stone, concrete, gres, cotto, ceramic as well as glass, pvc and resin

SOLUTIONS

For the cases protected by the Institutions (Superintendency), for the most delicate restorations, but also for the large construction as well as renovation and restoration sites

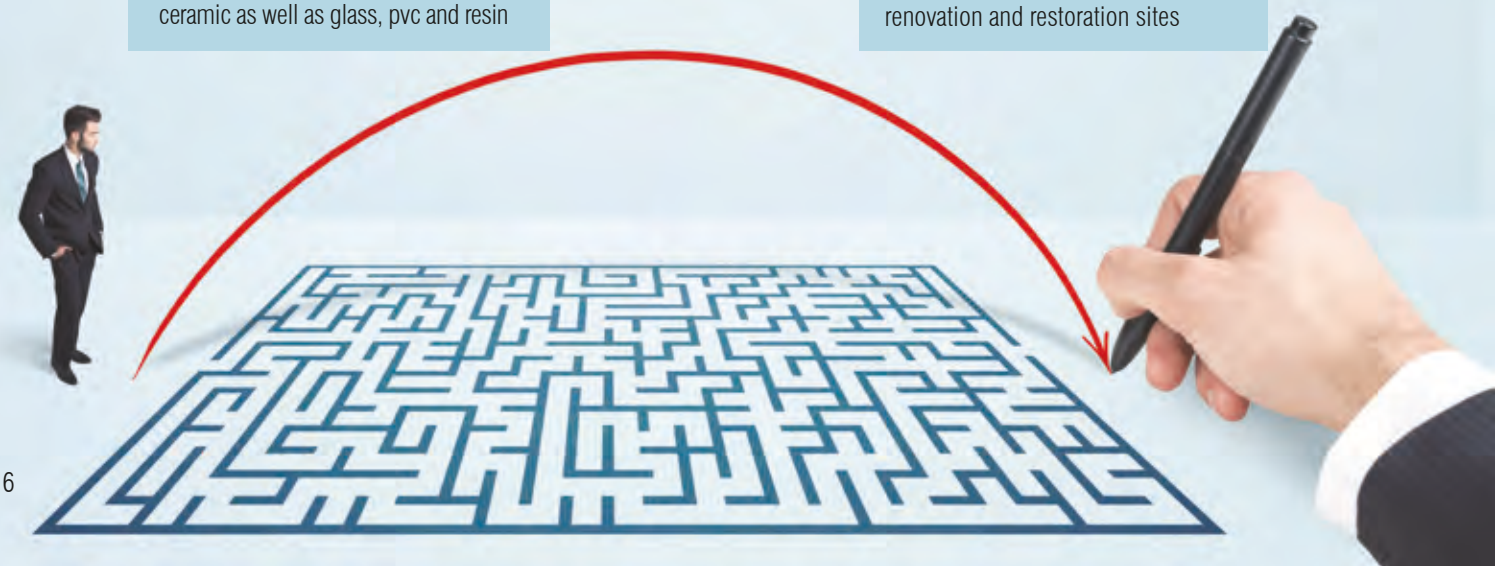
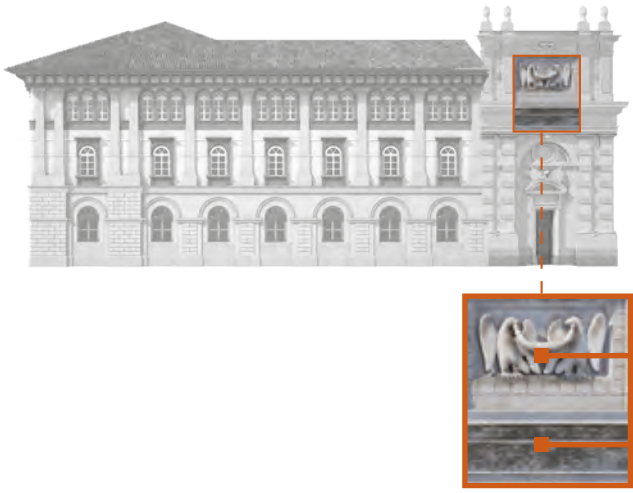


TABLE OF CIR SOLUTIONS

READING LEGENDA



1. **RESTORATION CLEANING**
2. **SOLUTION:**
   - RP 108
   - RP 103
   - BIO C
   - BIO T PLUS
3. solution card on page 34

1. Problems found on facades in construction and restoration

2. List of CIR products that can be used during the resolution of the problem

3. Reference to the relevant detailed sheet of the CIR proposal for a resolutive intervention

1. **CLEANING AND CARE OF THE STONE**
2. **SOLUTION:**
   - CS
   - BASICO
   - ACIDO
   - CIR WAX EASY PLUS
   - CR 7
   - IMPRESTONE
   - IMPRESTONE TONO
   - CIR TONO PLUS
   - IDRO BASE
   - PULI PAV
3. solution card on page 44

1. Types of floorings made of different materials and related intervention problems

2. List of CIR products that can be used in the course of solving the problem

3. Reference to the relevant detailed sheet of the CIR proposal for a resolutive intervention

PRODUCT CATEGORIES

CLEANERS

Our Cleaners are studied in relation to the characteristics of the material to be treated. Cleaning may require the use of products with solvent base, aqueous acid or alkaline PH, based on surfactants.
Although specific and at high cleaning power, they do not alter the color characteristics of the materials, while preserving the natural patina of aging. Their environmental impact is extremely low.
Included in this product category are the Graffiti Removers, specially designed to remove soiling from vandalism.
Our Removers are developed to act effectively on bases of varying porosity. They are eco-friendly and safe for the operator.

CONSOLIDANTS

The range of highly qualified Consolidants is our traditional strength. Our products allow a cortical consolidation; they all have characteristics of high penetration and a remarkable resistance to time. All Consolidants in range have been formulated according to the indications given in the legislation NORMAL.
Once treated with CIR Consolidants, the material becomes one with the treatment that therefore does not create any film on it, leaving unaltered its characteristics of breathability.

PROTECTIVES

We offer our customers a wide range of high-tech Protectives (also in NANO-TECHNOLOGY) at low viscosity and high performance.
Our Protectives, both water-repellent and hydro-oleorepellent, provide high performance durability without altering the characteristics of the support environmentally and fully respecting the operator.
Our Graffiti Protectives are part of this category of products, specially designed for the preventive protection from soiling of vandalism.

DEHUMIDIFYING PRODUCTS

Since years CIR develops high-level partnerships with the best companies in the industry, in order to address all aspects related to the problem of dehumidification of the walls, providing its employees a full range of products and materials to implement dehumidification systems. The CIR proposed system is studied to deal professionally and decisive rising damp problems in the walls and involves the use of a formulation according NANOTECH water, with low viscosity and VOC = 0. Such features ensure high performance and final results, in keeping with the materials, the operators and the enviroment.

PRODUCT LINES

BUILDING
cleaning, consolidation and protecion of facades

FOR BUILDING RENOVATION AND NEW CONSTRUCTION IN- AND OUTDOOR

Over the years we have perfected a complete line dedicated to the needs of professionals in the building industry. It includes cleaners for removing organic and inorganic pollutants, Consolidants and Protectives that ensure durability and reversibility of the cycles proposed in full compliance with current regulations.

RESTORATION
cleaning, consolidation and protecion for conservation

FOR THE RECOVERY AND CONSERVATION IN ANCIENT

We serve those who restructure a series of ready-to-use formulations, produced with raw materials of proven efficacy and in compliance with the UNI-NORMAL. We put at their disposal systems, cycles and intervention techniques, even specifically developed products in case of restoration of antiques, thanks to our in-house laboratory.

FLOORINGS
cleaning, treatment and maintenance

FOR CLEANING AND FOR ALL KIND OF INTERVENTIONON APPLIED SURFACES

We have been facing for many years the problems related to terracotta, stone, concrete and gres floors. The cycles of intervention proposed are designed to be effective, easy to use and long lasting, guaranteeing the value and beauty of the floor. We have formulated products for specific problems, such as the slipperiness, the hydrophobic, stain repellency.

GRAFFITI
removers - protectives

FOR THE PREVENTION AND BEAUTY OF OUR TOWN

We have prepared a complete line of products suitable for the removal and preventive protection from smudges vandalism (graffiti). The products are formulated environmentally and in the respect of the operator, so allowing effective interventions in full safety.

FOCUS
professional and multifunctional products

WHEN THE MARKET CALLS, CIR ANSWERS FOCUSING ON YOUR NEEDS

Latest line proposed by CIR, the FOCUS line. It includes products launched by CIR in response to what was observed on the not-professional market.
Demand for effective products for new materials that professionalism and experience CIR can solve with multifunctional or ready-to-use formulations.
Products which are simple to use, immediately effective, suitable to be placed in the consumer market: concrete answers, apparently elementary, but as a matter of fact, the result of a lot of experience, a lot of effort in Research and Development of formulations that are professional in their composition but at the same time ready to be a daily tool for the cleaning and care of our homes.

SOLUTIONS FOR FACADES

BUILDING
cleaning, consolidation and protecion of facades

GRAFFITI
removers - protectives

RESTORATION
cleaning, consolidation
and protecion for conservation

CONSOLIDATION OF MATERIALS
SOLUTION:
- CONSACRIL SIL A
- CONSACRIL SIL S
- ACQUACONS

solution card
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PROTECTION OF LIME
SOLUTION:
- CALCEFRESH

solution card
on page 30

PROTECTION OF MATERIALS
SOLUTION:
- IDROREPEL
- IDROREPEL TONO
- IDROREPEL ACQUA TONO
- IDROSTOP NEWS

solution card
on page 28

CONSOLIDATION OF PLASTER
SOLUTION:
- CONSACRILIC
- ACQUACONS
- PRIMER FIX

solution card
on page 26

SMOG
SOLUTION:
- RP 103
- RP 102/S
- RP 110
- NO SMOG
- PTO 10

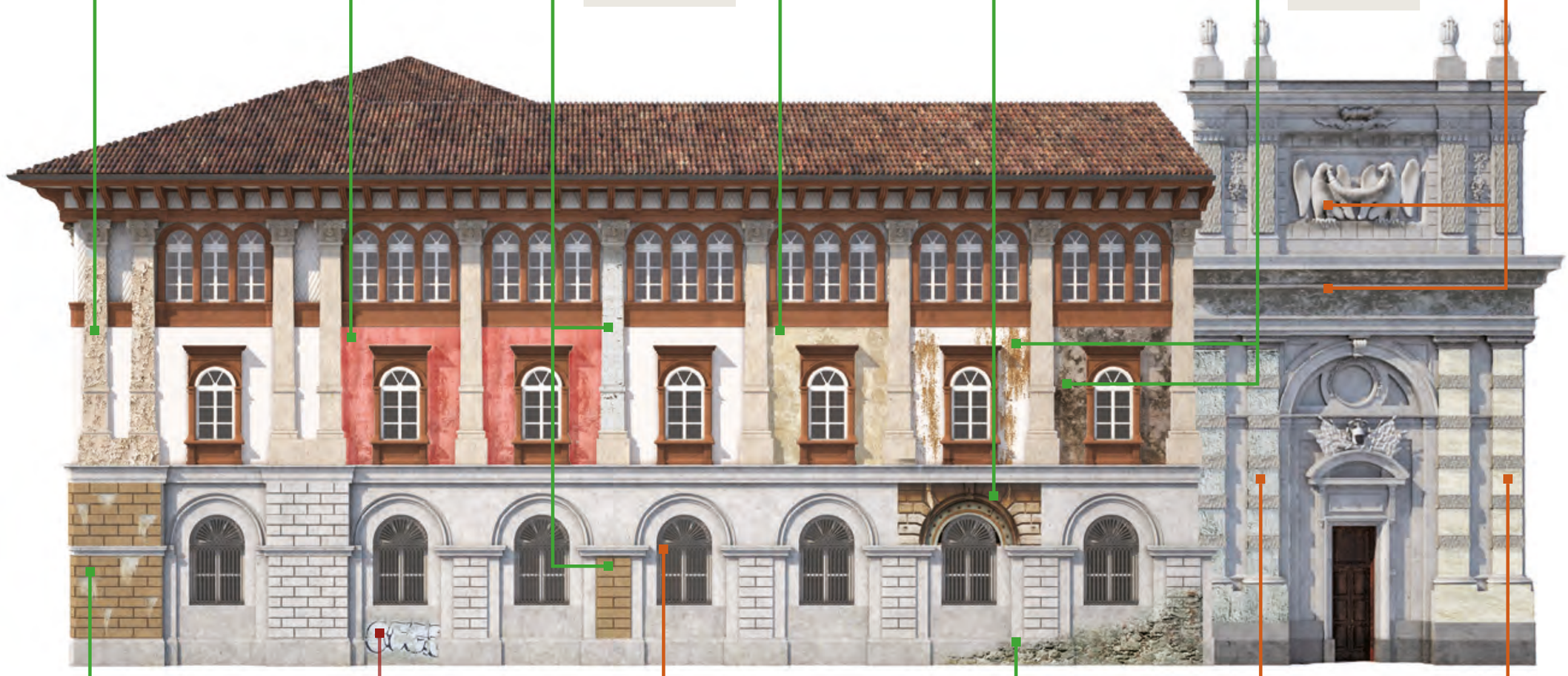
solution card
on page 20

MOLDS, LICHENS AND BACTERIA
SOLUTION:
- BIO C
- BIO T PLUS
- N AG PLUS
- BIO PT 15

solution card
on page 18

RESTORATION AND CLEANING
SOLUTION:
- RP 108
- RP 103
- BIO C
- BIO T PLUS

solution card
on page 34



EFFLORESCENCES
SOLUTION:
- ANTISALIA A
- PULI AC
- TAMPONE ANTISALE

solution card
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GRAFFITI
SOLUTION:
- ECO 7G
- NO OMBRE
- ECO PMC 2000
- ANTIGRAF PERMANENT

solution card
on page 40

RESTORATION AND PROTECTION
SOLUTION:
- CIRLAK

solution card
on page 38

RISING DAMP
SOLUTION:
- BARRIER ACQUA PLUS
- MALTA DEUMIDIFICANTE ANTISALE
- INTONACO POZZOLANICO DEUMDIFICANTE
- STABILITURA SACILE

solution card
on page 32

RESTORATION AND CONSOLIDATION
SOLUTION:
- SILIETILE
- BIO CPA
- BIO R-IPC 30
- CONSOLIDA NANO

solution card
on page 36

RESTORATION AND PROTECTION
SOLUTION:
- BIO PT 15
- IDROSTOP NEW

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on page 38

SOLUTIONS FOR FLOORINGS

FLOORINGS
cleaning, treatment and maintenance

CLEANING AND TREATMENT OF GRES

SOLUTION:
- DOPO POSA
- GRES PROTECTOR
- PAV LUX

solution card on page 48

CLEANING AND TREATMENT OF COTTO

SOLUTION:
- CS
- BASICO
- ACIDO
- CR 7
- CIR WAX (LUX o MATT)
- IDRO PTA
- IDRO PTA TONO
- PULI PAV
- PRATICOT

solution card on page 42

CLEANING AND TREATMENT OF MARBLE

SOLUTION:
- CS
- BASICO
- ACIDO
- CIR WAX (LUX o MATT)
- CRISTALLIZZANTE
- PULI PAV

solution card on page 46

WATERPROOFING OF TERRACES

SOLUTION:
- DOPO POSA
- DEFENDER S
- PULI PAV

solution card on page 54

SLIPPERY FLOORINGS

SOLUTION:
- BASICO
- ACIDO
- ANTISCIVOLO
- PULI PAV

solution card on page 52

CLEANING AND TREATMENT OF CONCRETE

SOLUTION:
- CS
- ACIDO
- BASICO
- STOP CEM
- FINE CEM PLUS
- CIR ULTRA FINISH
- CIR ULTRA FINISH COLORATO
- PULI PAV

solution card on page 50

CLEANING AND TREATMENT OF STONE

SOLUTION:
- CS
- BASICO
- ACIDO
- CIR WAX (LUX o MATT)
- CR 7
- IMPRESTONE
- IMPRESTONE TONO
- CIR TONO PLUS
- IDRO BASE
- PULI PAV
- IDRO PTA
- IDRO PTA TONO

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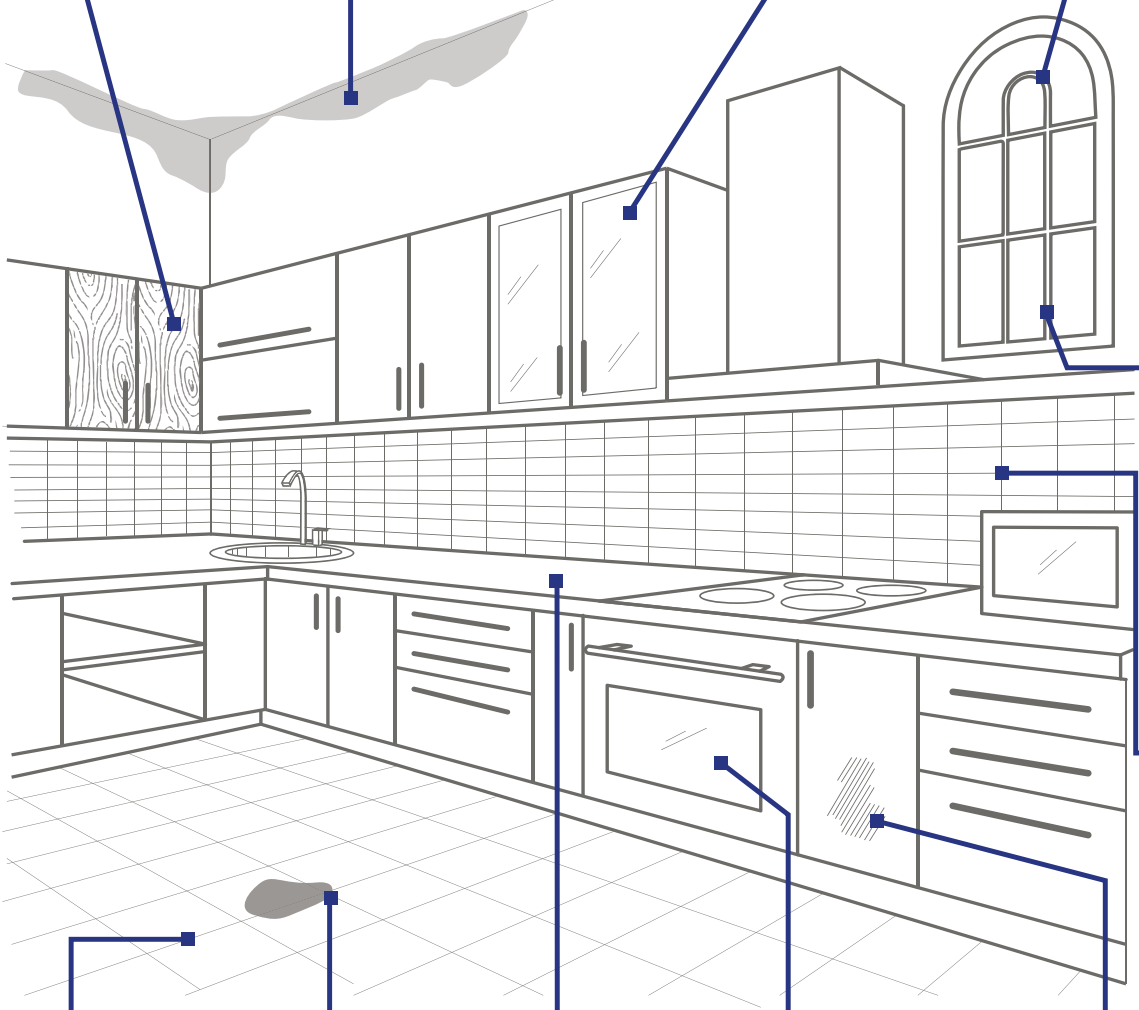
CLEANING AND TREATMENT OF COTTO

SOLUTION:
- CS
- ACIDO
- BASICO
- IDRO BASE
- PTA
- IDRO PTA
- IDRO PTA TONO
- PTA TONO
- CIR TONO PLUS
- PULI PAV

solution card on page 42

SOLUTIONS FOR EVERYDAY LIFE

FOCUS
prodotti professionali
e polifunzionali



CIRWOOD
Neutral detergent for wooden flooring and surfaces.

TOGLIMUFFA
Rapidly removes mould, lichens and microorganisms in general.

ANTIMUFFA
Sanitizing protective, it prevents the growth of moulds.

ADDITIVO ANTIMUFFA
If added to a water-based paint, makes it resistant to growth of mould and algae.

GLASS PROTECTOR
Nanotechnological water and oil-repellent protective for glass surfaces.

CONVERTITORE DI RUGGINE
It converts rust into a stable metal complex (hematite). It can be over painted.

SVERNICIATUTTO
Extra-strong gel, for the removal of paints, varnishes and enamels from walls, plaster and painted metals.

FUGA STOP SPRAY
Water-repellent hydrophobic spray for grouts.

PULIFUGHE
Concentrated acidic grout cleaner for tiled floors.

SMAK SPRAY
Stain remover spray for surfaces and floors.

SALVA CUCINA
Polyurethane monocomponent finishing for kitchen countertops.

TERMINATOR
Universal extrastrong degreaser.

RICREO
Product for renewal and protection of faded or discolored surfaces.

CHIMICA® ITALIANA RESTAURI

CIR SOLUTION SHEETS

MOLDS, ALGAE, BACTERIA

PROBLEM

On the porous surfaces are often present biological manifestations due to living organisms that develop on the surface, after that this has already undergone a degradation process derived from its exposure to the environment.
Agents and pollutants present in the atmosphere, cause an increase in the porosity of the materials, with formation of roughness, cracks, accumulation of dirt and atmospheric particulate.
After this first phase of alteration, some biological form of various organisms can appear: their reproductive spores and seeds can be anchored on surfaces, where they develop and multiply. This phase of their biological cycle induces the phenomena of alteration of the stone surface, transforming simple biological pollutants of the air into “biodeteriogens”. The most common groupings of such biodeteriogens are: **Algae - Lichens - Musks - Molds**.

CAUSE

Among the conditions that favor biodeterioration we can mention: the humidity rate above the norm; the environmental thermohigrometric regime; the formations of mineral salts present in the materials; the nature of some organic substances applied to materials, originally or undergoing restoration.
The phenomenon of aggression and the mechanism of alteration produced by the various organisms are in function of: type of porous material; environmental exposure conditions; state of conservation of the surface (the lack of correct conservative care is evidenced by the presence of biodeteriogens).

SOLUTION

The complete removal of the biodeteriogens present and the sanitization of the surfaces must be carried out. For this type of intervention the need is to apply methods that are effective against biodeteriogens, but at the same time have no interactions with the substrates, such as yellowing, increase in brightness or opacification of the surface. Quaternary ammonium salts are the most widely used products. They constitute a group of very widespread substances in the sector, as they combine a low-level toxicity with a broad spectrum of action, as well as a deep cleaner action. The conservative intervention also includes the measures useful to delay their reappearance, through the use of specific formulations that create conditions on the outer layer of the material that are inhospitable to the growth of micro-organisms.
Requirements necessary in this area of application:

- High efficacy against biodeteriogens
- Absence of interference with the constituent materials
- Low toxicity to human health
- Low risk of environmental pollution

BIO C

STRENGHTS
· Water based
· Broad spectrum of action against biodeteriogens
· Not harmful for the materials
· Ready to use, with correct percentage of active ingredient
· Does not interfere with substrate microorganisms

EXAMPLES OF USE
· Natural stones of any nature
· Face bricks
· Application on painted surfaces

APPLICATION

BIO T PLUS

STRENGHTS
· With dual action, cleaning and prevention
· Water based
· Broad spectrum of action against biodeteriogens
· Not harmful for the materials
· Ready to use, with correct percentage of active ingredient
· Does not interfere with substrate microorganisms
· Prevents the formation of biodeteriogens

EXAMPLES OF USE
· Natural stones of any nature
· Face bricks
· Application on painted surfaces

APPLICATION

BIO PT 15

STRENGHTS
· Solvent based product
· Makes surfaces treated water-repellent
· Does not alter the porosity of the material
· Prevents the formation of biodeteriogens
· Equipped with technical-scientific data sheet

EXAMPLES OF USE
· Porous natural stones of any nature
· Face bricks
· Painted surfaces
· Specific for the treatment of facade materials

APPLICATION

N. AG PLUS

STRENGHTS
· Mineral product based on water
· Nanotechnological product with silver ions
· Does not alter the treated materials
· It actively prevents the formation of microorganisms and bacteria
· Does not change the breathability of materials

EXAMPLES OF USE
· Coatings of any type and grain
· Applicable on finishes for indoor and outdoor
· Specific for the treatment of facade materials

APPLICATION

INTERVENTION CYCLE

- **Application of BIO C and BIO T PLUS on surfaces infested by microorganisms**
- **Wait 24 – 48 hours**
- **Proceed with the removal of microorganisms by brushing or rinsing**
- **To prevent the formation of Biodeteriogens, apply BIO T PLUS again**
- **Then proceed with application of the specific protective or finishing BIO PT 15 or N. AG PLUS**

CIR SOLUTION STRENGHTS

The solution proposed by CIR allows to act on a wide spectrum on microorganisms, in a selective way, without causing damage to the material or interactions with biodeteriogens.
The ready-to-use formulations minimizes the risks of mixing the various active ingredients on site, which would require expert dexterity and specific tools.
The SOLUTION proposed by CIR have the following advantages:

- **RESPECTS THE TREATED MATERIALS**
- **DOES NOT CAUSE COLOR CHANGES OF MICROORGANISMS**
- **IT IS NOT HARMFUL EITHER FOR OPERATORS AND ENVIRONMENT**
- **THEY INTEGRATE WITH EACH OTHER IN ORDER TO ALLOW WIDE-RANGING INTERVENTIONS ON MULTIPLE CASES**

THE TECHNICIAN RECOMMENDS

The cleaning operations to eliminate microorganisms must precede any type of processing or other cleaning; it is important to avoid brushing and sanding before applying the products formulated against biodeteriogens.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

SMOG

PROBLEM

Pollution, and especially particulate matter, is the main cause of deterioration of the construction and finishing elements located in the facades of buildings.
The airborne substances to which the materials are exposed and the climatic conditions, act on the supports modifying their composition. In this case the degradation takes the name of “chemical degradation”.
The most common effects of smog on materials are:
- Formation of Black Crusts
- Surface backwardness (chemical dissolution)
- Crystallization of salts

The level of aggression and the mechanism of alteration due to pollutants, however, vary depending on:
- The exposure of the material
- The chemical nature of the material
- The outdoor environmental conditions

SOLUTION

The first operation to be carried out in the presence of chemical alterations is the complete cleaning of the surface and the removal of smog crusts, if any. For this operation it is possible to intervene with various types of procedures and products: chemical or physical systems.
For the cleaning of materials CIR proposes the use of chemical systems made up of specific cleaners, with variable PH, compatible with the chemical nature of the supports, able to guarantee the respect of the material, of the operator and of the outdoor environment, thanks to the biodegradable surfactants contained within them. Subsequently it will be necessary to proceed with a specific protection and antismog; the particularly active principles contained within the formulations studied by CIR allow to strongly limit the penetration of the smog particles, transported by water and not, inside the porous materials, thus making the surfaces easy to clean.
Requirements necessary in this area of application:
- Effectiveness
- Compatibility
- Low environmental impact
- Long lasting effects

RP 110

STRENGHTS
· Water based
· With biodegradable surfactants
· Specific for calcareous natural stones
· Not harmful for the materials
· Can be diluted in water, in a % based on the dirt and the delicacy of the substrate

EXAMPLES OF USE
· Natural limestone stones:
Lecce Stone – Trani Stone – Carparo – Travertine – Unpolished marbles

APPLICATION

RP 102/S

STRENGHTS
· Water based
· With biodegradable surfactants
· Specific for face bricks
· Not harmful for the materials
· Can be diluted in water, in a % based on the dirt and the delicacy of the substrate

EXAMPLES OF USE
· Products generally resistant to acid products.
Face bricks

APPLICATION

RP 103

STRENGHTS
· Water based
· With biodegradable surfactants
· Specific for soft silicate natural stones
· Not harmful for the materials
· Can be diluted in water, in a % based on the dirt and the delicacy of the substrate

EXAMPLES OF USE
· Natural silicate stones in general:
Sandstone – Pietra Serena – Peperino – Pietra Forte – Campania Tuff – Piperno

APPLICATION

NO SMOG

STRENGHTS
· Water based
· Makes surfaces hydro-oil-repellent
· Does not alter the porosity of the material
· Prevents the formation of black smog crusts
· Equipped with technical-scientific data

EXAMPLES OF USE
· Porous natural stones of any nature
· Face bricks
· Absorbent painted surfaces
· Specific for the treatment of facade materials

APPLICATION

PTO 10

STRENGHTS
· Solvent based product
· Makes surfaces hydro-oil-repellent
· Does not alter the porosity of the material
· Prevents the formation of black smog crusts

EXAMPLES OF USE
· Porous natural stones of any nature
· Face bricks
· Surfaces painted with mineral paints
· Specific for the treatment of facade materials

APPLICATION

INTERVENTION CYCLE

- **Wet the substrate with clean water**
- **Apply the specific “RP” cleaner making it foam**
- **Wait from 5 to 15 minutes**
- **Risciacquare con abbondante acqua a pressione controllata**
- **Then proceed on a dry surface with the application of the specific protective layer NO SMOG o PTO 10**

ADVANTAGES OF CIR SOLUTION

The solution proposed by CIR allows to act on all types of materials used in the facade, removing the smog patinas in a selective way, without causing damage to the material.
The possibility to dilute the cleaners according to the needs, allows to intervene gradually, thus avoiding damaging the materials, keeping the natural aging patina of the supports unaltered.
Furthermore, the anti-smog protectives, in addition to specifically limit the degrading action due to chemical alterations, give the materials a high water-repellent power, necessary to guarantee the total protection of the material.

THE TECHNICIAN RECOMMENDS

During the cleaning phase it is essential to wet the substrate with water, before applying the cleaner, so as to allow the product to act on the smog patina outside the support, limiting its penetration into the porosity of the material.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

EFFLORESCENCES

PROBLEM

The degradation mechanism due to salt efflorescence is a consequence of the crystallization pressure of some salts, which have the characteristic of considerably increasing their volume during the passage to the solid phase, following the evaporation of water; the pressures caused inside the pores are such as to overcome the resistance capacity of the material and the result is the continuous erosion and disintegration of the surface layers of the materials. Several saline compounds can be found, in the form of aqueous solution, inside the walls. Their deposition on the surfaces depends both on the degree of solubility of each compound, and on the greater or smaller quantity of water necessary to solubilize them.
The salts can come from: the ground (especially the Nitrates and the Chlorides); from the deposition of aerosols present in the atmosphere (Chlorides and Sulfates); from the same material used for construction (alkali metal sulfates may be present in bricks, calcium and magnesium sulphates may be present in limestone, etc.); from localized infiltrations.
The growth of crystals of inorganic salts (nitrates, sulphates, sodium chloride, etc.) within the pores of a stone causes fragmentation and in extreme cases, pulverization.
The resistance of porous materials, to the damage caused by salts, depends on the distribution of the size of the pores inside them; it, all other conditions being equal, decreases as the concentration of pores with small dimensions increases.

SOLUTION

The resolutive and conservative intervention of the problem involves the complete removal of the efflorescences present on the surface and, if possible, the extraction of the salts inside the same materials. Furthermore, it is essential to solve the causes that produce the crystallization of salts with targeted and definitive interventions.
In case the problem of salts is mainly caused by the interaction between material and outdoor environment, after the cleaning operations it is necessary to hydrophobize the surfaces concerned in order to keep the salts in solution inside the materials, thus avoiding their crystallization outdoors, so if you are in a situation of thermodynamic stability the damage found will be insignificant.
The products used for the treatment against superficial salt efflorescence must be able to:

- Act on a broad spectrum to eliminate the various types of salt crystals that can be found on materials
- Do not alter the porosity of the supports
- Do not deposit harmful reaction products on materials

PULI AC

STRENGHTS
· Acts on all types of salt
· Surfactant-free product
· Allows rapid rinsing
· Miscela di acidi bilanciata
· Can be diluted in water, in a % based on the dirt present

EXAMPLES OF USE
· Silicate natural stones:
Serizzo – Pietra Serena – Sandstone – Porphyry – Granite
· Face bricks
· Removal of efflorescence from concrete-based plasters
· PH lowering in case of new plasters

APPLICATION

ANTISALI A

STRENGHTS
· Water based product
· Makes the material water-repellent in depth
· Makes the material water-repellent very quickly thanks to the specific reactive siloxanes
· Does not alter the porosity of the material
· Does not interfere with the thermodynamic equilibrium of the material

EXAMPLES OF USE
· Natural silicate stones: Serizzo – Pietra Serena – Sandstone – Porphyry – Granite
· Face bricks
· Before applying concrete mortars fresh on fresh
· It can be coated with lime-leveling with a good adhesive power

APPLICATION

TAMPONE ANTISALE

STRENGHTS
· Free of any binder
· With strong salt extraction power
· Completely free of lime - salts - clinker

EXAMPLES OF USE
· Masonry walls in general:
Stone - Brick - Tuff - Mixed
· For historical recovery interventions

INTERVENTION CYCLE

- **Dry-brushing of surfaces affected by efflorescence**
- **If it is considered necessary the extraction of the salts with TAMPONE ANTISALE**
- **Complete the salts removal with the specific cleaner PULI AC**
- **Apply the specific protective ANTISALI A on a clean and dry surface**

ADVANTAGES OF CIR SOLUTION

The solution proposed by CIR allows to act on all types of salts that can be found on building materials, in a selective way, without causing damage or abrasion on materials.
It also allows to intervene on several levels of deterioration and on various types of material or facade.
The SOLUTION proposed by CIR have the following advantages:

- **IS NOT SUBJECT TO QUICK AGING**
- **HAS A GOOD RESISTANCE TO CLIMATE CONDITIONS**
- **DOES NOT INTERFERE ON THE THERMODYNAMIC PROPERTIES OF THE MATERIALS**
- **IT IS RESPECTFUL OF THE MATERIALS**
- **ACTS ON A WIDE SPECTRUM IN MULTIPLE CASES**

THE TECHNICIAN RECOMMENDS

In order to carry out a resolutive intervention of the problem it is necessary to analyze and solve at the base the causes that lead the salts to come out.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

CONSOLIDATION

PROBLEM

The multiple degrading actions on natural surfaces, caused by chemical or physical alterations or by microorganisms, can cause on the material itself a loss of binder, such as to make the surface weak, crumbling and incompact, with increased porosity and losses of material.
The stone materials are also rigid and fragile, so they are sensitive to outdoor and indoor mechanical stresses (loads, vibrations, frost, crystallization of the salts, thermal expansion).
When this happens, the surface needs a conservative consolidation intervention, as well as initial cleaning and subsequent protection.

SOLUTION

The consolidation of porous materials is intended to interrupt the progress of degradation, returning the lost compactness to the stone or to the artefact.
In conservative interventions of stone materials, the products used for the consolidating treatment must be able to:

- Recreate the continuity between the deteriorated layers and the healthy core of the material
- Improve the resistance to mechanical efforts applied both outside and inside the capillary network
- Ensure the reabsorption of stress strains caused by thermal cycles

ACQUACONS

STRENGHTS

· Water based product
· Mineral product based on silicate lithium
· Non-toxic VOC = 0
· High penetration power
· High consolidating power
· Does not alter the materials

EXAMPLES OF USE

· Concrete-based or lime plasters
· Natural incompact stones: Tuff – Carparo stone – Travertine – Pietra Serena – Sandstones – Marbles – Lecce stone
· Incompact artifacts: Face bricks - Architectural Concrete
· Crumbling mortars and stuccos

APPLICATION

CONSACRIL SIL A

STRENGHTS

· Water based product
· Acryl siloxane product
· Makes the treated surfaces definitely water-repellent
· Does not alter the materials
· Does not create superficial films

EXAMPLES OF USE

· Natural incompact stones: Tuff – Carparo stone – Travertine – Pietra Serena – Sandstones – Marbles – Lecce stone
· Incompact artifacts: Face bricks - Architectural Concrete

APPLICATION

CONSACRIL SIL S

STRENGHTS

· Solvent based product
· Siloxanic acrylic product
· Makes the treated surfaces definitely water-repellent
· Gives the surfaces a pleasant wet effect
· Does not create superficial films

EXAMPLES OF USE

· Natural incompact stones: Tuff – Carparo stone – Travertine – Pietra Serena – Sandstones – Marbles – Lecce stone
· Incompact artifacts: facing bricks - architectural concrete

APPLICATION

INTERVENTION CYCLE

- **Removal of pollutants present on surfaces with a specific CIR cleaner**
- **On a clean and dry surface, carry out the consolidation intervention with the application of one of: ACQUACONS - CONSACRIL SIL A – CONSACRIL SIL S**
- **Evaluate the consolidating effect after a few days and repeat the operation if necessary**
- **Apply the specific CIR protection on a clean and dry surface (pag.28)**

N.B. In the case of consolidation with CONSACRIL SIL A and CONSACRIL SIL S the final protective does not need to be applied.

ADVANTAGES OF CIR SOLUTION

CIR uses molecules that form intermediates as close as possible to the natural binder of the stone. These molecules can be organic or inorganic in nature and present substantial differences between them: water repellence, guaranteed only by organic ones, and chemical affinity with the treated materials.
The SOLUTION proposed by CIR have the following advantages:

- **IT IS NOT SUBJECT TO QUICK AGING**
- **HAS A GOOD RESISTANCE TO CLIMATE CONDITIONS**
- **IT IS COMPATIBLE WITH THE CHEMICAL AND PHYSICAL PROPERTIES OF MATERIALS**
- **GUARANTEES VAPOR PERMEABILITY**
- **DOES NOT CAUSE HARMFUL BY-PRODUCTS**
- **IT IS NON-TOXIC AND ECO FRIENDLY**

THE TECHNICIAN RECOMMENDS

Avoid using unsuitable consolidating products, which can not penetrate and act on the friable layer of the stone, but which on the contrary form a hard layer on the surface, which will soon detach.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

PLASTER CONSOLIDATION

PROBLEM

Mineral surfaces, plasters or finishing, can be powdering and in some cases poor in binder and, therefore, with insufficient mechanical resistance.
These conditions do not allow the subsequent finishing operations to be carried out in a suitable manner as the latter may find a defective adhesion to the underlying support.
The realization of finishes above unsuitable surfaces can lead over time, due to the tensions that are formed between the various layers, to micro-cracks from which the water will trigger its degrading action.
The problem described above also occurs on old paint, aesthetically degraded but still load-bearing, for which it is intended to perform an overlying finishing intervention.

SOLUTION

Through the use of specific consolidants, designed for interventions on mineral substrates such as plaster - plasterboard and gypsum-based surfaces - old paints, the dusting of the surfaces is blocked, restoring compactness and strength to the materials. Furthermore, the consolidants uniform the absorption of the surfaces in order to facilitate the application of subsequent finishing products.
CIR for this problem proposes two products that guarantee high penetration inside the support, thanks to the very small molecular dimensions and the low viscosity, **CONSACRILIC** and **ACQUACONS**, able to consolidate the supports without creating any superficial film. And also a product, **PRIMER FIX**, able to standardize the absorption of the plasters for the subsequent finishes and block the superficial dusting.

ACQUACONS

STRENGHTS
· Water based product
· Mineral product based on silicate lithium
· Non-toxic VOC = 0
· High penetration
· High consolidating power
· Does not alter the materials

EXAMPLES OF USE
· Concrete or lime based crumbling plasters
· Incompact natural stone: Tuff – Carparo – Travertine – Pietra Serena Sandstone – Sandstones in general – Marble – Lecce Stone
· Incompact artifacts: Face bricks – Architectural Elements
· Crumbling mortars and stuccos

APPLICATION

CONSACRILIC

STRENGHTS
· Water based product
· NANOTECHNOLOGICAL product
· Non-toxic VOC = 0
· High penetration
· High consolidating and insulating power
· Absorption can occur uniformly

EXAMPLES OF USE
· Concrete or lime based plasters
· Gypsum based finishing
· Drywall
· Old paintings

APPLICATION

PRIMER FIX

STRENGHTS
· Water based product
· Acrylic base
· Uniform absorption

EXAMPLES OF USE
· Mineral or concrete crumbling plasters
· Well-adhered paints

APPLICATION

INTERVENTION CYCLE

- **Removal of pollutants present on surfaces with a specific CIR cleaner**
- **On a clean and dry surface, perform the consolidation intervention with the application of: CONSACRILIC - ACQUACONS - PRIMER FIX**
- **Evaluate the consolidating effect (after 24 hours for CONSACRILIC - about 4 days for ACQUACONS - 6 hours for PRIMER FIX)**
- **Subsequently proceed with finishing operations**

ADVANTAGES OF CIR SOLUTION

The solutions proposed by CIR guarantee a high consolidating power in the mineral substrates and the total absence of by-products which would damage the finishing after consolidation. Moreover CONSACRILIC and ACQUACONS are formulated with the use of active ingredients with very small molecular dimensions, which allow a high penetration and the absence of superficial films on the supports. The SOLUTION proposed by CIR have the following advantages:

- **IT IS COMPATIBLE WITH THE CHEMICAL AND PHYSICAL PROPERTIES OF MATERIALS**
- **GUARANTEES VAPOR PERMEABILITY**
- **DOES NOT CAUSE DAMAGING BY-PRODUCTS**
- **IT IS NOT TOXIC AND ECO-COMPATIBLE**

THE TECHNICIAN RECOMMENDS

To obtain a good result of consolidation, it is necessary to evaluate the absorption of the material, in order to choose the right dilution of the consolidant and to intervene in depth.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

PROTECTION

PROBLEM

The absorption of water by the porous supports placed on the facade, both as cladding and as a constructive element of the masonry itself, is one of the main causes of their deterioration.
In fact, water acts on materials directly or indirectly and plays a fundamental role in the processes of chemical - physical - biological degradation.
The water we find on the cortical surface can have different origins and presents itself as:
- rainwater (heavy rain, runoff)
- condensation humidity (superficial and interstitial condensation)

SOLUTION

To ensure that the water does not exert its degrading action against porous materials, CIR offers a range of water-repellent protective products that can strongly limit the absorption of water inside the material and the pollutants it contains.
The hydrophobic protective coatings proposed by CIR derive from silicon-based polymers and can be considered as derivatives of monomers having the SiH_4 silane as nomenclature; some of them are produced using the latest technology that allows to obtain active ingredients with NANOMERIC particle diameter.
CIR offers a range of protections that includes both solvent-based and water-based, both neutral and wet looking formulas, so as to be able to cope with the various problems and cases that may arise on site.
The characteristics of the protective devices proposed by CIR are:

- High protective power and durability
- Do not alter the treated material
- Do not change the breathability of the support
- Do not create any superficial film
- High penetration power into the support

IDROREPEL

STRENGHTS
· Solvent based product
· Makes surfaces water-repellent
· Does not alter the porosity of the material
· Does not create superficial films on the material
· Equipped with technical-scientific data sheet

EXAMPLES OF USE
· Porous natural stones of any nature
· Face bricks
· Painted surfaces
· Specific for the treatment of facade materials

APPLICATION

IDROREPEL TONO

STRENGHTS
· Solvent based product
· Makes surfaces water-repellent and with a pleasant wet effect
· Does not alter the porosity of the material
· Does not create superficial films on the material

EXAMPLES OF USE
· Porous natural stones of any nature
· Face bricks
· Specific for the treatment of porous materials placed on the facade

APPLICATION

IDROREPEL ACQUA TONO

STRENGHTS
· Water based product
· Makes surfaces water-repellent and with a pleasant wet effect
· Does not alter the porosity of the material
· Does not create superficial films on the material

EXAMPLES OF USE
· Porous natural stones of any nature
· Face bricks
· Specific for the treatment of porous materials placed on the facade

APPLICATION

IDROSTOP NEW

STRENGHTS
· Water based product
· High penetration product
· Does not alter the porosity of the material
· Does not create superficial films on the material
· Equipped with technical-scientific data sheet

EXAMPLES OF USE
· Porous natural stones of any nature
· Face bricks
· Painted surfaces
· Specific for the treatment of facade materials

APPLICATION

INTERVENTION CYCLE

- **Perform the removal of the pollutants present with a specific cleaner**
- **Proceed, if necessary, with consolidation operations and wait just enough to evaluate the effect**
- **Then, on a clean and dry surface, apply the specific protective products in two hands**

ADVANTAGES OF CIR SOLUTION

The wide range of solutions proposed by CIR allows to strongly limit the absorption of water by the materials, in full respect and without altering the physical and chromatic characteristics.
Moreover CIR solutions guarantee an excellent durability over time to weather changes, thus avoiding the formation of chromatic alterations on the surfaces, common to generic protective films.

THE TECHNICIAN RECOMMENDS

Before carrying out the protective treatment of a surface it is necessary to check each time the absorption of the support, in order to evaluate which product to choose, whether solvent based or water based. Always work on a clean and perfectly dry surface.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

LIME PROTECTION

PROBLEM

The lime-based finishes are of high aesthetic value. At the same time they are extremely delicate and sensitive to the elements and outdoor aggressions, which can alter their color, causing stains and bleaching.
The lime-based finishes and supports, during the hardening phase, carbonate, are very sensitive to water washouts, as they can cause carbonates to escape from the finish, with consequent damage to the pigments and the aesthetic effect .
Moreover, the supports containing lime, have a strongly alkaline pH during their maturation phase; this aspect limits the effectiveness of the protective treatments with the generic formulations, which are carried out in a short time after the laying of the finish, but involves the need to wait for its complete maturation.
The effects of carbonates on lime-based surfaces are:
- Localized spots
- Whitening and washout strips on surfaces
- Crystallization of salts and subsequent physical deterioration of the support

SOLUTION

The solution proposed by CIR allows, through the specific protective, to strongly limit the water absorption by the lime-based support. The protective CALCEFRESH allows to be applied on still fresh surfaces, therefore 24/36 hours after their laying, reducing to a minimum the risks due to outdoor agents.
This solution was made possible by CIR's use of specific alkaline pH-resistant molecules, able to penetrate the finish without being damaged and neutralized by the alkalinity of the substrate while limiting the absorption of water and of the pollutants it has conveyed.
The main features of CALCEFRESH are:
- Resistance to alkaline pH
- Allows the normal carbonation of the substrate without interfering
- Does not create any superficial film
- Hydro-oil-repellent
- Applicable after 24 - 36 hours from the laying of the lime based finishing

CALCEFRESH

STRENGHTS
· Water based product
· Hydro-oil-repellent product
· Does not alter the porosity of the finish
· Resistant to alkaline pH

EXAMPLES OF USE
· Lime-based finishes
· Lime-based leveling mortars
· Lime-based plaster

APPLICATION

INTERVENTION CYCLE

- **Wait 24-36 hours after the application of the lime-based finish**
- **Apply the protective CALCEFRESH in two wet-on-wet hands**
- **Within 24 hours the surfaces will be definitely protected**

ADVANTAGES OF CIR SOLUTION

The solution proposed by CIR makes the treated surfaces water-oil repellent, allowing to limit the possible alterations caused by rainwater, thanks to the short times between the lime-based surface finish and the hydro-oil-repellent protective effect.

THE TECHNICIAN RECOMMENDS

On lime-based finishes, apply the product with a low-pressure regulator. Avoid application on marmoris or compact pressed finishes.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

RISING DAMP

PROBLEM

Rising damp is essentially due to a physical phenomenon of vehiculation, ie the water's ability to penetrate the walls and to rise from the ground upwards through the capillaries present in the materials constituting them; the water goes back to the capillaries, until the forces involved find equilibrium.
The phenomenon of ascent by capillarity manifests itself every time a liquid comes into contact with a small vessel called a capillary. The water is then disposed of through the normal process of evaporation through the surface of the masonry, triggering a process of degradation of the elements that constitute it, causing the following damage:
- Widespread presence of stains and salt efflorescence
- Detachments of the plaster from the masonry

SOLUTION

CIR provides a professional system for creating a chemical barrier, **NANOTECHNOLOGICAL** and hydrophobic.
The realization of the chemical barrier makes it possible to interrupt the ascent of water into themasonry, hydrophobizing the capillaries of the materials making the adhesion forces that cause the ascent null, so as to prevent the rising of the water and with it also the disruptive action of the salts conveyed by the water coming from the ground. Once the chemical cut of the masonry has been carried out, if the surfaces are coated with plaster and not seen, CIR provides a system of plasters based on hydrated lime and natural pozzolans, which guarantee a minimum diffusion by steam and the total compatibility with the chemical barrier made previously.

BARRIER ACQUA PLUS

STRENGHTS
· Water Based
· Nanotechnology
· High penetration
· VOC=0
· Easy to use thanks to the pre-dosed kit

EXAMPLES OF USE
· Walls in natural stone:
Lecce Stone – Trani Stone – Carparo – Travertine – Tuff – Sandstone in general
· Face bricks
· For interventions on buildings of historical interest

MALTA DEUMIDIFICANTE ANTISALE

STRENGHTS
· Based on lime and natural pozzolan
· With strong anti-salt action
· Completely free of lime – salts – clinker
· Extremely high breathability

EXAMPLES OF USE
· Masonry walls in general in:
Stone – Bricks – Tuff (or a mixture of them)
· For indoor or outdoor interventions
· For interventions on buildings of historical interest

INTONACO POZZOLANICO DEUMIDIFICANTE

STRENGHTS
· Based on micronized natural lime and pozzolan
· Siliceous aggregates with a max diameter of 3 mm in a continuous curve
· Completely free of lime – salts – clinker
· Extremely high breathability

EXAMPLES OF USE
· Masonry walls in general: Stone – Bricks – Tuff (or a mixture of them)
· For indoor or outdoor interventions
· For interventions on buildings of historical interest

STABILITURA SACILE

STRENGHTS
· Based on natural lime and pozzolan
· With white sand of selected sacile
· Completely free of lime – salts – clinker
· Extremely high breathability

EXAMPLES OF USE
· Masonry walls in general: Stone – Bricks – Tuff (or a mixture of them)
· For indoor or outdoor interventions
· For interventions on buildings of historical interest

INTERVENTION CYCLE

- **On facing masonry, proceed with the restoration of the stuccos and joints**
- **Perform the chemical cutting on the face wall with BARRIER ACQUA PLUS SYSTEM**
- **Restore the holes drilled for the injection of the BARRIER ACQUA PLUS**
- **Then proceed with the restoration of the plasters with highly breathable materials**

ADVANTAGES OF CIR SOLUTION

The solution proposed by CIR makes it possible to perform effective and resolving dehumidification of the rising dampness problem, on many cases that can be found on site and on many materials constituting the masonry wall. The proposed restoration materials guarantee full compatibility with the chemical cutting operation with Barrier Acqua Plus System, full compliance with the wall and compatibility with the materials of the past.

- **READY TO USE**
- **EASY TO USE**
- **EASY TO BE MONITORED**
- **ECOLOGICAL**
- **NATURAL**
- **RESPECTFUL OF BUILDING MATERIALS**
- **LONG LASTING IN TIME**

THE TECHNICIAN RECOMMENDS

The dehumidification of a building must always include specific measures to solve the problem of humidity at the base, intervening directly on the causes that produce problems, due in most cases to wrong construction techniques. Covering the surfaces only with plasters or repainting the surfaces is equivalent in many cases to hiding the problem and not to solve it.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

CLEANING IN RESTORATION

PROBLEM

The removal of dirt, deposits, patinas and encrustations, consisting of materials unrelated to the stone surface or of the artefact of historical and artistic interest, or products of the original material that are irreversible and harmful for their conservation, may be carried out using mechanical/physical or chemical methods.
The cleaning process must be:
– well controllable in every phase, gradable and selective
– must not produce materials that are harmful for stone conservation (eg: soluble salts)
– it must not produce modifications, such as micro-fractures or strong abrasions on the clean surface, which can accelerate the deterioration due to increased porosity

SOLUTION

CIR offers, for the cleaning of stone surfaces or artefacts of historical and artistic interest, a range of cleaners, with controlled pH, able to guarantee the respect of the material, the operator and the outdoor environment, thanks to the biodegradable surfactants contained in them.
Given the neutral pH of the cleaners, these can also be used with long contact times with the compressing technique, or thickened in the gel phase, working gradually and more controllable.
The cleaners of the restoration range are:

- Effective
- Compatible with stone materials or artefacts of historical and artistic interest
- Low environmental impact

RP 108

STRENGHTS
· Based on water
· With biodegradable surfactants
· Specific for calcareous natural stones
· Not harmful for the materials
· Can be diluted in water based on the dirt and the delicacy of the substrate

EXAMPLES OF USE
· Natural limestone stones:
Lecce Stone - Trani Stone - Carparo - Travertine
- Unpolished marbles

APPLICATION

RP 103

STRENGHTS
· Based on water
· With biodegradable surfactants
· Specific for calcareous natural stones
· Not harmful for the materials
· Can be diluted in water in a % based on the dirt and the delicacy of the substrate

EXAMPLES OF USE
· Natural silicate stones in general:
Pietra Serena – Sandstone - Peperino - Pietra Forte – Campano Tuff

APPLICATION

BIO C

STRENGHTS
· Based on water
· Broad spectrum of action against biodeteriogens
· Not harmful for the materials
· Ready to use, with correct % of active ingredient
· Does not interfere with substrate microorganisms

EXAMPLES OF USE
· Natural stones of any nature
· Face bricks
· Application on painted surface

APPLICATION

BIO T PLUS

STRENGHTS
· With dual action, cleaning and prevention
· Based on water
· Broad spectrum of action against Biodeteriogens
· Not harmful for the materials
· Ready to use, with correct% of active ingredient
· Does not interfere with substrate microorganisms
· Prevents the formation of Biodeteriogens

EXAMPLES OF USE
· Natural stones of any nature
· Face bricks
· Application on painted surfaces

APPLICATION

INTERVENTION CYCLE

- **In the presence of microorganisms, apply the specific BIO C or BIO T PLUS**
- **Wait not less than 24 hours and proceed with the removal of biodeteriogens**
- **Wet the surfaces with clean water**
- **Application of the specific “RP” cleaner making it foam**
- **Leave the product to act for the pre-set time**
- **Rinse with plenty of water**
- **Subsequently proceed with the phases of the conservative intervention**

ADVANTAGES OF CIR SOLUTION

The solution proposed by CIR allows to act on the materials, in a gradual and selective way, without altering the natural aging patina. The neutral pH of cleaners allows to intervene on all types of natural stone, both in calcareous matrix and silicate, as well as on the manufactured articles, so that these do not interact with the materials that make up the surfaces.

THE TECHNICIAN RECOMMENDS

In case of dirt, smog or salt, thick and hard encrustations, it is advisable to drybrush the surface affected by the cleaning with a broom brush, in order to damage the superficial layer of dirt that limits the penetration of cleaners inside them.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

CONSOLIDATION IN RESTORATION

PROBLEM

Consolidation aims to restore to the surfaces the lost compactness and adhesion between the individual layers, significantly increasing their mechanical characteristics, preventing detachments and/or losses of material.
In the restoration sector, the consolidants used must have molecules that form intermediates as close as possible to the natural binder of the stone or of the artifact so as to leave the characteristics of breathability and color unchanged.
These molecules must also have good penetration characteristics, durability and resistance to climatic conditions.

SOLUTION

For this purpose CIR has developed a range of consolidants able to respond in a concrete way to all the requirements indicated in the NORMAL 20/85 recommendations, referring to conservative interventions on stone materials.
These specific products make it possible to intervene on every type of natural stone, both in calcareous and silicate matrix, and on manufactured products, using both raw materials consolidated over time and new generation in NANOTECHNOLOGY, always respecting the following requirements:

- They must not undergo rapid aging processes
- They must have good resistance to weather conditions
- They must be compatible with the chemical and physical properties of the stone
- They must have a coefficient of thermal expansion similar to that of the support
- They must guarantee vapor permeability
- They must not cause harmful by-products
- They must not be toxic

SILETILE

STRENGHTS
· Produced in inert solvent mixture
· Mineral product based on ethyl silicate
· Ready to use
· High penetrating power
· High consolidating power
· Does not alter the materials

EXAMPLES OF USE
· Silicate natural stones:
Tuff – Pietra serena – Sandstones – Beola - Peperino
· Incompact artifacts:
Face bricks – Architectural concrete

APPLICATION

BIO CPA

STRENGHTS
· Produced in inert solvent mixture
· Mineral product based on ethyl silicate
· Concentrated product
· High penetration power
· High consolidating power
· Does not alter the materials
· Prevents the formation of microorganisms
· Equipped with a scientific technical sheet

EXAMPLES OF USE
· Silicate natural stones:
Tuff – Pietra serena – Sandstones – Beola - Peperino
· Incompact artifacts:
Face bricks – Architectural concrete
· Concrete based plasters

APPLICATION

BIO R-IPC 30

STRENGHTS
· Produced in inert solvent mixture
· Mineral product based on ethyl silicate and siloxanes
· Pronto uso
· High penetration power
· High consolidating power
· Does not alter the materials
· Prevents the formation of microorganisms
· Equipped with a scientific technical sheet

EXAMPLES OF USE
· Natural calcareous incompact stones:
Calcareous tuff – Carparo – Travertino – Marbles in general – Lecce stone
· Incompact artifacts: Face bricks

APPLICATION

CONSOLIDA NANO

STRENGHTS
· Water based product
· NANOTECHNOLOGICAL product
· Colloidal silica based product
· Non-toxic VOC = 0
· High penetration power
· High consolidating power

EXAMPLES OF USE
· Concrete-based or lime plasters
· Incompact natural stones: Tufo – Carparo – Travertino – Pietra serena – Sandstone – Marbles in Gender – Lecce stone
· Incompact artifacts: Face bricks – Architectural concrete
· Crumbling mortars and stuccos

APPLICATION

INTERVENTION CYCLE

- **Removal of pollutants present on surfaces with a specific CIR cleaner**
- **On a clean and dry surface, carry out the consolidation operation with the application of SILETILE - BIO CPA - BIO R-IPC 30 - CONSOLIDA NANO**
- **Evaluate the consolidating effect after about 15 - 20 days**
- **Subsequently proceed with finishing operations**

ADVANTAGES OF CIR SOLUTION

The SOLUTION proposed by CIR guarantee a high consolidating power in the mineral substrates and the total absence of harmful by-products respecting all the characteristics required by the NORMAL rules.
Furthermore, the range of CIR consolidants allows to perform the intervention on all types of substrates, even the most difficult ones, such as limestone stones, while maintaining the physical characteristics of the materials unaltered.
The SOLUTION proposed by CIR have the following advantages:

- Compatible with the chemical and physical properties of materials
- They guarantee vapor permeability
- They do not cause harmful by-products

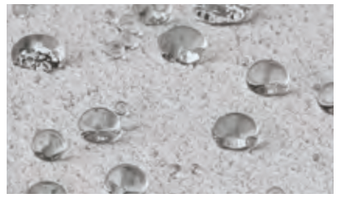
THE TECHNICIAN RECOMMENDS

The consolidating operation must always be carried out on a perfectly dry surface free from both indoor and superficial humidity, as this acts as a catalyst during the chemical reaction of the consolidant and could lead to its undesired superficial crystallization.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

PROTECTION IN RESTORATION

PROBLEM



The absorption of water by the porous supports placed on the facade is one of the main causes of their degradation.
In fact, water acts on the materials directly or indirectly and thus plays a fundamental role in the processes of chemical - physical - biological degradation.
The water present on the cortical surface can have different origins and presents itself as:
- rainwater (heavy rain, runoff)
- condensation humidity (superficial and interstitial condensation)

The water and the polluting agents conveyed by it exert their degrading action also on the metal parts found on the facade, causing oxidation and relative leakage in the areas below.

SOLUTION

Protect the materials by intervening on the outdoor environment, when possible, or with specific chemical protections.
In the last case it is essential to avoid intervening with protective devices that cause the formation of a damaging surface film, which is not vapor permeable; in fact the formation of a condensation due to the humidity that forms under the film is inevitable, which leads to the degradation and possible detachment of the surface layer of the stone.
CIR offers a range of breathable, water-repellent protectives able to strongly limit the absorption of water inside the material and the pollutants it carries.
The characteristics of the protecting devices proposed by CIR are:

- Chemical inertia in relation to the material
- Absence of harmful by-products, even after application
- Good chemical stability compared to pollutants and oxygen
- Good stability to UV radiation
- Low permeability to the absorption of liquid water
- Good water vapor permeability

BIO PT 15

STRENGHTS
· Solvent based product
· Makes the surfaces treated water repellent
· Does not alter the porosity of the material
· Prevents the formation of biodeteriogens
· Equipped with a scientific technical sheet

EXAMPLES OF USE
· Porous natural stones of any nature
· Face bricks
· Painted surfaces
· Specific for the treatment of facade materials

APPLICATION

IDROSTOP NEW

STRENGHTS
· Water based product
· High penetration NANOTECHNOLOGICAL product
· Does not alter the porosity of the material
· Does not create superficial films on the material
· Equipped with technical-scientific data sheet

EXAMPLES OF USE
· Porous natural stones of any nature
· Face bricks
· Painted surfaces
· Specific for the treatment of facade materials

APPLICATION

CIRLAK

STRENGHTS
· Solvent based product
· With corrosion inhibitor for copper and related alloys
· Returns brilliance to the treated material
· Easily reversible

EXAMPLES OF USE
· Metal surfaces of various kinds
· Copper and copper-containing alloys

APPLICATION

INTERVENTION CYCLE

- **Perform the removal of the pollutants present with a specific cleaner**
- **Proceed, as appropriate, with consolidating operations and wait for the time necessary to evaluate the effect**
- **Successivamente, su superficie pulita ed asciutta, applicare in due mani lo specifico protettivo scelto BIO PT 15 – IDROSTOP NEW - CIRLAK**

ADVANTAGES OF CIR SOLUTION

The wide range of SOLUTION proposed by CIR allows to greatly limit the absorption of water by the materials, in full respect and without altering the physical and chromatic characteristics.
Moreover CIR SOLUTION guarantee an excellent seal over time to weather changes, thus avoiding the formation of chromatic alterations on surfaces, a consequence common to generic protective films.
The proposed protectives are equipped by a technical scientific sheet, which certifies the various technical characteristics, through specific laboratory tests.

THE TECHNICIAN RECOMMENDS

Before carrying out the protective treatment of a surface it is necessary to check each time the absorption of the support, in order to evaluate which product to choose, whether solvent based or water based, and to always operate on a clean and perfectly dry surface.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

GRAFFITI

PROBLEM

The varnishes and inks used to make graffiti penetrate into the porosity of the materials, making their subsequent elimination particularly difficult. The main problem for this type of degradation, more and more widespread in the historic centers and in the big cities, turns out to be the cleaning phase of the materials, as this always requires a mechanical action, fundamental to extract the pigment from the internal porosity of the support.
The indiscriminate use of devices able to mechanically clean the vandal contamination, often coincides with an alteration and damage of the material itself, such as effects of corrosion and abrasion much more serious than the present graffiti.

SOLUTION

For this type of problem the first operation to be carried out in the presence of porous material dirty with graffiti, is the removal of vandalism; for this phase CIR has formulated specific removers able to dissolve the pigments of the paints used.
The removers developed by CIR, thanks to their gel phase, allow to act gradually on the support and with long contact times, so as to be able to intervene even on stratified layers over time.
Furthermore, the surfaces exposed to the risk of being soiled must be appropriately protected with specific products able to prevent the varnishes from penetrating into the porosity thanks to the formation of a diaphragm between the material and the outdoor environment.
The requirements for this type of application must be:

- Wide spectrum of action against paints
- Compatibility with the treated materials
- Low toxicity for the operator and the environment
- Respect of the physical and aesthetic characteristics of the treated materials

ECO 7 G

PROPRIETÀ
· Ecological
· Broad spectrum of action against pigments
· Formulated as gel
· Acts slowly on the material
· It does not damage the treated materials

EXAMPLES OF USE
· Natural stones of any nature:
Travertine – Marble – Tuff – Pietra Serena Sandstone and Sandstone in general
· Face bricks – Klinker - Ceramics
· Do not apply on painted surfaces

APPLICATION

NO OMBRE

PROPRIETÀ
· Wide spectrum of action towards pigments
· Formulated as gel
· Acts deep on the material
· Specific to remove persistent halos after applying ECO 7G

EXAMPLES OF USE
· Natural stones of any nature:
Travertine – Marble – Tuff – Pietra Serena Sandstone and Sandstone in general
· Face bricks – Klinker - Ceramics
· Do not apply on painted surfaces

APPLICATION

ECO PMC 2000

STRENGHTS
· Water based product
· Makes the treated surfaces hydro oil repellent
· Anti-adhesive action
· Does not alter the treated materials
· Resists a single CLEANING cycle
· Equipped with a scientific technical sheet

EXAMPLES OF USE
· Natural stones of any nature: Travertine – Marble – Tuff – Pietra Serena Sandstone and Sandstone in general
· Face bricks
· Concrete face view
· Do not apply on painted surfaces

APPLICATION

ANTIGRAF PERMANENT

STRENGHTS
· Water based product
· Makes the treated surfaces hydro oil repellent
· Does not alter the treated materials
· Resists more CLEANING cycles

EXAMPLES OF USE
· Natural stones of any nature: Travertine – Marble – Tuff – Pietra Serena Sandstone and Sandstone in general
· Face bricks – Klinker
· Concrete face view
· Also applicable on painted surfaces

APPLICATION

INTERVENTION CYCLE

- **Spread a few mm thick layer of ECO 7G above the dirt**
- **Wait 30-40 minutes**
- **Rinse the surface with pressurized water**
- **If the halos persist, apply NO OMBRE, leaving it to act for a few minutes and rinsing it as previously done with ECO 7G**
- **Apply the specific ECO PMC 2000 and ANTIGRAF PERMANENT protective coating to the dry surface**

ADVANTAGES OF CIR SOLUTION

The solutions proposed by CIR allow to act on various types of material subject to vandal contamination, both as prevention and as solving treatment, respecting their physical and aesthetic characteristics.
CIR removers are completely eco-friendly and not harmful both for the environment and the operator. They also ensure important advantages during the cleaning phase thanks to the slow evaporation active ingredients of CIR products.
The SOLUTIONS proposed by CIR have the following advantages:

- **RESPECTFUL OF THE TREATED MATERIALS**
- **ECOLOGICAL, RESPECTFUL OF THE ENVIRONMENT AND OF THE OPERATORS**
- **THEY INTEGRATE WITH EACH OTHER IN ORDER TO ALLOW WIDE-RANGING INTERVENTIONS ON MANY CASES**

THE TECHNICIAN RECOMMENDS

During the cleaning and removal of vandal contamination, it is essential to use a pressure-controlled professional vacuum cleaner, in order to combine a dual cleaning action, both physical and chemical.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

COTTO FLOORS

PROBLEM

Cotto is a material that is widely used as a finish for flooring, both indoor and outdoor; the characteristics of the material imply however that this is suitably treated, in order to be able to maintain it over time and easily manage in everyday maintenance. The treatments have undergone important changes over the years, partly due to the ever decreasing number of ar are increasingly easier to use and reversible.

CLEANING

The Cotto cleaning can be done differently, based on the dirt that needs to be removed. Below is a table with the description of the most common types of cleaning.

DEWAXING

- Apply pure **CS**
  Allow it to act for not less than 10 min.
- Pour **BASICO** diluted to 50%.
  Work for a few minutes
  Remove the whole with vacuum cleaner
- Apply **ACIDO** diluted to 10%
  Work it for a few minutes
  Remove the whole with a vacuum cleaner

APPLICATION

NEW FLOORING

- Apply **ACIDO** diluted to 20%.
  Work for a few minutes.
  Remove the whole with vacuum cleaner
- Rinse with clean water.
  Remove the whole with vacuum cleaner

APPLICATION

UNTREATED COTTO

- Pour **BASICO** diluted to 30%.
  Work it for a few minutes.
  Remove the whole with vacuum cleaner
- Apply **ACIDO** diluted to 10%.
  Work for a few minutes.

APPLICATION

SOLUTION FOR INDOOR

The treatment of indoor cotto floors is necessary in order to be able to carry out daily maintenance easily, since the indoor finish, in addition to giving the material a pleasant chromatic effect, creates a surface that allows the rag to slide.

COMPACT COTTO

- Apply **IDRO PTA** or **IDRO PTA TONO** in two wet-on-wet hands. Wait approximately 2 hours
- Apply **CIR WAX (LUX** or **MATT)** in two hands about 1-2 hours apart on a dry surface

APPLICATION

NB. The treatment can be repeated over time, spreading a further hand of **CIR WAX (LUX** or **MATT)**

POROUS OR ARTISAN COTTO

- Apply **CR 7 (LUX** or **MATT)** in two hands about 1 - 2 hours apart

APPLICATION

NB. Highly resistant treatment

SOLUTION FOR OUTDOOR

The treatment of outdoor cotto floors is necessary in order to maintain both the physical and chromatic characteristics of the material.

WATER REPELLENT TREATMENT

- Apply **IDRO BASE** in two hands wet on wet

APPLICATION

STAIN REPELLENT TREATMENT - WET LOOK

- Apply **PTA TONO** or **IDRO PTA TONO** in two hands distant approx 1-2 hours from each other

APPLICATION

STAIN REPELLENT TREATMENT

- Apply **PTA** or **IDRO PTA** in two hands about one to two hours apart

APPLICATION

WATER REPELLENT TREATMENT - WET LOOK

- Apply **CIR TONO PLUS** in two hands distant approx 1-2 hours from each other

APPLICATION

NB. On previously treated floors, we recommend using **PTA**

MAINTENANCE

Proper maintenance of cotto floor, especially for indoor surfaces, makes it possible to keep the treatment intact over the years, without altering it.
The CIR solution foresees the use of neutral pH maintenance cleaners, free from aggressive substances and solvents.
DAILY MAINTENANCE: PULI PAV
EXTRAORDINARY MAINTENANCE: PRATICOT (to be used every 4 months approx.)

ADVANTAGES OF CIR SOLUTION

The solutions proposed by CIR enhance the aesthetics of the treated material, while maintaining its characteristics unchanged; moreover the finishing and treatment products for cotto floors are easy to use and completely reversible.

THE TECHNICIAN RECOMMENDS

Before carrying out a finishing treatment on indoor flooring, it is advisable to always carry out a water absorption test on the flooring in question in order to evaluate the degree of absorbance, and then choose the appropriate treatment.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

STONE FLOORS

PROBLEM

In order to preserve the natural beauty of stone materials, used in flooring, it is necessary to limit the interaction of outdoor pollutants with the material itself, through specific impregnation or finishing treatments.
In this case the treatments used must guarantee a high resistance, as they are called to resist outdoor stresses such as:
irradiation, trampling, grease stains.

CLEANING

The cleaning of stone surfaces must take into account the chemical nature of the stone and this can be done differently, on the basis of the dirt that must be removed, always acting with balanced and suitably diluted products.
Below is a table with the description of the most common types of cleaning.

STONE DEWAXING

- Apply pure **CS**
  Allow it to act for not less than 10 min.
- Pour **BASICO** diluted to 50%
  Work it for a few minutes
  Remove the whole with vacuum cleaner
- Apply **ACIDO** diluted to 5%
  Work it for a few minutes
  Remove the whole with a vacuum cleaner

APPLICATION

NEW FLOORING

- Apply **ACIDO** diluted to 5%
  Work it for a few minutes
  Remove the whole with vacuum cleaner
- Rinse with clean water
  Rimuovere il tutto con aspiraliquidi

APPLICATION

UNTREATED STONE

- Pour **BASICO** diluted to 20%
  Work it for a few minutes
  Remove the whole with vacuum cleaner
- Apply **ACIDO** diluted to 5%
  Work it for a few minutes
  Remove the whole with vacuum cleaner

APPLICATION

SOLUTION FOR INDOOR

The treatment of indoor stone flooring is necessary in order to be able to carry out daily maintenance easily, as well as giving the material a pleasant chromatic effect.

COMPACT STONE

- Apply **CIR WAX (LUX** or **MATT)**
  in two hands approx
  1-2 hours from each other

APPLICATION

NB. The treatment can be repeated over time, spreading a further hand of **CIR WAX (LUX** or **MATT)**

POROUS STONE

- Apply **CR 7 (LUX** or **MATT)**
  in two hands approx
  1-2 hours from each other

APPLICATION

NB. Highly resistant treatment

SOLUTION FOR OUTDOOR

The treatment of outdoor stone floors is necessary in order to maintain the physical and chromatic characteristics of the material.

WATER REPELLENT TREATMENT

- Apply **IDRO BASE**
  in two hands, wet on wet

APPLICATION

STAIN REPELLENT TREATMENT

- Apply **IMPRESTONE** or **IDRO PTA**
  in two hands distant approx
  1-2 hours from each other

APPLICATION

STAIN REPELLENT TREATMENT

- Apply **IMPRESTONE TONO** or **IDRO PTA TONO** in two hands about
  1 - 2 hours apart from each other

APPLICATION

WATER REPELLENT TREATMENT - WET LOOK

- Apply **CIR TONO PLUS**
  in two hands about
  1 - 2 hours apart from each other

APPLICATION

MAINTENANCE

Proper maintenance of stone floors, especially for indoor surfaces, makes it possible to keep the treatment intact over the years, without altering it.
The CIR solution foresees the use of neutral pH maintenance cleaners, free from aggressive substances and solvents.
DAILY MAINTENANCE: PULI PAV
EXTRAORDINARY MAINTENANCE: PRATICOT (to be used every 4 months approx.)

ADVANTAGES OF CIR SOLUTION

The solutions proposed by CIR enhance the aesthetics of the treated material, while maintaining the characteristics of the materials and their natural beauty unaltered.

THE TECHNICIAN RECOMMENDS

Before carrying out a finishing treatment on indoor flooring, it is advisable to always carry out a water absorption test on the flooring in question in order to evaluate the degree of absorbance, and then choose the appropriate treatment.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

MARBLE FLOORS

FLOORINGS
cleaning, treatment and maintenance

PROBLEM

The floors covered in marble are of high beauty and prestige, at the same time however, they are very delicate and require adequate maintenance and surface treatments able to highlight their natural beauty.
The marbles used for flooring, during the construction phase of the slabs, undergo sanding and polishing processes, which highlight the aesthetic effect and at the same time close the surface porosity. The products used for marble surfaces must be compatible with the chemical characteristics of the supports.

CLEANING

The cleaning of the marble surfaces must take into account the delicacy of the material and for this reason it is always necessary to intervene with balanced and suitably diluted products.
Below is a table with the description of the most common types of cleaning.

MARBLE DEWAXING

- Apply pure **CS**
  Allow it to act for not less than 10 min.
- Pour **BASICO** diluted to 5%
  Work it for a few minutes
  Remove the whole with vacuum cleaner
- Rinse with clean water
  Remove the whole with vacuum cleaner

APPLICATION

NEW FLOORING

- Apply **ACIDO** diluted to 5%
  Work it for a few minutes
  Remove the whole with a vacuum cleaner
- Rinse with clean water
  Remove the whole with vacuum cleaner

APPLICATION

UNTREATED MARBLE

- Pour **BASICO** diluted to 5%
  Work it for a few minutes
  Remove the whole with vacuum cleaner
- Rinse with clean water
  Remove the whole with vacuum cleaner

APPLICATION

SOLUTION FOR INDOOR

The treatment of indoor marble floors is necessary in order to carry out daily maintenance easily, as well as giving the material a pleasant chromatic effect.

COMPACT MARBLE

- Apply **CIR WAX (LUX** or **MATT)**
  in two hands about 1 - 2 hours apart from each other

APPLICATION

NB. The treatment can be repeated over time, spreading a further hand of **CIR WAX (LUX** or **MATT)**

POLISHED MARBLE

- Apply **CRISTALLIZZANTE**
  Work the product with single disc machine at 400 rpm and disc with steel wool.

APPLICATION

NB. It is possible to increase the degree of gloss by working the dry surface with a white disc.

SOLUTION FOR OUTDOOR

The treatment of outdoor marble floors is necessary in order to maintain the physical and chromatic characteristics of the material.

STAIN REPELLENT TREATMENT

- Apply **IMPRESTONE**
  in two hands about
  1 - 2 hours apart from each other

APPLICATION

WATER-REPELLENT TREATMENT - WET LOOK

- Apply **CIR TONO PLUS**
  in two hands far apart
  1-2 hours from each other

APPLICATION

MAINTEINANCE

Proper maintenance of marble floors, especially for indoor surfaces, is essential in order to maintain the brilliance of the material.
The CIR solution foresees the use of neutral pH maintenance cleaners, free from aggressive substances and solvents.
DAILY MAINTENANCE: PULI PAV

ADVANTAGES OF CIR SOLUTION

The solutions proposed by CIR enhance the aesthetics of the treated material, while maintaining the characteristics of the materials and their natural beauty unaltered.

THE TECHNICIAN RECOMMENDS

It is advisable to proceed with the cleaning phases of marble floors with low-level cleaners and short contact times, in order not to affect the brightness of the surfaces.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

GRES FLOORS

PROBLEM

The aesthetic effects proposed in the last few years for gres flooring have increasingly highlighted the need to treat surfaces covered with this material, in order to limit dirt retention and facilitate daily maintenance.

CLEANING

For the cleaning of gres floors, CIR offers a specific formulation cleaner, designed to cope with the problems of dirt to which the material is subject, especially following the laying of the floor.

FLOORINGS NEWLY LAYED

- Apply **DOPO POSA** diluted to 25%, work it for a few minutes
- Rinse with clean water
  Remove the whole with vacuum cleaner

APPLICATION

FLOORINGS ALREADY IN PLACE

- Apply **DOPO POSA** diluted to 10%, work it for a few minutes
- Rinse with clean water
  Remove the whole with vacuum cleaner

APPLICATION

SOLUTION FOR INDOOR

The treatment of the indoor gres flooring is necessary in order to carry out daily maintenance easily.

GRES PORCELLANATO

- Apply **GRES PROTECTOR**
  in two hands approx
  15 minutes from each other

APPLICATION

NB. The treatment can be repeated over time, applying a further hand of **GRES PROTECTOR**

SOLUTION FOR OUTDOOR

The treatment of outdoor gres floors is necessary in order to maintain the physical and chromatic characteristics of the material unaltered.

PORCELAIN GRES

- Apply **GRES PROTECTOR**
  in two hands approx
  15 minutes from each other

APPLICATION

NB. The treatment can be repeated over time, applying a further hand of **GRES PROTECTOR**

MAINTENANCE

Correct maintenance of gres floors, especially for indoor surfaces, allows the beauty of the surfaces to remain unaltered.
The CIR solution foresees the use of neutral pH maintenance cleaners, which allow frequent use, so as to maintain the natural shine of the flooring.
DAILY MAINTENANCE: PAV LUX

ADVANTAGES OF CIR SOLUTION

The solutions proposed by CIR enhance the aesthetics of the treated material, while maintaining the characteristics of the materials and their natural beauty unaltered.

THE TECHNICIAN RECOMMENDS

It is advisable to spread the protective by working the surface with rotating movements, taking care not to leave stagnant product on the surface.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

CONCRETE FLOORS

PROBLEM

In order to protect the concrete floors and keep them clean over time, it is necessary to proceed with a treatment of the same, able to limit the porosity and resist outdoor stains and mechanical and chemical stress to which it is subjected: traffic of cars - oil stains - fuels - etc.
In this case the treatments used must guarantee a high resistance, because they are called to resist outdoor stresses such as: UV exposition, foot traffic, grease stains.

CLEANING

The cleaning of concrete surfaces can be done differently, on the basis of the dirt that must be removed, always acting with balanced and suitably diluted products.
Below is a table with the description of the most common types of cleaning.

DEWAXING

- Apply pure **CS**
  Allow it to act for not less than 10 min.
- Pour **BASICO** diluted to 50%
  Work it for a few minutes
  Remove the whole with a vacuum cleaner
- Apply **ACIDO** diluted to 5%
  Work it for a few minutes
  Remove the whole with a vacuum cleaner

APPLICATION

NB. Treatments made with epoxy products must be removed with appropriate mechanical systems

NEW FLOORING

- Apply **ACIDO** diluted to 5%
  Work it for a few minutes
- Rinse with clean water
  Remove with vacuum cleaner

APPLICATION

UNTREATED CONCRETE

- Pour **BASICO** diluted to 20%
  Work it for a few minutes
  Remove the whole with vacuum cleaner

APPLICATION

SOLUTION FOR INDOOR

The treatment of concrete floors is necessary in order to limit the absorption of pollutants into the material and preserve its compactness over time.
CIR proposes two types of treatment, a type composed of single-component systems and another composed of a high-resistance pigmentable bi-component system for floors subject to severe stress.

MONOCOMPONENT TREATMENT

- Apply pure **STOP CEM** in two hands about 1 - 2 hours apart from each other
- Apply pure **FINE CEM PLUS** in one hand without creating superficial stagnation

APPLICATION

NB. The treatment consists of two monocomponent polyurethane products

BI-COMPONENT TREATMENT

- Apply **PROMOCEM** in one hand
- Apply **CIR ULTRA FINISH (LUX – MATT)** in two hands about 1 - 4 hours apart from each other based on the chosen aesthetic effect

APPLICATION

NB. On a quartz/smoothed floor, perform a mechanical preparation of the substrate

COLORED BI-COMPONENT TREATMENT

- Apply **PROMOCEM 9003** in one hand
- Apply **CIR ULTRA FINISH MATT** appropriately colored in two hands, about 1-2 hours apart from each other

APPLICATION

NB. On quartz/smooth floors, perform a mechanical preparation of the substrate

FLOORINGS
cleaning, treatment and maintenance

SOLUTION FOR OUTDOOR

For outdoor floors CIR offers a solution with high resistance both mechanical and UV rays, able to maintain the characteristics of the material over time.

BI-COMPONENT TREATMENT

- Apply **PROMOCEM** in one hand
- Apply **CIR ULTRA FINISH (LUX – MATT)** in two hands about 3 - 4 hours apart from each other.

APPLICATION

NB. On quartz/smooth floors, perform a mechanical preparation of the substrate

COLORED BI-COMPONENT TREATMENT

- Apply **PROMOCEM 9003** in one hand
- Apply **CIR ULTRA FINISH MATT** appropriately colored in two hands, 1-2 hours apart from each other. Available in the pigmented version in 7 different RAL colours.

APPLICATION

NB. On quartz/smooth floors, perform a mechanical preparation of the substrate

MAINTENANCE

The CIR solution foresees the use of neutral pH maintenance cleaners, free of aggressive substances and solvents, which allow the aesthetic effect of the protective treatment to remain unaltered.
On floors treated with CIR ULTRA FINISH it is possible to use more aggressive cleaning agents, without affecting the finishing.
DAILY MAINTENANCE: PULI PAV

ADVANTAGES OF CIR SOLUTION

The solution proposed by CIR allows to perform highly resistant treatments both outdoor and indoor, without being affected by UV rays and therefore without undergoing any chromatic alteration over time.
It should be noted that the CIR ULTRA FINISH product can be pigmented with coloring pastes for water based systems.
Available in the colored version by a pigmentation TONER in 7 RAL colors

STRONG COLOURS:
- YELLOW RAL 1021
- RED RAL 3016
- BLUE RAL 5015

PASTEL COLOURS:
- GREEN RAL 6019
- GRAY RAL 7032
- GRAY RAL 7035
- WHITE RAL 9003

IIn addition, the CIR ULTRA FINISH bi-component system is certified suitable for use in environments subject to H.A.C.C.P.

THE TECHNICIAN RECOMMENDS

Before carrying out a treatment on a concrete floor it is necessary to check the absence of moisture coming from the ground and check the degree of absorption of the flooring.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

SLIPPERY FLOORS

PROBLEM

The floors placed outdoor, or near the entrances of buildings or in places in frequent contact with water, are often slippery and therefore dangerous for those who walk there.
However, it is not always possible to use non-slip ceramic coatings and for this reason the need arises to adapt the existing flooring to the anti-slip parameters that make it safe.

CLEANING

The cleaning the slippery surfaces is necessary in order to remove all the pollutants present and allow the anti-slip treatment to work directly on the material.
Moreover, thanks to the cleaning, the surface is prepared for the treatment by opening the cortical porosity. Below is a table with a description of the types of cleaning.

OLD FLOORING

- Apply **BASICO** diluted to 20%
  Work for a few minutes
  Remove everything with wet vacuum
- Apply **ACIDO** to 50%
  Work for a few minutes
  Remove with a wet vacuum cleaner

APPLICATION

NEW FLOORING

- Apply **ACIDO** to 50%
  Work for a few minutes

APPLICATION

NB. Epoxy treatments must be removed with appropriate physical systems

SOLUTION FOR OUTDOOR AND INDOOR

The ANTISCIVOLO treatment proposed by CIR acts directly on the material, opening the porosity and creating, in contact with water, a set of microsuckers that greatly increase the friction with the material.
The treatment can be done on surfaces in: cotto - polished stone - stoneware - ceramic.

SLIPPERY SURFACE

- Pour evenly **ANTISCIVOLO** pure
  Leave it to act for about 25 minutes
- Remove everything with wet vacuum
  Rinse with clean water

APPLICATION

NB. Verify the treatment action on a wet surface – Highly resistant treatment

FLOORINGS
cleaning, treatment and maintenance

MAINTENANCE

The surfaces treated with ANTISCIVOLO hould remain as clean as possible, in order to prevent that dirt inteferes with the treatment, because of the decreasing of the coefficient of friction.
DAILY MAINTENANCE: PULI PAV

ADVANTAGES OF CIR SOLUTION

The solution proposed by CIR allows to work directly on the material, with longer lasting results and aesthetically less invasive, compared to the black strips glued on the materials usually used as a non-slip solution.

THE TECHNICIAN RECOMMENDS

Before carrying out the treatment on the entire surface, it is advisable to evaluate, through preliminary tests, the correct contact times between the product and the surface, in order to evaluate the final result

NB. For further specifications on how to use our products, refer to the relative technical data sheets

TERRACES WATERPROOFING

FLOORINGS
cleaning, treatment and maintenance

PROBLEM

The lack of maintenance of the buildings necessarily brings out the constructional defects of some parts of them, among which one of the most widespread problems is that of infiltrations into the terraces, which over time lead to real damage to the building element, which in some cases may also lead to detachments of material.

CLEANING

The cleaning of the surfaces to be treated is necessary in order to remove all the pollutants present and allow the anti-slip treatment to work directly on the material.
Below is a table with the description of the most common types of cleaning.

SUPPORT PREPARATION

- Apply **DOPO POSA** diluted to 10-25%
  Work for a few minutes
  Remove everything with wet vacuum
- Rinse with clean water

APPLICATION

NB. The treatment can be repeated over time, spreading a further hand of DOPO POSA

SOLUTION

CIR has studied a specific product, DEFENDER S,able to waterproof the surface, in order to avoid the penetration of water inside it and resist external weathering agents; it ensures high penetration into the materials and can also be used in presence of micro-cracks up to 1 mm wide.

WATERPROOFING TREATMENT

- Apply **DEFENDER S**
  In two hands about 1-2 hours apart from each other

APPLICATION

NB. The treatment can be repeated over time, spreading a further hand of DEFENDER S

MAINTENANCE

A correct maintenance of the flooring, allows to strongly limit the degrading and disruptive actions that external agents exert on the flooring.
The CIR solution foresees the use of neutral pH maintenance cleaners, free from aggressive substances and solvents.
DAILY MAINTENANCE: PULI PAV

ADVANTAGES OF CIR SOLUTION

The solution proposed by CIR, in addition to specifically intervene on the problem of infiltration, protects the material hydrophobizing it in depth, does not create any surface film that can be attacked by external agents and is long lasting.

THE TECHNICIAN RECOMMENDS

It is always advisable to make an assessment of the state of degradation of the joints before proceeding to the treatment of the same.

NB. For further specifications on how to use our products, refer to the relative technical data sheets

EXAMPLE OF SCIENTIFIC TECHNICAL SHEET

SCHEDA TECNICO - SCIENTIFICA

BIO PT 15

DESCRIZIONE:

BIO PT 15 è un protettivo idrorepellente di profondità a base di silossani oligomeri e biocidi antivegetativi veicolati da una miscela inerte di solventi ad evaporazione controllata, specificatamente formulato per il trattamento idrofobizzante di materiali lapidei assorbenti, pietre naturali, manufatti e cementi decorativi.
BIO PT 15 non è filmogeno, raggiunge un elevato grado di penetrazione nel supporto lapideo, creando superfici impermeabili all'acqua piovana e di ruscellamento proteggendolo dagli agenti inquinanti disciolti in essa. La sua componente biocida impedisce la crescita di muschi, alghe, licheni, muffe e di tutti quegli organismi biodeterogeni responsabili del degrado lapideo.
BIO PT 15 permette alle superfici trattate di traspirare non creando barriere al trasporto di vapore acqueo, non modifica l'aspetto cromatico dei supporti lapidei e dimostra un'ottima resistenza agli agenti del degrado ambientale quali i principali inquinanti atmosferici, i raggi UV, etc.
La bassa viscosità ne permette un'ottimà penetrazione nei supporti da trattare.
L'elevata stabilità chimica del principio attivo fondamentale presente in BIO PT 15 garantisce una buona durata del trattamento nel tempo unitamente ad un elevato grado di reversibilità che lo rende idoneo anche al trattamento di superfici monumentali.

CARATTERISTICHE CHIMICO-FISICHE:

NATURA:	miscela di silossani oligomeri e biocidi antivegetativi
MATERIA ATTIVA:	4/6 % circa
RESIDUO SECCO:	1,5-2,5% % circa
DENSITA' A 20°:	0,76 Kg/lt
ASPETTO:	liquido trasparente
SOLVENTE:	ragia minerale

EFFICACIA PROTETTIVA

La valutazione di un prodotto idrorepellente deve essere eseguita determinandone le sue caratteristiche prestazionali in relazione ad ogni materiale lapideo. Un prodotto idoneo per un certo materiale può essere, in effetti, poco efficace per un altro, o, in ogni modo, dimostrarsi inadeguato dopo le prove di durabilità. Per la valutazione dei prodotti sono state eseguite le indagini prescritte dalla Norma UNI 10921:2001 - Beni Culturali – Materiali lapidei naturali e artificiali – Prodotti idrorepellenti: applicazione su provini e determinazione in laboratorio delle loro caratteristiche - nella quale si

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richiamano i seguenti riferimenti normativi:
- UNI 10859: Beni culturali - Materiali lapidei naturali ed artificiali - Determinazione dell'assorbimento d'acqua per capillarità
- NORMAL 7/81: Assorbimento d'acqua per immersione totale - Capacità di imbibizione
- NORMAL 21/85: Permeabilità al vapore d'acqua
- NORMAL 29/88: Misura dell'indice di asciugamento
- UNI 11207:2007: Misura dell'angolo di contatto
- NORMAL 43/93: Misure colorimetriche di superfici opache
- NORMAL 44/93: Assorbimento d'acqua a bassa pressione.

I campioni sono stati trattati secondo le modalità sopra descritte, per sei ore in quanto tale tempo si e' dimostrato il migliore a garantire il massimo rapporto di protezione in funzione della quantità di BIO PT 15 applicato. Tale tipo di trattamento equivale ad una applicazione di protettivo in più mani in modo da raggiungere una completa ed uniforme saturazione del supporto lapideo

RISULTATI SPERIMENTALI

A. COEFFICIENTE ASSORBIMENTO CAPILLARE

L'assorbimento d'acqua per capillarità rappresenta la quantità di acqua assorbita per unità di superficie, in funzione del tempo. Il coefficiente di assorbimento capillare rappresenta la velocità con cui si verifica, da parte dei campioni, il fenomeno dell'assorbimento d'acqua per via capillare. Viene ricavato dalle curve che rappresentano la quantità di acqua assorbita in funzione del tempo prima e dopo il trattamento con BIO PT 15.
La prova è stata eseguita su provini (5 x 5 x 1) di pietra arenaria e calcarea, trattata e non trattata, in contatto con acqua desionizzata, utilizzando il prodotto idrorepellente BIO PT 15.
La prove sono state interrotte a 6 ore (√t = 147) per i provini di pietra non trattata e a 9 ore (√t = 180) per i provini trattati, quando sono state soddisfatte le condizioni della Norma UNI 10859:2000.
Come resoconto della prova si riportano:
una tabella nella quale si riassumono i valori sperimentali di acqua assorbita dopo 2 ore e al tempo finale, l'Indice di assorbimento capillare "IC", l'Indice di assorbimento capillare relativo "IC_{rel}" e il Coefficiente di assorbimento capillare "CA" relativi ai provini non trattati e ai quelli trattai con idrorepellente BIO PT 15, su pietra silicatica.
una tabella nella quale si riassumono i valori sperimentali di acqua assorbita dopo 2 ore e al tempo finale, l'Indice di assorbimento capillare "IC", l'Indica di assorbimento capillare relativo "IC_{rel}" e il Coefficiente di assorbimento capillare "CA" relativi ai provini non trattati e a quelli trattati con idrorepellente BIO PT 15, su pietra calcarea.
un grafico nel quale si riporta la media dei valori sperimentali della quantità di acqua assorbita dai provini di pietrà non trattata e dai provini di pietra trattata con idrorepellente BIO PT 15 (i valori sono stati calcolati facendo una media tra i provini di pietra silicatica e i provini di pietra calcarea).

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D. QUANTITA' DI ACQUA ASSORBITA PER IMMERSIONE TOTALE:

Tale prova evidenzia le differenze in percentuale, prima e dopo il trattamento, di acqua assorbita dai campioni per immersione totale e non per assorbimento capillare.
La prova, eseguita su tre provini di forma cubica di 3 x 3x 3 cm trattati con idrorepellente BIO PT 15 e tre provini simili di pietra non trattata, è stata protratta per 43 ore, tempo al quale la quantità di acqua assorbita in due pesate successive è stata ≤0.1%. Nel resoconto di prova riportiamo i valori della Capacità di Imbibizione "CI", calcolati sia per i provini di pietra silicatica che per quelli di pietra calcarea: essa rappresenta il rapporto tra l'aumento di peso che subisce il provino saturo di acqua ed il suo peso allo stato asciutto, espresso come CI= ΔM/M%. Si riporta inoltre un grafico riassuntivo, il quale mostra i valori medi di acqua assorbita dai provini non trattati (linea blu) e i valori medi di acqua assorbita dai provini trattati con BIO PT 15 (linea rosa), in funzione del tempo trascorso.

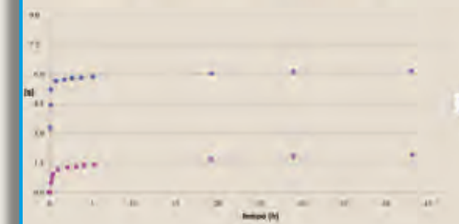
CAPACITA' DI IMBIBIZIONE – PIETRA SILICATICA:

- Trattamento BIO PT 15	CI (ΔM/M%)= 0.553
- Pietra non trattata	CI (ΔM/M%)= 1.922
- Riduzione %	71,24%

CAPACITA' DI IMBIBIZIONE – PIETRA CALCAREA:

- Trattamento BIO PT 15	CI (ΔM/M%)= 3.879
- Pietra non trattata	CI (ΔM/M%)= 10.119
- Riduzione %	67,47%

GRAFICO RIASSUNTIVO: CONFRONTO N.T – PT 15:



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D. QUANTITA' D'ACQUA ASSORBITA A BASSA PRESSIONE:

Per questa prova si adotta la metodologia indicata nella NORMAL 44/93.
Sono stati sottoposti a prova tre provini (5 x 5 x 2) di pietra non trattata e tre provini trattati con idrorepellente BIO PT 15.
La cella usata per la prova ha una sezione di contatto di 7.065 cm^2 e la pipetta graduata ha una capacità di 1 ml, suddiviso in intervalli di 0.01ml.
La prova è stata condotta effettuando una lettura ogni 5 minuti per un'ora.
Il Grado di assorbimento "GA" a 60' viene espresso in ml/cm^2.
Nel resoconto di prova si riportano i valori del Grado di Assorbimento "GA", sia per quanto riguarda i provini di pietra silicatica che quelli di pietra calcarea, prima e dopo il trattamento con BIO PT 15. Si riporta inoltre un grafico riassuntivo che mostra i valori medi di acqua assorbita dai provini non trattati (linea rosa) e i valori medi di acqua assorbita dai provini trattati con BIO PT 15 (linea verde), in funzione del tempo trascorso

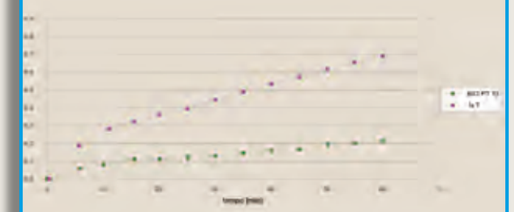
ASSORBIMENTO A BASSA PRESSIONE – PIETRA CALCAREA:

– Pietra non trattata	GA (ml/cm^2) =	1,106
– Trattamento BIO PT 15	GA (ml/cm^2) =	0.298
– Riduzione %	76,45%	

ASSORBIMENTO A BASSA PRESSIONE – PIETRA SILICATICA:

– Pietra non trattata	GA (ml/cm^2) =	0.086
– Trattamento BIO PT 15	GA (ml/cm^2) =	0.017
– Riduzione %	79,78%	

GRAFICO RIASSUNTIVO: CONFRONTO N.T. – BIO PT 15.



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ASSORBIMENTO CAPILLARE - PIETRA SILICATICA:

La tabella riassume la media dei risultati ottenuti dall'analisi dell'assorbimento capillare misurati su un campione di pietra silicatica, prima e dopo il trattamento con BIO PT 15.

Valori	unità di misura	Trattamento	
		BIO PT 15	N.T
Quantità di acqua assorbita a tempi brevi (2 h)	Q [mg/cm²]	30.477	87.863
Quantità di acqua assorbita al tempo finale	Q_{24} [mg/cm²]	49.206	230.448
Indice di assorb. capillare	IC	0.686	0.723
Indice di assorb. capillare relativo	IC_{rel}	0.949	
Coef. di assorbimento capillare	CA [mg/cm² x s$^{-1/2}$]	0.277	1.024

I risultati confermano che **il trattamento con BIO PT 15 aumenta drasticamente le capacità idrorepellenti del substrato lapideo,** impedendo all'acqua di penetrare per capillarità ed esplicando quindi un'ottima azione protettiva.

ASSORBIMENTO CAPILLARE - PIETRA CALCAREA:

La tabella riassume la media dei risultati ottenuti dall'analisi dell'assorbimento capillare misurati su un campione di pietra calcarea, prima e dopo il trattamento con BIO PT 15.

Valori	unità di misura	Trattamento	
		BIO PT 15	N.T
Quantità di acqua assorbita a tempi brevi (2 h)	Q [mg/cm²]	24.741	154.094
Quantità di acqua assorbita al tempo finale	Q_{24} [mg/cm²]	54.928	188.875
Indice di assorb. capillare	IC	0.702	0.898
Indice di assorb. capillare relativo	IC_{rel}	0.782	
Coef. di assorbimento capillare	CA [mg/cm² x s$^{-1/2}$]	0.379	3.845

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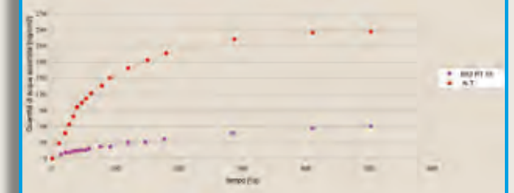
Anche in questo caso, i risultati confermano che **il trattamento con BIO PT 15 aumenta drasticamente le capacità idrorepellenti del substrato lapideo,** impedendo all'acqua di penetrare per capillarità ed esplicando quindi un'ottima azione protettiva.

GRAFICO RIASSUNTIVO: Confronto N.T. – BIO PT 15



B. RAPPORTO DI PROTEZIONE

Rappresenta una misura percentuale del grado di protezione ottenuto dal trattamento in funzione della quantità di protettivo applicato ed e' espresso dal seguente rapporto:

$$E\,\% = \frac{A1 - A2}{A1} \times 100$$

A1= media quantità di acqua assorbita per capillarità prima del trattamento
A2=media quantità d'acqua assorbita per capillarità dopo il trattamento.

A1= (188.879+230.448)/2= 209.663 mg/cm²
A2= (49.206+54.928)/2= 52.067 mg/cm²

E % = 75,1%

I campioni di materiale lapideo sono stati trattati, seguendo le normative già citate, per sei ore; un tempo che sperimentalmente garantiva il massimo della riduzione nell'assorbimento di acqua utilizzando la minima quantità necessaria di BIO PT 15.
L'efficacia protettiva e' risultata prossima al 75 %.
La resa del prodotto, calcolata su pietra serena non degradata, e' risultato pari a 5 ÷ 8 mg/kg di prodotto. Vari test effettuati sullo stesso litotipo degradato hanno evidenziato una resa di circa 3 mg/kg di prodotto a causa dell'aumento della porosità che si verifica nel materiale degradato

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E. PERMEABILITA' AL VAPOR D'ACQUA

Per questa prova è stata applicata la metodologia indicata nella NORMAL 21/85, su provini cilindrici pianparalleli, di diametro 74 mm circa e spessore di 12 mm circa. Le celle di misura sono state poste in un recipiente chiuso, contenente gel di silice.
La prova è stata condotta per complessive 92 ore alla temperatura di 24°C. L'intervallo a flusso costante è stato determinato dalla 44ª alla 92ª ora.
Come risultati di prova vengono riportati i valori medi di permeabilità al vapor d'acqua, espressa in g/m²-24h e riferita a 20°C, sia per quanto riguarda i provini di pietra silicatica che quelli di pietra calcarea, prima e dopo il trattamento con BIO PT 15. Si riporta inoltre un grafico riassuntivo che mostra i valori medi di perdita in peso, dovuta all'evaporazione del vapore acqueo, dei provini non trattati (linea rossa) e dei provini trattati con BIO PT 15 (linea verde), in funzione del tempo trascorso. Più la percentuale della riduzione di permeabilità al vapore acqueo è bassa, più la traspirabilità del supporto rimane alta e quindi il prodotto utilizzato è un buon protettivo.

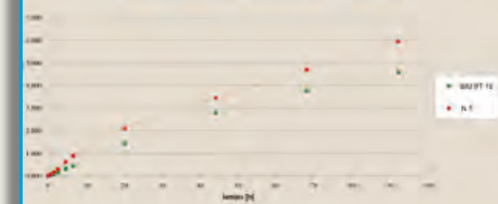
PERMEABILITA' AL VAPOR D'ACQUA – PIETRA CALCAREA:

– Pietra non trattata	ml/cm² = 231.550
– Trattamento BIO PT 15	ml/cm² = 180.817
– Riduzione %	23,85%

PERMEABILITA' AL VAPOR D'ACQUA – PIETRA SILICATICA:

– Pietra non trattata	ml/cm² = 46.486
– Trattamento BIO PT 15	ml/cm² = 31.397
– Riduzione %	31,30%

GRAFICO RIASSUNTIVO: CONFRONTO N.T. – BIO PT 15



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F. QUANTITA' DI ACQUA RILASCIATA PER EVAPORAZIONE

Rappresenta un dato di estrema importanza nella valutazione dell'efficacia protettiva di un prodotto in quanto misura la velocità con cui l'acqua assorbita dal materiale lapideo evapora dal substrato prima e dopo il trattamento, consentendo di effettuare una stima della traspirabilità del protettivo impiegato.
La prova è stata eseguita secondo la metodologia indicata nella NORMAL 29/88, sui provini cubici (3 x 3 x 3 cm) di pietra trattata e non trattata, già sottoposti alla prova di assorbimento d'acqua per immersione totale. L'esperienza è stata protratta per 47 ore quando si sono verificate le condizioni di fine prova richieste.
Il risultato di tale prova viene espresso dall'Indice di Asciugamento.
Nel resoconto di analisi si riporta:
una tabella dove si riassumono i valori sperimentali del contenuto d'acqua residua al tempo relativo e l'indice di asciugamento "IA", per provini non trattati e per quelli trattati con idrorepellente BIO PT 15, su pietra silicatica.
una tabella dove si riassumono i valori sperimentali del contenuto d'acqua residua al tempo relativo e l'indice di asciugamento "IA" per provini non trattati e di quelli trattati con idrorepellente BIO PT 15, su pietra calcarea.
un grafico nel quale si riporta la media dei valori sperimentali della quantità di acqua residua al tempo relativo nei provini di pietra non trattata e in quelli di pietra trattata con idrorepellente BIO PT 15 (i valori sono stati calcolati facendo una media tra i provini di pietra silicatica e i provini di pietra calcarea)

INDICE DI ASCIUGAMENTO – PIETRA CALCAREA:

Valori	unità di misura	Trattamento	
		BIO PT 15	N.T
Contenuto d'acqua iniziale	Q max [%]	4.598	9.387
Tempo finale della prova	[h]	47	47
Indice di asciugamento (drying index)	IA	0.895	1.085

INDICE DI ASCIUGAMENTO – PIETRA SILICATICA:

Valori	unità di misura	Trattamento	
		BIO PT 15	N.T
Contenuto d'acqua iniziale	Q max [%]	0.561	1.412
Tempo finale della prova	[h]	47	47
Indice di asciugamento (drying index)	IA	0.704	0.459

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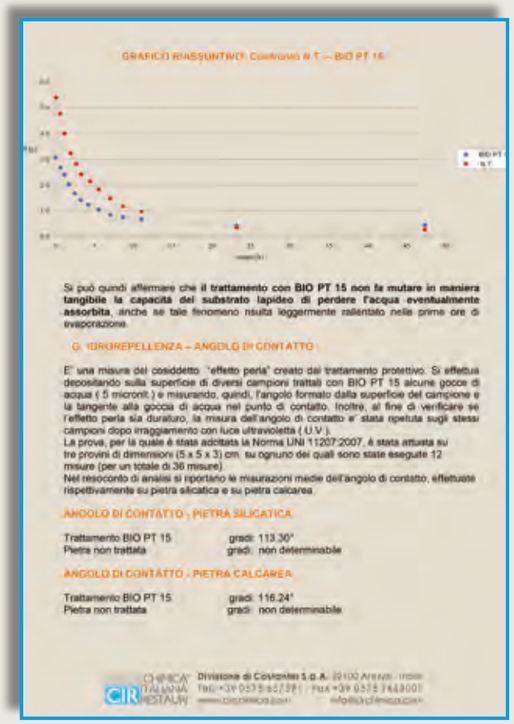


GRAFICO RIASSUNTIVO Confronto W.T. – BIO PT 15

Si può quindi affermare che **il trattamento con BIO PT 15 non fa mutare in maniera tangibile la capacità del substrato lapideo di perdere l'acqua eventualmente assorbita**, anche se tale fenomeno risulta leggermente rallentato nelle prime ore di evaporazione.

G. IDROREPELLENZA – ANGOLO DI CONTATTO :

E' una misura del cosiddetto "effetto perla" creato dal trattamento protettivo. Si effettua depositando sulla superficie di diversi campioni trattati con BIO PT 15 alcune gocce di acqua (5 microlit.) e misurando, quindi, l'angolo formato dalla superficie del campione e la tangente alla goccia di acqua nel punto di contatto. Inoltre, al fine di verificare se l'effetto perla sia duraturo, la misura dell'angolo di contatto e' stata ripetuta sugli stessi campioni dopo irraggiamento con luce ultravioletta (U.V.).
La prova, per la quale è stata adottata la Norma UNI 11207:2007, è stata attuata su tre provini di dimensioni (5 x 5 x 3) cm su ognuno dei quali sono state eseguite 12 misure (per un totale di 36 misure).
Nel resoconto di analisi si riportano le misurazioni medie dell'angolo di contatto, effettuate rispettivamente su pietra silicatica e su pietra calcarea.

ANGOLO DI CONTATTO - PIETRA SILICATICA:

Trattamento BIO PT 15:	gradi: 113.30°
Pietra non trattata:	gradi: non determinabile

ANGOLO DI CONTATTO - PIETRA CALCAREA:

Trattamento BIO PT 15:	gradi: 116.24°
Pietra non trattata:	gradi: non determinabile

Dai risultati sperimentali si può affermare che **il trattamento con BIO PT 15 rende il materiale lapideo idrorepellente ed idrofobo all'acqua rispetto al supporto non trattato. Se i gradi misurati sono >90°, allora la tensione superficiale della goccia è elevata e la bagnabilità ridotta. Il valore dell'angolo di contatto misurato sulla pietra trattata conferma questo comportamento, mentre su pietra non trattata esso non è misurabile, visto che l'acqua viene assorbita dal supporto.**

H. MISURE COLORIMETRICHE:

Le prove, per le quali è stata adottata la metodologia indicata nella NORMAL 43/93, sono state eseguite con un colorimetro MINOLTA CR-21.
Le misure sono state eseguite sulla superfici trattate dei provini espresse secondo i sistemi di riferimento CIE x, y, Y e L*, a*.
Di seguito riportiamo la media delle misurazioni effettuate su tutti i provini, trattati e non, rispettivamente su pietrà silicatica e su pietra calcarea.

VARIAZIONI CROMATICHE - PIETRA SILIQATICA:

Sistema di riferimento CIE:

- Trattamento BIO PT 15:	Y=28.81	x=0.3184	y=0.3280	z=0.3536
- Pietra non trattata:	Y=26.06	x=0.3189	Y=0.3282	z=0.3529
- Variazione %:	Y=-2.61	x=-0.172	y=-0.046	z=-0.198

Sistema di riferimento L*a*b*

- Trattamento BIOPT 15:	L* = 60.59	a* = -1.14	b* = 3.98
- Pietra non trattata:	L* = 60.00	a* = -0.95	b* = 4.04
- Variazione %:	L* = -0.978	a* = -19.92	b* = 1.44

VARIAZIONI CROMATICHE - PIETRA CALCAREA:

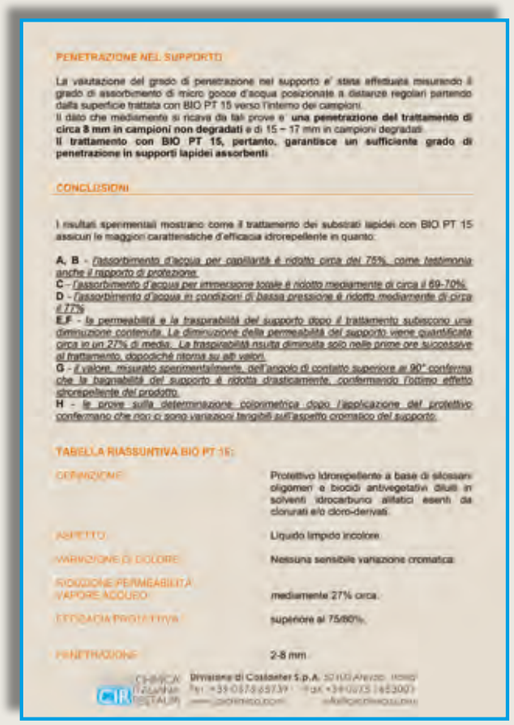
Sistema di riferimento CIE:

- Trattamento BIO PT 15:	Y=46.91	x=0.3626	y=0.3597	z=0.2778
- Pietra non trattata:	Y=47.46	x=0.36.06	Y=0.3591	z=0.2803
- Variazione %:	Y=-1.79	x=-0.554	y=-0.145	z=-0.899

Sistema di riferimento L*a*b*

- Trattamento BIO PT 15:	L* = 74.09	a* = 3.56	b* = 20.54
- Pietra non trattata:	L* = 74.57	a* = 3.05	b* = 20.17
- Variazione %:	L* = 0.644	a* = -17.00	b* = -1.83

Interpretazione dei risultati:
I risultati di tali prove non hanno evidenziato significative variazioni nell'aspetto cromatico dei campioni a seguito del trattamento con BIO PT 15.



PENETRAZIONE NEL SUPPORTO:

La valutazione del grado di penetrazione nel supporto e' stata effettuata misurando il grado di assorbimento di micro gocce d'acqua posizionate a distanze regolari partendo dalla superficie trattata con BIO PT 15 verso l'interno dei campioni.
Il dato che mediamente si ricava da tali prove e' **una penetrazione del trattamento di circa 8 mm in campioni non degradati** e di 15 – 17 mm in campioni degradati.
Il trattamento con BIO PT 15, pertanto, garantisce un sufficiente grado di penetrazione in supporti lapidei assorbenti.

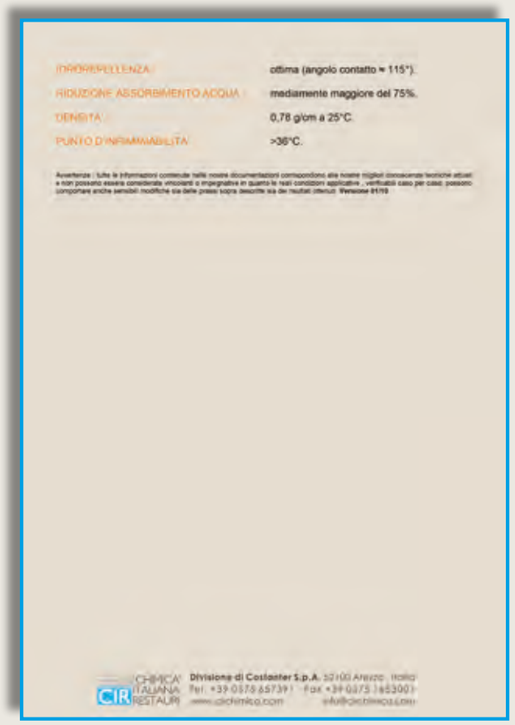
CONCLUSIONI:

I risultati sperimentali mostrano come il trattamento dei substrati lapidei con BIO PT 15 assicuri le maggiori caratteristiche d'efficacia idrorepellente in quanto:

A, B - *l'assorbimento d'acqua per capillarità è ridotto circa del 75%, come testimonia anche il rapporto di protezione.*
C – *l'assorbimento d'acqua per immersione totale è ridotto mediamente di circa il 69-70%.*
D - *l'assorbimento d'acqua in condizioni di bassa pressione è ridotto mediamente di circa il 77%.*
E,F - *la permeabilità e la traspirabilità del supporto dopo il trattamento subiscono una diminuzione contenuta. La diminuzione della permeabilità del supporto viene quantificata circa in un 27% di media. La traspirabilità risulta diminuita solo nelle prime ore successive al trattamento, dopodiché ritorna su ali valori.*
G - *il valore, misurato sperimentalmente, dell'angolo di contatto superiore ai 90° conferma che la bagnabilità del supporto è ridotta drasticamente, confermando l'ottimo effetto idrorepellente del prodotto.*
H – *le prove sulla determinazione colorimetrica dopo l'applicazione del protettivo confermano che non ci sono variazioni tangibili sull'aspetto cromatico del supporto.*

TABELLA RIASSUNTIVA BIO PT 15:

DEFINIZIONE:	Protettivo idrorepellente a base di silossani oligomeri e biocidi antivegetativi diluiti in solventi idrocarburici alifatici esenti da clorurati e/o cloro-derivati.
ASPETTO:	Liquido limpido incolore.
VARIAZIONE DI COLORE:	Nessuna sensibile variazione cromatica.
RIDUZIONE PERMEABILITÀ VAPORE ACQUEO:	mediamente 27% circa.
EFFICACIA PROTETTIVA:	superiore al 75/80%.
PENETRAZIONE:	2-8 mm.



IDROREPELLENZA:	ottima (angolo contatto ≈ 115°).
RIDUZIONE ASSORBIMENTO ACQUA:	mediamente maggiore del 75%.
DENSITÀ:	0,78 g/cm a 25°C.
PUNTO D'INFIAMMABILITÀ:	>36°C.

Avvertenze : tutte le informazioni contenute nella nostra documentazione corrispondono alle nostre migliori conoscenze tecniche attuali e non possono essere considerate vincolanti o impegnative in quanto le reali condizioni applicative , verificabili caso per caso, possono comportare anche sensibili modifiche sia delle prassi sopra descritte sia dei risultati ottenuti. **Versione 01/10**

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