### THE NEW DIMENSION OF BUILDINGS 25 YEARS OF CHEMICAL SOLUTIONS







### MADE IN ITALY



PENTACHEM	4
🖗 PLASTERS	10
TILE ADHESIVES	12
HYPERPLASTICIZERS AND SUPERPLASTICIZERS	16
REPAIR AND TECHNICAL MORTARS	20
ACCELERATING AND RETARDING AGENTS	22
DEFOAMERS	26
🔅 WATERPROOFING AGENTS	29
MANTI-SHRINKAGE AGENTS AND FIBERS	32
鯵 AIR ENTRAINING AGENTS	34
CERTIFICATES	35



## 25 YEARS OF FIRST-HAND EXPERIENCE



**Pentachem s.r.l.** is a company located in San Clemente (Rimini, Italy) specialised in the production of chemical additives for mineral binders mixtures such as cement, gypsum, and hydrated lime, additives for every kind of ready-to-use plasters, for smooth finishings, and for cementitious adhesives, and additives for every kind of high resistance mortars for building restoration, and construction.

In addition to all this, **Pentachem** is also a research and innovation center, attentive to the constant changes on the market and always engaged in the study and development of new products and technologies in the field of construction.

**Pentachem** has been founded in **1994** by a group of technicians and by *Renzo Leardini*, an international expert in the world of additives for cement, concrete, and mortars.

Thanks to the sound expertise acquired over the years and to its dynamism, **Pentachem** strengthened under the leadership of specialists with a proven background in the fields of additives for concrete and premixed ready-to-use mortars and established itself internationally.

Today, 25 years after its foundation, the company is present with its products and its chemical and technological knowledge in Russia, with a production plant in Saint Petersburg, in Europe, Middle East, North Africa, and in East Asia. Among its customers, Pentachem boasts both small and medium manufacturers and the most important global players in the construction field.





Pentachem - Italy

01

### WHAT WE OFFER TO OUR CUSTOMER

Pentachem produces chemical additives and offers its customers three main categories of products:

- Raw materials carefully selected and checked.
- Technologies and additives, results of its research and experience.

Customized additives.

02

### HOW WE WORK

Besides offering top quality products, Pentachem works closely with its own customers to resolve their problems and to provide support in all phases of the development of the final product:

- We study and select the quality of the binders and of the mineral aggregates.
- We develop the best granulometry curves.
- We select the most appropriate additive or we customize the product.
- We fine-tune the final product.
- We carry out tests to assess the quality of the final product, both in our laboratory and/or at the customer's plant.

03

### HOW WE FOLLOW OUR CUSTOMERS

Moreover, Pentachem follows its customers also during the post-development phase providing a constant technical support and cooperation for sales:

- We offer the counseling of our specialized technicians.
- We provide the technical training through seminars at the customers' plant.

## FOCUS ON:

## 5 GOOD REASONS TO CHOOSE PENTACHEM

01 Quick solutions

Attention to the environment

4 · · · · · · · · · · · · · · · ·



04

Close touch between technical departments

03 Dynamism





## PARTNER

Year after year, Pentachem has grown and has opened new markets in Italy, Spain, France, Switzerland, Scandinavia, Baltic Republics, Greece, Albania, North Macedonia, Bulgaria, Turkey, Cyprus, Belarus, Russia, Kazakhstan, Georgia, Morocco, Algeria, Tunisia, Libya, Egypt, Nigeria, Lebanon, Palestine, Israel, and China.

*Everything starts from a specific market need:* Pentachem resolves technical problems, develops products, enhances the performances of existing products, and optimizes the formulations. Pentachem is able to follow its customer in all the processing stages.







CARLO LEARDINI SALES MANAGER



RENZO LEARDINI GENERAL MANAGER



DENISE TONI ASSISTANT SALES MANAGER

AND BACK OFFICE



### UMBERTO GUZZARDI ASSISANT

ASSISANT SALES MANAGER





### MONICA BACCHINI ADMINISTRATIVE AREA



### MANUELA ANDRUCCIOLI

ADMINISTRATIVE AREA



### ROBERTO CIALOTTI

HEAD OF PRODUCTION





### CLAUDIO FRULLI TECHNICAL MANAGER





























In order to prepare easy-to-apply, high quality plasters, **Pentachem** offers its customers not only chemical raw materials but also *"solution additives"*, which, in one single product, include all the well-tuned raw materials, necessary to give plaster all the demanded features.

The series **Pentagel** is the result of a ten-year research, which we carried out focusing on the choice of the best raw materials to produce additives stable in time and efficient in every situation.

### THE ADVANTAGES OF THE USE OF <u>PENTAGEL</u> ADDITIVES IN PREMIXED PLASTERS ARE:

- Better thixotropy.
- 🛯 🏼 🖉 Better adhesion.
- 🕷 Easy levelling.
- Easy application.
- Less waste.
- Elimination of problems related to cracking and segregation.

ADDITIVES FOR PLASTERS	PENTAMIX ADX 115	PENTAMIX AER 205	PENTAGEL GRS 25	PENTAGEL IGM 806 sr	PENTAGEL RS 612/M	PENTAGEL RS 619	PENTAGEL I 100 N/ M	PENTAGEL I 150	PENTAGEL I 133
NATURE	r.m	r.m	s.a.	s.a.	s.a.	s.a.	s.a.	s.a.	s.a.
CHARACTERISTICS (min=1 max=4)									
Workability	4	4	4	3	4	4	3	3	3
Water retention	1	2	4	3	4	3	3	2	3
Porosity	2	4	1	3	1	1	3	4	2
Thixotrophy	4	3	4	4	2	2	4	3	4
CEMENT-BASED PLASTERS							3		
Plaster by hand / machine									
Dehumidifying plaster									
Skim finishing									
Finishing decorative plaster ≤ 0.8 mm					$\bigcirc$		$\bigcirc$		
Thermal plaster							$\Diamond$		
GYPSUM-BASED PLASTERS						-		-	
Skim coat									
Plaster by hand / machine									
NHL-BASED PLASTERS									
Plaster by hand / machine									
Finishing decorative plaster ≤ 0.8mm					$\Diamond$				
Putty						$\bigcirc$			
POLYMER-BASED									
Finishing decorative plaster	$\bigcirc$	$\Diamond$							



r. m. = raw material

s.a. = solution additive







**Premixed cementitious adhesives** are high-tech products that in the last years have become the object of many studies and researches seen that the necessity and the sensibility of customers have greatly changed.

In particular, some special applications that only yesterday were unimaginable, such as vertical application of large formats and application on water-resistant surfaces, have now become a necessity.

**Pentachem** keeps up with the times and it is always ready to take up the challenges from the market and to conform to increasingly demanding norms.

The table here below shows the classification methods of tile adhesives according to European Standard EN 12004.

///	TILE ADHESIVES Resistance to initial adhesion $\ge$ 0,5 N/mm <sup>2</sup> and resistance to adhesion after 20' $\ge$ 0,5 N/mm <sup>2</sup>	<b>C1</b>
1	TILE ADHESIVES Resistance to initial adhesion $\ge$ 1,0 N/mm <sup>2</sup> and resistance to adhesion after 20' $\ge$ 0,5 N/mm <sup>2</sup>	<b>C2</b>
<i>(11)</i>	FAST SETTING Resistance to adhesion after 24h $\geq$ 0,5 N/mm <sup>2</sup> and resistance to adhesion after 10' $\geq$ 0,5 N/mm <sup>2</sup>	F
1	VERTICAL SLIP ≤ 0,5 mm	Т
111	EXTENDED OPEN TIMES Resistance to adhesion after $30' \ge 0.5 \text{ N/mm}^2$	Ε
1	Transverse DEFORMATION $\ge$ 2,5 mm e < 5 mm	<b>S1</b>
1	High transverse DEFORMATION ≥ 5 mm	<b>S2</b>

ADDITIVES FOR TILE ADHESIVES AND TILE GROUT	PENTARAPID CF	<b>PENTARESIN P3</b>	PENTA EC 4111	PENTA EC 42	PENTAMIX APL	PENTAMIX APL 14	PENTAMIX FUG
NATURE	calcium f.	RPP	cellu	ulose	anti	-film	RPP/DS*
	r.m	r.m	s.a.	s.a.	s.a.	s.a.	s.a.
CHARACTERISTICS (min=1 max=4)							
Thixotropy	1	4	4	3	1	1	2
Open time	1	2	4	4	2	4	3
Tensile adhesion strength	3	4	4	4	2	4	2
CLASSES							
C1	$\bigcirc$		$\bigcirc$				
C1T	$\bigcirc$		$\bigcirc$				
C 2			$\mathbf{\hat{\mathbf{O}}}$				
С 2 Т			$\bigcirc$				
C 2 E							
C 2 TE							
C 1 F				$\bigcirc$			
C 1 FT				$\bigcirc$			
C 2 F				$\bigcirc$			
C 2 FT				$\bigcirc$			
C 2 FE				$\bigcirc$			
C 2 TE S1				$\mathbf{\hat{\mathbf{O}}}$			
C 2 TE S2				$\bigcirc$			
Tile grout							

= suggested
= recommended

r. m. = raw material s.a. = solution additive

\* sulfonic dispersant







## PENTAMIX APL PENTAMIX APL 14

**Pentamix APL** and **Pentamix APL 14** are two products born from the research and the technology of **Pentachem**. They work on the development and the features of the film and on the features of the binders responsible of its development.

Thanks to their composition, they lengthen the formation time of the film and reduce its thickness. Thus, the contact surface between the tile adhesive and the cement increases and the cement can develop stronger resistances.



Effects of <u>PENTAMIX APL 14</u> on the adhesion strengths in a tile adhesive with <u>PENTA EC 4111</u>













**Pentachem** offers its customers a wide range of products, from plasticizers to last generation super and hyperplasticizers.

This great variety allows **Pentachem** to exploit all the different technical features of each product and to propose the best additive for the raw material the customer uses.



HYPER AND SUPER PLASTICIZERS	PENTAFLOW PC 5	PENTAFLOW AC 6 *	PENTAFLOW AC7 *	PENTAFLOW MP	PENTAFLOW TW	PENTAFLOW PC 811**	PENTAFLOW PC 815** (slurry)	PENTAFLOW SA.2	PENTAFLOW AU.1	PENTAFLOW AN/T	PENTAFLOW AN/G
	PC	PC	PC	ME	NS	PC	PC	PC	ME	ME	PC
NATURE	m.p.	m.p.	m.p.	m.p.	m.p.	m.p.	m.p.	s.a.	s.a.	s.a.	s.a.
		P	<sup>o</sup> C-polyca	iboxylate	e ME-me	elamine	NS-napl	hthalene	sulfonat	e	
CHARACTERISTICS (min=1 max=4)				1	1						
Flow	4	4	3	3	3	4	3	4	4	3	4
Anti-bleeding effect	1	1	3	4	3	1	1	4	3	4	4
Defoaming effect	1	1	2	3	2	2	1	4	4	4	4
Mechanical strenghts	4	4	3	4	2	2	3	3	4	3	2
SELF-LEVELING											
Low thickness (internal use)								$\bigcirc$			
Low thickness (external use)		$\bigcirc$	$\bigcirc$	$\bigcirc$				$\Diamond$			
High thickness (anhydrite gypsum based)										٠	
High thickness (hemyhydrated gypsum based)											•
Industrial				$\Diamond$							
Middle thickness ≤ 3 cm				$\Diamond$	$\Diamond$			$\Diamond$	$\Diamond$		
High thickness				$\bigcirc$							
High thickness with lightweight aggregates or air bubbles	٠	٠					$\Diamond$				
FLUID MORTARS FOR HORIZONTAL	SURF	ACES									
Anchoring mortars				$\Box$							
Injectable mortars											



= recommended

\_

Portland cement Gypsum

Binary / ternary binder mix

r. m. = raw material

s.a. = solution additive

\* Only for extra EU markets \*\* The product is not available in the following Countries (check next page)



## PENTAFLOW PC 5 PENTAFLOW AC 6 PENTAFLOW AC 7

They are last generation polycarboxylate hyper-plasticizers, with a percentage of active material greater than 95%. The particular molecule and the fineness of the fraction allow the additive to melt quickly and to provide an immediate plasticizing effect. The additives are particularly suitable for cementitious mixtures

Pentaflow AC 6 and Pentaflow AC 7 are last generation hyperplasticizers with a high dispersing action of their components. Pentaflow AC 7 has also a high thermal stability that allows the product keeping its features also in very hot environments.



Strength resistances of a standard mortar at the same flow





## PENTAFLOW PC 811 PENTAFLOW PC 815

They are two superplasticizers based on polycarboxylate and micro silicate with an anti-sedimentation effect, mainly recommended for industrial floorings and surfaces subject to heavy traffic.

Pentaflow PC 811 is a product in powder form, while Pentaflow PC 815 is a slurry.

THESE TWO PRODUCTS ARE NOT AVAILABLE IN THE FOLLOWING COUNTRIES:







### **REPAIR MORTARS**

To repair damaged concrete, **Pentachem** offers its customers additives for all the phases of the rehabilitation cycle, starting from the cleaning of the rusted iron to the application of the thixo-tropic mortar.

Cleaning and rehabilitation of the rusted irons with **Oxifer Gel** 



Treatment of the irons with Antiox L 30 or with a passivating grout with Pentamix FER 2



Thixotropic mortar formulated with **Pentamix IT.1** 

### **TECHNICAL MORTARS**

Technical mortars are all those mortars with special technical and structural characteristics with high mechanical strengths.

Among them, we can list:

Anchoring mortars for poles, pillars, and machine tools.

Injection mortars for the protection of cables and the consolidation of the soil.

Thixotropic mortars for the repair and restoration of damaged concrete.

Solution Supports of the elimination of the problem of humidity on supports affected by rising damp.

For all these products, **Pentachem** offers well-tuned solution additives to create an effective and long- lasting product.

ADDITIVES FOR REPAIR AND TECHNICAL MORTARS	OXIFER GEL	ANTIOX L 30	PENTAMIX FER 2	PENTAMIX IT.1	PENTAMIX N	PENTAMIX OS.10
NATURE	s.a.	s.a.	s.a.	s.a.	s.a.	s.a.
CHARACTERISTICS (min=1 max=4)						
Flow	2	4		1	3	2
Development of mechanical strenght				4	4	2
Thixotropy	2			4	1	3
High thickness				4	3	1
VERTICAL MORTARS						
Rust converter						
Antioxidation liquid						
Passivating grout						
Repair Mortars						
Masonry mortar				$\bigcirc$		
Rendering mortar				$\bigcirc$		
Osmotic mortar						
FLUID MORTARS / HORIZONTAL USE						
Anchoring Mortars						
Repair Mortars						



r. m. = raw material s. a. = solution additive



## ACCELERATING AND RETARDING §



Accelerating and retarding agents allow correcting and managing the setting and hardening times of mixtures.

1 1 1 1 1

過程期の

Pentachem offers a wide range of high quality products, both raw materials and "solution additives", to help the customers to choose the most suitable additive depending on the desired final features.

ACCELERATING	PENTARAPID					
AGENTS	CF	CR 1001	C2	89A	464	LEGARAF
NATURE	cal for.	allumin.	mineral	salts	salts	salt
	r.m.	s.a.	s.a.	s.a.	s.a.	s.a.
CHARACTERISTICS (min=1 max=4)	_			_	_	
Setting-time acceleration	1	4	4	4	4	4
Fast development of strenghts	3	3	4	1	4	4
SELF LEVELING						
Low thickness (internal use)			~			
Low thickness (external use)						
Industrial			$\sim$			
High thickness S 3 cm						$\sim$
High thickness with lightwoight aggregates or air						
high thickness with light weight aggregates of an			$\Box$			
Repair Mortars						
Masonry Mortars						$\overline{\mathbf{O}}$
Rendering Mortars						
Osmotic Mortars	$\overline{\mathbf{x}}$	$\overline{\mathbf{A}}$	$\Diamond$			
FLUID MORTARS / HORIZONTAL USE						
Anchoring Mortars						$\Diamond$
Repair Mortars						
Injectable Mortars						$\bigcirc$
CEMENT BASED PLASTERS						
Plaster by hand/machine (with hydrated lime)	$\bigcirc$					$\bigcirc$
Plaster by hand/machine (without hydrated	$\Diamond$		$\Diamond$			$\Diamond$
Dehumidifying plaster	$\diamond$	$\mathbf{\hat{\mathbf{D}}}$				
Skim finishing						$\Diamond$
Finishing decorative plaster ≤ 0.8 mm						
Thermal plaster			$\Diamond$			
Osmotic Mortars						
GYPSUM BASED PLASTERS						
Traditional plaster application by hand / machine						
(with hydrated lime)						
Traditional plaster application by hand / machine						
(without hydrated lime)						
NHL BASED PLASTERS						
Plaster by hand / machine	$\bigcirc$					
Finishing decorative plaster ≤ 0.8 mm	$\Diamond$					
Putty	$\Diamond$					
CEMENT ADHESIVES						



r.m. = raw material s.a. = solution additive

# FTADDING

RLIARDING									
AGENTS	АТ	AC	83	ATNK	63	GSI			
NATURE	tartaric	citric	salts	salts	proteic	proteic			
	r.m.	r.m.	r.m.	r.m.	s.a.	s.a.			
CHARACTERISTICS (min=1 max=4)		2		2					
High retarding capability	4	3	3	2	4	4			
SELF-LEVELING		~							
Low thickness (internal use)			$\Box$	$\Box$					
Low thickness (external use)									
Industrial									
Middle thickness ≤ 3 cm		$\mathbf{O}$							
High thickness			$\mathbf{\hat{\mathbf{O}}}$						
High thickness with lightweight	>			<					
aggregates or air bubbles				$\cup$					
VERTICAL MORTARS									
Repair Mortars		$\mathbf{\hat{\mathbf{D}}}$	$\bigcirc$	$\mathbf{\hat{\mathbf{D}}}$					
Masonry Mortars		$\Diamond$		$\langle D \rangle$					
Rendering Mortars			$\Diamond$	$\Diamond$					
FLUID / HORIZONTAL MORTARS									
Anchoring Mortars		$\bigcirc$		$\bigcirc$					
Repair Mortars	$\Diamond$	$\Diamond$		$\overline{\mathbf{O}}$					
Iniectable Mortars		$\bigcirc$	$\hat{\Omega}$	$\overline{\mathbf{O}}$					
CEMENT BASED PLASTERS									
Plaster by hand / machine			$\Diamond$	$\Diamond$					
Dehumidifying plaster				$\overline{\Delta}$					
Skim finishing	$\mathbf{\Omega}$		$\hat{\Omega}$	$\Diamond$					
Finishing decorative plaster ≤ 0.8 mm	$\overline{\mathbf{O}}$		$\overline{\Delta}$	$\bigcirc$					
Thermal plaster	$\Diamond$	$\bigcirc$	$\bigcirc$	$\Diamond$					
GYPSUM BASED PLASTERS									
Plaster by hand / machine		~							
(with hydrated lime)		Q		$\mathbf{O}$					
Plaster by hand / machine									
(without hydrated lime)									
NHL BASED PLASTERS									
Application by hand / machine									
Finishing decorative plaster ≤ 0.8 mm									
Putty									



r.m. = raw material s.a. = solution additive

## **PENTATARD AT**

Pentatard AT is a retarding agent based on 100% natural tartaric acid.

Thanks to its composition, this additive develops a gap between the beginning and the ending of the setting time much more stable and manageable than the gap developed by synthetic acid, thus allowing to better control the retarding effect.



......

Natural tartaric acid (0,03%)



Defoamers are state-of-the-art additives, born to prevent and eliminate the air from inside mortars.

Pentachem developed two lines of antifoaming agents:

MANTIFOAM PS

products based on silicone oils, poly glycols, and polymers on mineral support.

### 鯵 <u>antifoam pt</u>

products based on modified poly glycols and a dimension reducer of bubbles on mineral support.

While developing these products, **Pentachem** has focused on two aims: eliminating the air inside the system and reducing the dimensions of the bubbles (so that their explosions would not blemish the surface of the product).

Thanks to this research, **Pentachem** can offer a wide array of different additives depending on the final features required by the customer.







The graph helps choosing the most suitable product for the desired targets. We have considered five different parameters with a value ranging from 0 (minimum) to 5.



The test was performed on a thixotropic mortar, with a fixed and known volume of air inside, to assess the capacity of the products **Antifoam P** to remove the air during the mixing phase and at the beginning of the application. The porosimeter tests assessing the volume of air in percentage were performed according to the UNI EN 1015-7.

DEFOAMERS	ANTIFOAM PS1	ANTIFOAM PS2	ANTIFOAM PS3	ANTIFOAM PS4	ANTIFOAM PT1
NATURE	silicone	silicone	silicone	silicone	mineral
CHARACTERISTICS (min=1 max=4)	5.4.	5.4.	5.0.	5.0.	5.0.
Antifoaming	3	4	1	2	2
Defoaming	2	1	4	3	3
Quickness of surface bubble elimination	3	4	4	3	2
Ability to fragment bubbles	2	1	3	4	2
Compatibility	2	2	4	4	2
SELF-LEVELLING					
Low thickness (internal use)					
Low thickness (external use)					
Industrial					
Middle thickness ≤ 3 cm					
High thickness					
VERTICAL MORTARS					
Repair Mortars	$\bigcirc$				
FLUID / HORIZONTAL MORTARS					
Anchoring Mortars	$\bigcirc$				
Repair Mortars	$\bigcirc$				
Injectable Mortars		$\mathbf{\hat{\mathbf{D}}}$			
Concrete	$\bigcirc$				
DECORATIVE PLASTERS					
Plaster / skim coat					
Finishing decorative plaster ≤ 0.8 mm	$\bigcirc$				



r.m. = raw material s.a. = solution additive

## WATERPROOFING AND HYDROPHOBIC

ACENITS	PENTAPROOF									
AGENIS	L 25	20 P	30 P	50 P	LC 50	СА				
NATURE	silane	stearate	silicone	mix	stearate	mix				
	s.a.	s.a.	s.a.	s.a.	s.a.	s.a.				
CHARACTERISTICS (min=1 max=4)										
Waterproofing under water pressure	3	3	4	4	3	3				
Hydrophobic effect	2	2	4	4	3	4				
Capillary absorption	2	3	4	3	2	2				
VERTICAL MORTARS										
Masonry mortars										
Rendering mortars										
FLUID MORTARS / HORIZONTAL USE										
Concrete										
Joint fillers				$\bigcirc$						
CEMENT BASED PLASTERS										
Plaster by hand / machine	$\sim$	$\sim$		$\sim$						
(with hydrated lime)										
Plaster by hand / machine	$\diamond$	$\sim$		>						
(without hydrated lime)										
Skim finishing				$\bigcirc$						
Finishing decorative plaster ≤ 0.8 mm	$\bigcirc$	$\mathbf{O}$								
Thermal plaster			$\mathbf{O}$							
GYPSUM BASED PLASTERS		-								
Plaster by hand / machine										
(with hydrated lime)										
Plaster by hand / machine	$\Diamond$									
(without hydrated lime)										
Panels in gypsum										
NHL BASED PLASTERS										
Plaster by hand / machine				$\bigcirc$						
Finishing decorative plaster ≤ 0.8 mm										
Putty										

= suggested
= recommended

r.m. = raw material s.a. = solution additive

## PENTAPROOF 20 P / CA / 30 P / 50 P

They are mass hydrophobic agents based on stabilised stearates and silicones with great dispersal capacity. The vast selection of hydrophobic agents allows the customer choosing the optimal product according to the price and to the final application.

### PENTAPROOF 20 P

Suggested for construction mortar and concrete.

### PENTAPROOF CA

Suggested for plasters and waterproof mortars.

### PENTAPROOF 50 P

Suggested for high-quality plasters and waterproof mortars.

### 鯵 PENTAPROOF 30 P

> the most efficient product < suggested for tile grouts and for decorative mixtures, providing complete waterproofing and the *"drop-effect"*.

All <u>PENTAPROOF</u> additives have been created in order to guarantee the waterproofing of mortars under the direct pressure of water.



### Rate of absorption in water

### Standard mortar with **PENTAPROOF 30P**



Water absorption in standard mortar according to pressure and different dosage of PENTAPROOF 50P



ANTI-SHRINKAGE			
AGENTS AND FIBERS	PENTAMIX EX 3	PENTAMIX EX 4	FIBERCHEM
NATURE	Mix of glycol ethers	Mix of glycol ethers	Polypropylene
CHARACTERISTICS (min-1 max-4)	r.m.	r.m.	r.m.
Shrinkage reduction effect	Δ	Л	Λ
Waterproofing under water pressure	1	1	3
Hydrophobic effect	1	1	1
SELF-LEVELING			
Low thickness (internal use)			
Low thickness (external use)			
Industrial			
Middle thickness ≤ 3 cm			
High thickness			
High thickness with lightweight aggregates or air bubbles	٠	•	•
VERTICAL MORTARS			
Repair mortars			
FLUID MORTARS / HORIZONTAL USE			
Anchoring mortars			
Repair mortars			
Concrete			
CEMENT BASED PLASTERS			
Skim finishing			
Finishing decorative plaster ≤ 0.8 mm			
NHL BASED PLASTERS			
Application by hand / machine	$\bigcirc$	$\mathbf{\hat{\mathbf{O}}}$	
Finishing decorative plaster ≤ 0.8 mm	$\bigcirc$	$\mathbf{\hat{\mathbf{D}}}$	
Putty	$\bigcirc$	$\bigcirc$	



r.m.= raw material s.a. = solution additive

## **PENTAMIX EX 3 PENTAMIX EX 4**

They are two anti-shrinkage additives that work on the surface tension of mortars. They solve problems connected to the hydraulic shrinkage in fast setting mortars and in cementitious systems

### Hydraulic shrinkage in a reference mortar of Pentachem 0,00 White Pentamix EX3 Pentamix EX4





AIR ENTRAINING AGENTS	PENTAMIX AER 205	PENTAMIX AER 905	PENTAMIX AER 907	PENTAMIX AER L
NATURE	SLS	Surfactant	Protein	Surfactant
	r.m.	r.m.	r.m.	r.m.
CHARACTERISTICS (min=1 max=4)	-		-	-
Waterproofing under water pressure	1	1	1	1
Hydrophobic effect	1	1	1	1
Air development	3	4	4	4
SELF LEVELING				
Blocks in cellular concrete				
High thickness with lightweight	$\sim$			
aggregates or air bubbles				
VERTICAL MORTARS		-		-
Masonry mortars				$\mathbf{\hat{\mathbf{O}}}$
Rendering mortars				$\Diamond$
FLUID MORTARS ( HORIZONTAL USE)				
Anchoring mortars				
Concrete	$\bigcirc$			$\bigcirc$
CEMENT BASED PLASTERS				
Plaster by hand / machine				
(with hydrated lime)				
Plaster by hand / machine				
(without hydrated lime)				
Dehumidifying plaster				
Thermal plaster				
GYPSUM BASED PLASTERS				
Plaster by hand / machine				
(with hydrated lime)				
Plaster by hand / machine				
(without hydrated lime)				
Blocks in gypsum				
NHL BASED PLASTERS				
Plaster by hand / machine				$\mathbf{O}$



### CERTIFICATI



## MANAGEMENT SYSTEM CERTIFICATE

Certificato no./Certificate No.: CERT-07330-2000-AQ-BOL-SINCERT Data prima emissione/Initial date: 17, novembre, 2000

Validità:/Valid: 17, novembre, 2018 - 17, novembre, 2021

Si certifica che il sistema di gestione di/This is to certify that the management system of

### PENTACHEM S.r.l. - Sede Legale e Operativa

Via Galvani, 3 - Z.I. Casarola - 47832 S. Clemente (RN) - Italy

È conforme ai requisiti della norma per il Sistema di Gestione Qualità/ has been found to conform to the Quality Management System standard: **ISO 9001:2015** 

Questa certificazione è valida per il seguente campo applicativo:

Progettazione e produzione di additivi chimici per l'edilizia e per la produzione di premiscelati per l'edilizia. Attività di assistenza tecnica (EA: 12) This certificate is valid for the following scope:

Design and production of chemical additives for the building industry and for the production of premixed product for the building industry. Activity of technical assistance (EA: 12)

Luogo e Data/Place and date: Vimercate (MB), 06, ottobre, 2018





Table J, MLA LE, Jan GL Albert E. ALCONDUMENTS O. SDA, MON. MIS, STO (ARC, LAR ALC, & HUL, ALV) (In STANIS III ARCINE (STATISTICS), SCA, SDC, TEM RD v. & MAN, LAC part (In scheme II) acconditionwells, A. MOD, LAS 4: SDP Per l'Organismo di Certificazione/ For the Certification Body DNV GL – Business Assurance Via Energy Park, 14 - 20871 Vimercate (MB) - Italy

Belter

Zeno Beltrami Management Representative

La validità del presente Certificato è subordinata al rispetto delle condizioni contenute nel Contratto di Certificazione/ Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid. DNV GL Business Assurance Italia S.r.I., Via Energy Park, 14 - 20871 Vimercate (MB) - Italy. TEL:039 68 99 905. www.dnvgl.it



#### PENTACHEM S.R.L.

Via Galvani n° 3 *(Zona Ind. Casarola)* 47832 S. Clemente (RN)

> I T A L Y Tel. +39 0541-988026 Fax +39 0541-989557 info@pentachem.it

www.pentachem.it

