

TECHNICAL DATA SHEET

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LEDAN[®] D2

Injection
Mixture

Excellent penetration, even without preliminary support wetting; easy leakage cleaning, chemical-mechanical compatibility and absence of efflorescences even in very wet environments.

PARTICULAR FEATURES

Excellent penetration, even without preliminary support wetting; easy leakage cleaning, chemical-mechanical compatibility and absence of efflorescences even in very wet environments.

COMPOSITION OF FORMULATION

It is made up of special hydraulic binders (C30) chemically stable and with very low soluble salt contents, very pure quartzes granulometrically impalpable, very fine pozzolana and a special combination of fluidifying, retentive, airing additives. The special formulation, produced in 1/10,000 planetary dispersion for a time under 20 minutes, forms an homogenous pre-mix of a white colour. To the mortar can be added microfibres to improve the mechanical features in special uses.

APPLICATION FIELDS

LEDAN D2 is a formulation extremely versatile. Particularly is used for: consolidation of: brick vaults, mix stony colonnades, archaeological structures, frescoed or scratched masonry structures.

PREPARATION'S INSTRUCTIONS

Knead energetically, for about three minutes, LEDAN D2, with water.

RECOMENDED DOSES

USE	LEDAN D2	WATER
PRE-CONSOLIDATION OF DECOHERER SURFACES	1 Kg	1,6 lt
CONSOLIDATION OF MASONRY STRUCTURES, VAULTS, EXT.	1 Kg	1,6 lt

INSTRUCTIONS FOR USE

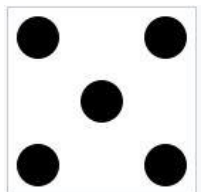
1) Plaster well the product's possible leakage from the masonry support with the appropriate LEDAN STUC FORTE plastering mixture.

2) Carry out puncturing of building in quincunx with punctures' distance not over 50 cm and a deepness equal to 2/3 of the building. Puncture diameter minimum 8 mm.

3) Clean thoroughly the punctures with air.

4) Carry out the injections of LEDAN D2 uninterruptedly.

** If the puncturing and clearing operations are carried out correctly, the LEDAN D2, even without preliminary support wetting and applying a very low pressure, will flow right inside the empty area, spreading uniformly. Whenever this doesn't happen, check again the carried-out punctures' potential receptiveness.*



LIMITS FOR THE USE

LEDAN D3 is lime based mixture, therefore avoid application in periods of extreme cold (with minimum temperatures less than 5° C) or extreme heat (with maximum temperatures over 35° C)

EQUIPMENTS FOR USING

The application of LEDAN D2 can be done with cochlea systems, compression air, pistons, both manual and electrical (Art.:Nr.: 4406 000). It's advised, anyway, the use of equipments that allow to fill the masonry with high quantity of material, without the necessity of pauses for charging.

PHYSICAL - CHEMICAL FEATURES					
SPECIFIC WEIGHT	1,40 Kg/Dm ³	MEDIUM	ADHERENCE	1,4 N/mm ²	EXCELLENT
PLUGSTART	18 HOURS	MEDIUM	EXUDING	NEGLECTIBLE	EXCELLENT
PLUGEND	24 HOURS	MEDIUM	STEAM PERMEABILITY	11 μ	GOOD
WORKABILITY	3 HOUR	MEDIUM	ELASTIC MODULE SEC COMP	11.000 N/mm²	MEDIUM
RESISTENCE TO COMPRESSION	15 N/mm ²	HIGH	WATER RETENTION	>80%	EXCELLENT
RESISTENCE TO BENDING	3,5 N/mm ² (28 gg)	HIGH	SHRINKAGE	5%	EXCELLENT

N.B. The material was characterized bearing in mind its own application modalities. The numerical values refer to averages revealed on laboratory supports reproducing problems inherent in building structures.

EFFLORESCENCE

To evaluate if possible soluble salts present in a mortar may cause undesired chemical and chromatic alteration phenomena, it is possible to carry out a test according to the RAL 544/3 regulations in the laboratory. The formulation LEDAN D2 undergoing such a test does not cause efflorescence phenomena.

EXPERIMENTATIONS CARRIED OUT IN YARDS CHECKED BY THE MINISTRY FOR CULTURAL HERITAGE AND ACTIVITIES

A product to use in the sector of cultural heritage, as well as rigorous laboratory studies, also requires careful checks in yards, aiming to verify real behaviour over time, stability, the absence of direct and indirect negative effects and possible reversibility. LEDAN D2, focused on research promoted and financed by the Ministry for Cultural Heritage and Activities, Supervision of Matera (rocky churches) and Supervision of Southern Etruria (Necropolis of Tarquinia). The application proofs carried out during the research have showed that the material correspond to the requisite - aim and can, for absence of negative effects, be used in interventions of monumental restoration.

DURABILITY

Some LEDAN D2 samples undergoing an accelerated aging cycle, simulating a natural ageing of around 20 years, have demonstrated a performance drop of under 5%.

SPECIFICATION ENTRY

Injections for structural consolidation of decohered masonry, vaults and manufacture also frescoed, carried out using a premix composed by special hydraulics binders (C30) chemically stable and with very low soluble salt content, inert flints and calcareous in combination with hyperfluidifying additives. Because of the application peculiarity the premix must be tested for at least 10 years in research promoted by the BB.AA.CC Ministry. As for the product used, its principal chemical-physical features, the places and date of occurred testing must be declared. The producer must also supply the papers relating to the performed research activity, ratified by the Public Organ responsible for control thereof.

STORAGE

If conserved in a dry place and closed containers the product is conserved for 12 months.

PACKAGES

Buckets of : 15 Kg

CONSORZIO EUROPEO TECNO EDILE TOSCANA
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Premix for structural reinforcement of basically dry masonries

PARTICULAR FEATURES

Premix suitable for consolidating injections of dry masonries, off the ground, without mosaics or frescoes, characterized by a mechanical resistance as good as that of the walls where it is applied. The product offers an excellent steam permeability and a high volumetric stability. LEDAN D3 can be injected without preliminary water saturation of the walls.

COMPOSITION OF THE FORMULA

Made of special portland hydraulic binders at high resistance to sulphates, chemically stable and with a very low content of soluble salts, hydraulic and air-hardening limes, pozzolana, plus a special combination of hyper-fluidifying additives and injecting agents. The special formula, produced in planetary dispersion 1/10.000 for not less than 10 minutes, results in a homogenous grey premix.

FIELDS OF APPLICATION

Cavities filling, structural reinforcement, cracks sealing. To obtain injecting mixtures with customized chemical physical characteristics with the addition of impalpable aggregates. To reinforce large masonries with costs cut.

PREPARATION'S INSTRUCTIONS

LEDAN D3 is a premix ready-to-use with the addition of water only. Mix vigorously LEDAN D3 with low salinity water for about 4 minutes. Inject the product preferably within 30 minutes from the preparation.

RECOMENDED DOSES

USE	LEDAN D3	WATER
STRUCTURAL CONSOLIDATION	10 Kg	16 lt

INSTRUCTIONS FOR USE

- 1) Stop properly the possible spill of the product from the plaster with appropriate LEDAN RALAC grouting mortar.
 - 2) Carry out the drilling of the walls to be reinforced using a drilling grid with a mesh not exceeding 25cm and making holes with a diameter of minimum 15mm.
 - 3) Clean thoroughly the holes with air.
 - 4) Inject with no stop pressure machines.
- If the drilling and cleaning operations are carried out properly, the LEDAN D3, even without preliminary wetting of the wall and the application of a very low pressure, will flow inside the masonry, spreading evenly. In case it doesn't happen, check again the potential receptivity of the holes made.

LIMITS OF USE

LEDAN TC1 is a lime based compound, therefore avoid application in extreme cold conditions (minimum temperature below 5° C) or extremely hot (maximum temperature above 35° C).

● Grouting mortar

● EQUIPMENTS FOR USE

The application of the LEDAN D3 is possible with metering screw, compressed air or pistons systems, both manual or electric. It is anyway suggested to use equipments that allow to let into the masonry a large quantity of product, not requiring charging stops.

PHYSICAL - CHEMICAL FEATURES					
SPECIFIC WEIGHT	0,78 Kg/Dm ³	MEDIUM	ADHESION	0,17 N/mm ²	MEDIUM
INITIAL SETTING	6 HOURS	MEDIUM	EXUDATION	NONE	EXCELLENT
FINAL SETTING	12 HOURS	MEDIUM	STEAM PERMEABILITY	15 μ	GOOD
WORKABILITY	3 HOURS	MEDIUM	ELASTIC MODULE	5.500 N/mm ²	EXCELLENT
COMPRESSION STRENGTH	20 N/mm ²	MEDIUM	WATER RETENTION	>85%	EXCELLENT
BENDING STRENGTH	5,2 N/mm ² (28 gg)	MEDIUM	SHRINKAGE	6%	EXCELLENT

N.B. The mortar was characterised taking into account its own application mode. The numerical values refer to averages detected on media lab reproducing wall structures problems.

● EFFLORESCENCE

To evaluate if any soluble salts contained in a mortar, may cause unwanted phenomena of chemical and chromatic alteration, it is possible to carry out a lab test according to the RAL 544/3 regulation. The LEDAN D3 mortar compound undergoing such a test does not cause efflorescence phenomena.

EXPERIMENTS CARRIED OUT IN BUILDING YARDS UNDER THE "MINISTRY OF HERITAGE AND CULTURAL ACTIVITIES" CONTROL

A product to be used in the cultural heritage sector, not only requires rigorous laboratory studies, but also careful checks in building yards, aiming to verify the effective results on duration and stability, together with the absence of direct and indirect negative effects and possible reversibility.

LEDAN D3 was developed thanks to a research promoted and financed by the Ministry of Heritage and Cultural Activities, Superintendence of Lazio, building yards of the Medieval Walls of Bassiano (Province of Latina). The application tests carried out during the research, have proved that the product comply with the target-requirements and not presenting negative side effects, can be used on monumental restoration.

LEDAN D3 has been used also in the reattachment of the travertine slabs on the walls of the American Embassy in Naples.

● DURABILITY

Some LEDAN D3 samples undergoing an accelerated aging cycle, simulating a natural aging of about 20 years, resulted in a performance downfall below 8%.

SPECIFICATION ENTRY

Injections for consolidation of masonries and filling of cracks with premixed mortar LEDAN D3, made of binders highly resistant to sulphates, pozzolana, hydraulic and air-hardening limes that, together with suitable additives, make it possible to inject it without preliminary water saturation of the walls.

The manufacturer must declare to have used the product also in works where its application was under the control of the Ministry of Heritage and Cultural Activities officials.

● STORAGE

If conserved in a dry place and closed containers the product is conserved for 8 months.

● PACKAGES

Buckets/sacks of 15 kg

TECNO EDILE TOSCANA
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Mixture suitable to the filling up of very large cracks in structural systems.

PARTICULAR FEATURES

Thixotropic pre-mix suitable to carry out the filling up of cracks also deep in masonries and particularly in vaults also frescoed. Cracks width between 15 and 40 mm.

COMPOSITION OF FORMULATION

It is made up of special hydraulic binders (C30), chemically stable and with very low soluble salt contents, pozzolana, calcareous and siliceous inerts and a special combination of fluidifying, retentive and airing additives. The special formulation, produced in 1/10,000 planetary dispersion for a time not under 20 minutes, forms a homogenous pre-mix of white colour.

APPLICATION FIELDS

The product, is used to execute interventions of quick and efficient structural consolidation of cracked manufactures.

Fast initial setting and controlled expansive power

PREPARATION'S INSTRUCTIONS

LEDAN TA3/N is a pre-mix ready for use with the only adding of water.

Fast initial setting, prepare just the amount injectable in 15 minutes.

Knead energetically, for about two minutes, LEDAN TA3 with clean water;

RECOMENDED DOSES

USE	LEDAN TA3	WATER
FILLING OF CRACKS	10 Kg	8 lt
FILLING OF BIG VOIDS	10 Kg	6 lt

INSTRUCTIONS FOR USE

- 1) Firstly drill the holes and remove well friable and incoherent parts.
- 2) If possible wet the surfaces
- 3) Add water to LEDAN TA3, mixing energetically with electrical equipment.
- 4) Inject within 10 minutes.
- 6) Inject "uninterruptedly" to avoid occlusions, by air pistols or by special machine having exit nozzles with diameter not less than 10 mm.

LIMITS FOR THE USE

LEDAN TA3 is lime based mixture, therefore avoid application in periods of extreme cold (with minimum temperatures less than 5° C) or extreme heat (with maximum temperatures over 35°C)

LEDAN TA3/N is applicable by air pistols and equipment at cochlea with continuous alimentation, such as to allow the total filling up of the crack without interruptions.

PHYSICAL - CHEMICAL FEATURES					
SPECIFIC WEIGHT	1,4 Kg/Dm ³	MEDIUM	ADHERENCE	1,9 N/mm ²	GOOD
INITIAL SETTING	1 HOURS	MEDIUM	EXUDATION	NONE	EXCELLENT
FINAL SETTING	2,5 HOURS	MEDIUM	STEAM PERMEABILITY	8 μ	GOOD
WORKABILITY	20 minutes	MEDIUM	ELASTIC MODULE	20 000 N/mm ²	MEDIUM
RESISTENCE TO COMPRESSION	27 N/mm ²	GOOD	WATER RETENTION	>7%	EXCELLENT
RESISTENCE TO BENDING	8 N/mm ² (28 gg)	MEDIUM	SHRINKAGE	1,90 μm	EXCELLENT

N.B. The material was characterized bearing in mind its own application modalities. The numerical values refer to averages revealed on laboratory supports reproducing problems inherent in building structures.

EFFLORESCENCE

To evaluate if possible soluble salts present in a mortar may cause undesired chemical and chromatic alteration phenomena, it is possible to carry out a test according to the RAL 544/3 regulations in the laboratory. The formulation LEDAN TA3/N undergoing such a test does not cause efflorescence phenomena.

EXPERIMENTATIONS CARRIED OUT IN YARDS CHECKED BY THE MINISTRY FOR CULTURAL HERITAGE AND ACTIVITIES

A product to use in the sector of cultural heritage, as well as rigorous laboratory studies, also requires careful checks in yards, aiming to verify real behaviour over time, stability, the absence of direct and indirect negative effects and possible reversibility. LEDAN TA3/N has been developed during a research promoted and financed by the Ministry for Cultural Heritage and Activities. The application tests carried out during the research had shown that the material corresponded to the requisites and can, for absence of negative effects, be used in interventions of monumental restoration.

DURABILITY

Some LEDAN TA3/N samples undergoing an accelerated aging cycle, simulating a natural ageing of around 20 years, have demonstrated a performance drop of under 4%.

SPECIFICATION ENTRY

Injections for re-adherence and filling up of voids in ornamental systems. LEDAN TA3/N is a low specific weight mortar with expansive power and very low soluble salt content. Tests carried out at Domus Aurea in Rome had shown a perfect filling of big voids with reduced weight.

STORAGE

If conserved in a dry place and closed containers the product is conserved for 24 months.

PACKAGES

Buckets of: 15 Kg