



Pentachem
SINCE 1994

INNOVATIVE SUSTAINABLE SOLUTIONS

PRODUCT CATALOGUE 2024



Since 1994 in the heart of building

Chemical additives and sustainable state-of-the-art technologies

Pentachem is an Italian company specialised in the production and sales of chemical additives for buildings, ranging from additives for masonry mortars and plasters to additives for self-levelling and repair mortars.

Pentachem currently works in Western Europe, Eastern Europe, and in Africa, both directly and through agents and distributors.



5 Good reasons to choose Pentachem



DYNAMISM AND RESPONSIVENESS



VAST EXPERIENCE IN ITALY AND ABROAD



EFFECTIVE AND SPECIFIC SOLUTIONS



SPEED OF SERVICE



CONSTANT TOUCH BETWEEN TECHNICAL DEPARTMENTS



CARLO LEARDINI
SALES MANAGER



CLAUDIO FRULLI
TECHNICAL MANAGER



RENZO LEARDINI
GENERAL MANAGER



Our first 30 years

The history of **Pentachem** began in 1994, when three laboratory technicians combined their experience to give the start to a new adventure: to create a center of excellence inspired by innovation and experimentation, to test new technologies and to promote collaboration between experts from different scientific fields.

It has been a great challenge, but during our first 30 years of activity we managed to become well-known and appreciated by important Italian and international customers, the result of close technical collaboration focused exclusively on solving multiple construction problems. The professionalism in relations with our customers and suppliers allows us to look forward to the future with confidence ready to face new challenges.



RENZO LEARDINI
FOUNDER

1994

Birth of Pentachem.

1995

Achievement of the first ten customers.

2002

Development of a new laboratory with modern equipments.

2005

Pentachem expands on the foreign market with its first international sale.

2016

Doubling of the laboratory and of the sales unit.

2015

First attendance to an international trade fair.

2014

Development of new foreign markets (North Africa and Russia).

2010

Birth of NCT, a twin company focused on nanoparticle products and bio-compatible technologies.

2017

Expansion in Spain, Greece, and Scandinavia.

2019

Development of new lines of raw materials.

2021

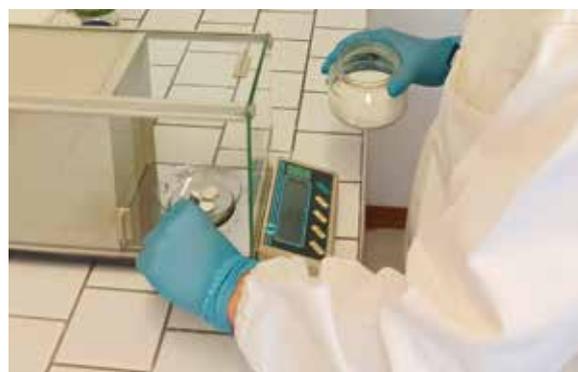
Further expansion in Poland, Portugal, and South Africa.

2023

Further opening up to eco-sustainability with new products and new paletization plants.

2024

Development of new product lines dedicated to the new generation of cements.





International distributors:

POLAND
Safic-Alcan Polska Sp z o.o.

SOUTH AFRICA
Safic Alcan Southern Africa

TUNISIA
Nadec

ALGERIA, MOROCCO
Transmare Chemie

SCANDINAVIA
Oy Finnpool AB

GREECE, ALBANY, CYPRUS
Chemical Net S. Kontari
and Son Private Company

RUSSIA
AO «РУСХИМСЕТЬ»

SPAIN
Midegas

MALTA
Prochemical

National distributors:

NORTH-WEST
Ivan Calcaterra

NORTH-EAST
Mediochimica S.n.c.

CENTER NORTH
Adolfo Mondini

ABRUZZO, UMBRIA AND MOLISE
Michele De Petris

LAZIO AND CAMPANIA
Alberto Trapanese

PUGLIA AND BASILICATA
Pigment A.L.

SICILY AND CALABRIA
Prochemical

**OUR
PARTNERS**



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Defoamers

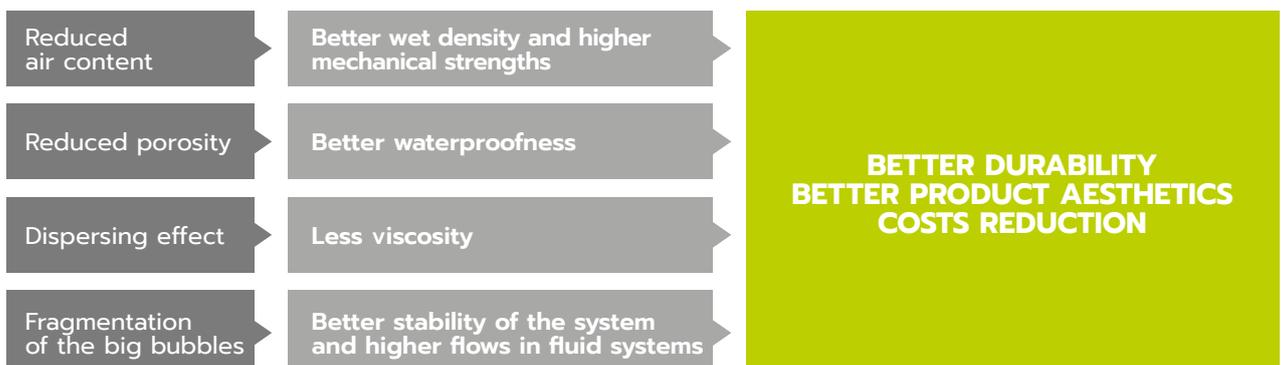
The air inside the mortars stems from mechanical agitation and from the use of specific chemical agents. Without the full control of it, the technical and aesthetic characteristics of the product may be compromised.

Defoamers are chemical additives developed in order to keep the air under control and to reduce its content inside the mixtures.

They are made out of different types of molecules that destabilize the surface tension of the air bubbles. Depending on the molecule type and the peculiar formulation, the defoamers of **Pentachem** can primarily minimize the air content inside the system or reduce the bubbles' size by fragmenting them and homogeneously spread the mixture, in order to give a better stability to the structure and a better aesthetic effect to the surface.



BENEFITS OF USING A **PENTACHEM** DEFOAMER:





ANTI-FOAM PS 3	ANTI-FOAM PS 5	ANTI-FOAM PS 201	ANTI-FOAM GREEN P1	ANTI-FOAM PO 300	ANTI-FOAM L
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COMPOSITION	silicone	natural oils	mineral oils	silicone
STATE	powder			liquid

FEATURES (MIN=1 MAX=4)

Antifoaming effect	2	4	4	3	4	4
Surface effect	3	3	3	4	3	3
Speed of solubilization	3	3	3	3	4	4
Compatibility with cement	4	4	4	3	4	4
Compatibility with gypsum	4	3	3	4	3	4
Development of mechanical strengths	2	4	3	3	3	3

SELF-LEVELLING

Underlayment						
Low thickness						
High thickness						

VERTICAL MORTARS

Structural repair mortars						
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FLUID / HORIZONTAL MORTARS

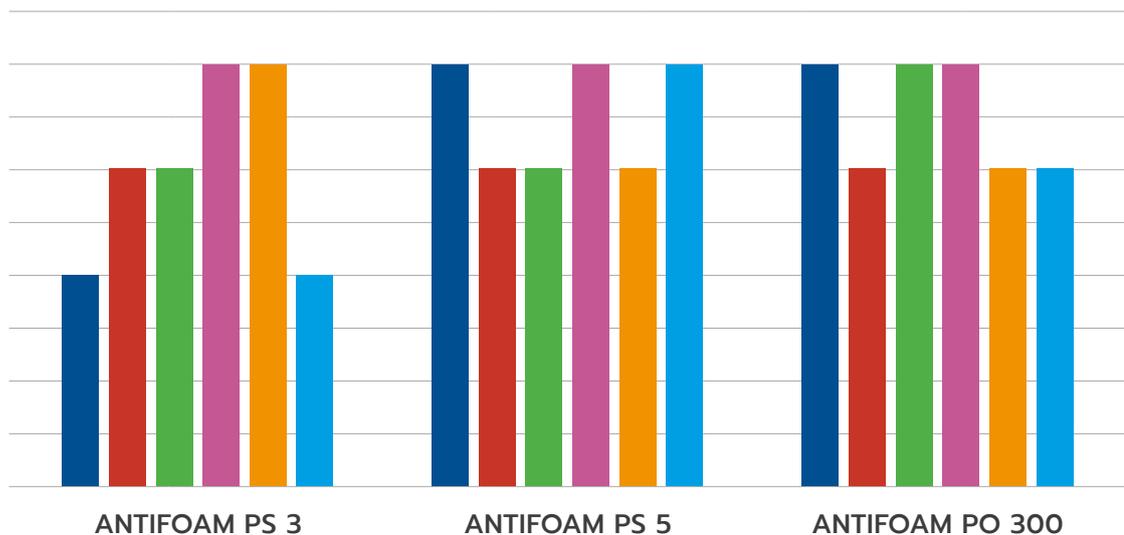
Anchoring mortars						
Repair mortars						
Tile grouts						
Concretes						

suggested recommended VOC free



Depending on technical and formulation characteristics, **Pentachem's** defoamers have, at different levels, all the following features:

- **Antifoaming effect:** ability to quickly blow up the bubbles in the surface and those inside of the mortar and prevent the formation of others.
- **Surface effect:** ability to break apart the bubbles in order to obtain a homogeneous dispersion and a better aesthetic effect, free of craters and spots.
- **Speed of solubilization:** the velocity of dispersion of the particles in order to start the micro-fragmentation action of the additive.
- **Compatibility with cement and gypsum:** ability to effectively work with the binders.
- **Development of strengths:** ability to withstand static stresses.

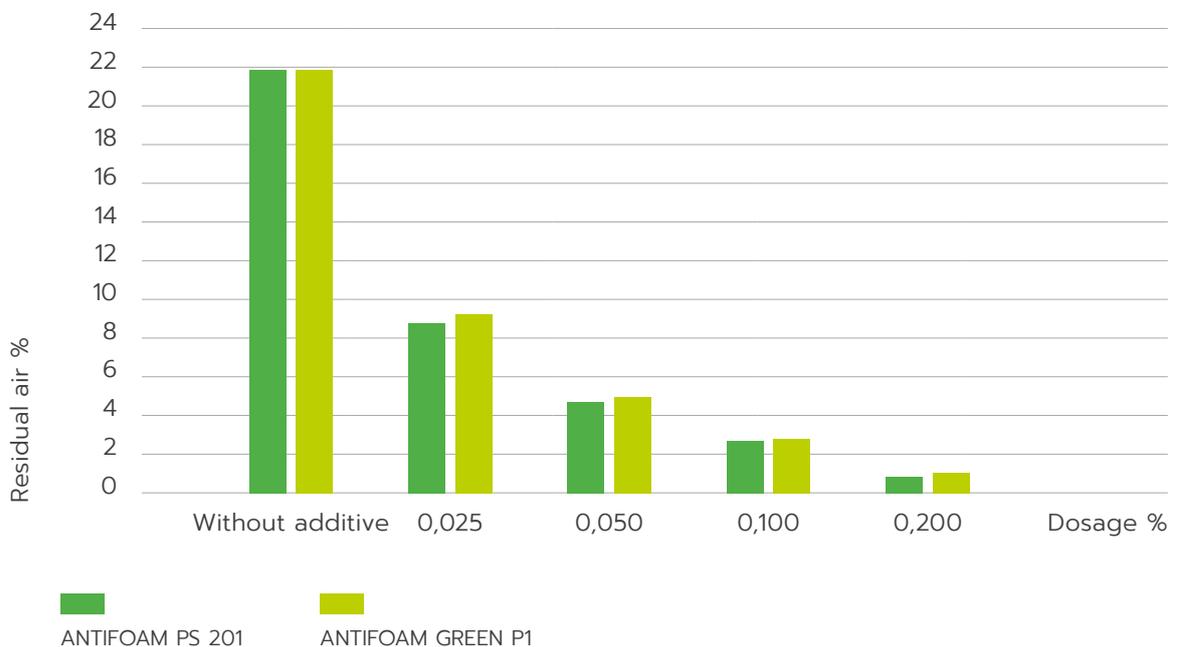


Antifoam PS 201

It is an extremely effective defoamer in powder form, capable of combining a quick air minimization with a strong fragmenting effect in order to make the finished product's surface homogeneous and without any craters and stains.



ANTIFOAMING EFFECT OF ANTIFOAM PS 201 AND ANTIFOAM GREEN P1 ON A PLASTER MORTAR FOR INTERNAL USE AT DIFFERENT DOSAGES



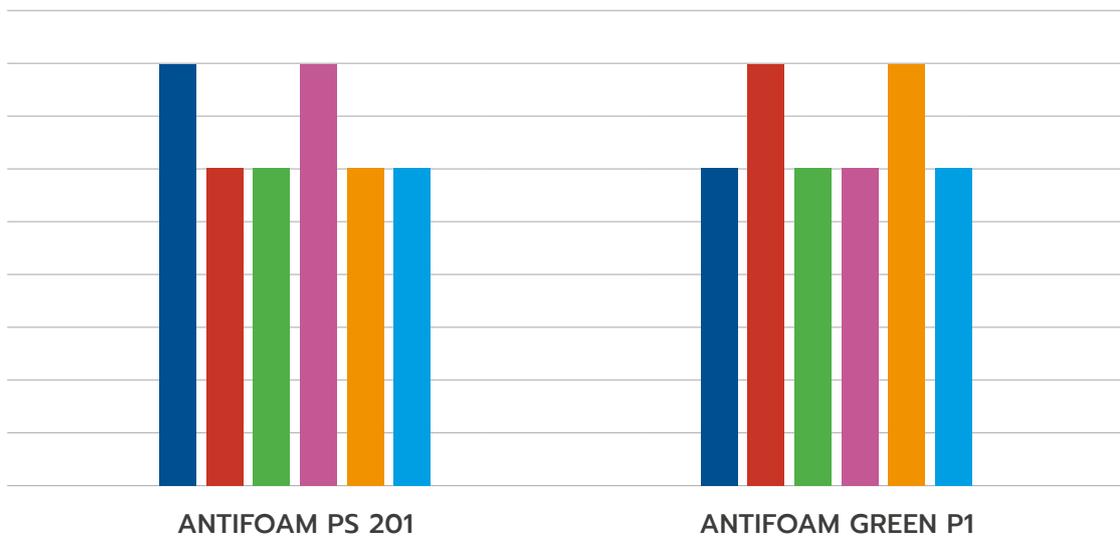
DUE TO PREVIOUS AGREEMENTS WITH THE SUPPLIERS OF RAW MATERIALS, THIS ADDITIVE IS NOT AVAILABLE IN THE FOLLOWING COUNTRIES:

- Benelux • Austria • Switzerland • Germany • France • United Kingdom • Poland
- South Africa • United States • Canada • India • Brazil • Mexico

Antifoam GREEN P1

It is a new generation of powder defoamer, composed of a mixture of natural oils and environmentally sustainable surfactant polymers on a mineral support. The action of the active ingredients begins immediately on the wet mortar, reducing the size of the largest bubbles even under strong mechanical agitation.

Both products are environmentally friendly, developed to meet the most demanding VOC emission regulations such as Emission Code EC 1 Plus and French VOC Regulation A+.



Antifoaming effect

Surface effect

Speed of solubilization

Compatibility with cement

Compatibility with gypsum

Development of mechanical strengths



Anti-shrinkage agents

By "shrinkage", we mean the volume reduction that occurs in all the cement-based mortars both in the plastic and hardening phase. Such reduction is caused by a variation in the water content inside the mortar.

THIS SHRINKAGE IS DIVIDED INTO:

PLASTIC: the contraction that happens shortly after the application, when the product is still plastic.

HYDRAULIC: the contraction that happens due to the evaporation of the water inside the cement mixture in the first few months after the application.

The most noticeable consequences of this event are the formation of cracks, deformations, and the reduction of adhesion to the underlayer, which affect enormously the durability of the final product. In order to avoid these problems, **Pentachem** developed an entire line of shrinkage reducing and compensating agents.

BENEFITS OF A SHRINKAGE REDUCING AGENT FROM THE **PENTAMIX EX** LINE:

REDUCTION OF CAPILLARY PRESSURE AND TENSION INSIDE THE POROUS STRUCTURE

Minimization of the hydraulic and plastic shrinkage

Greater waterproofness and better resistance to freeze and thaw cycles

Compensation of shrinkage

HIGHER DURABILITY OPTIMIZATION OF THE PRODUCTION COSTS





	PENTAMIX EX 3	PENTAMIX EX 4	PENTAMIX EX 5	PENTAMIX EX 6	PENTAMIX EX 9	PENTAMIX EX 35 L	FIBERCHEM 6 mm
COMPOSITION	npg		glyco- lethers	polyfunctional alcohols	glyco- lethers	fibres	
STATE	powder					liquid	solid

FEATURES (MIN=1 MAX=4)							
Anti-shrinkage effect	4	4	3	4	4	4	4
Shrinkage compensating effect	3	3	4	3	3	3	4
Resistances conservation	4	4	3	4	4	4	2

SELF-LEVELLING							
Underlayment							
Low thickness							
High thickness							

VERTICAL MORTARS							
Structural repair mortars							

FLUID / HORIZONTAL USE							
Anchoring mortars							
Repair mortars							
Tile grouts							
Coloured mortars							
Concretes							

suggested
 recommended
 VOC free

Pentamix EX 3

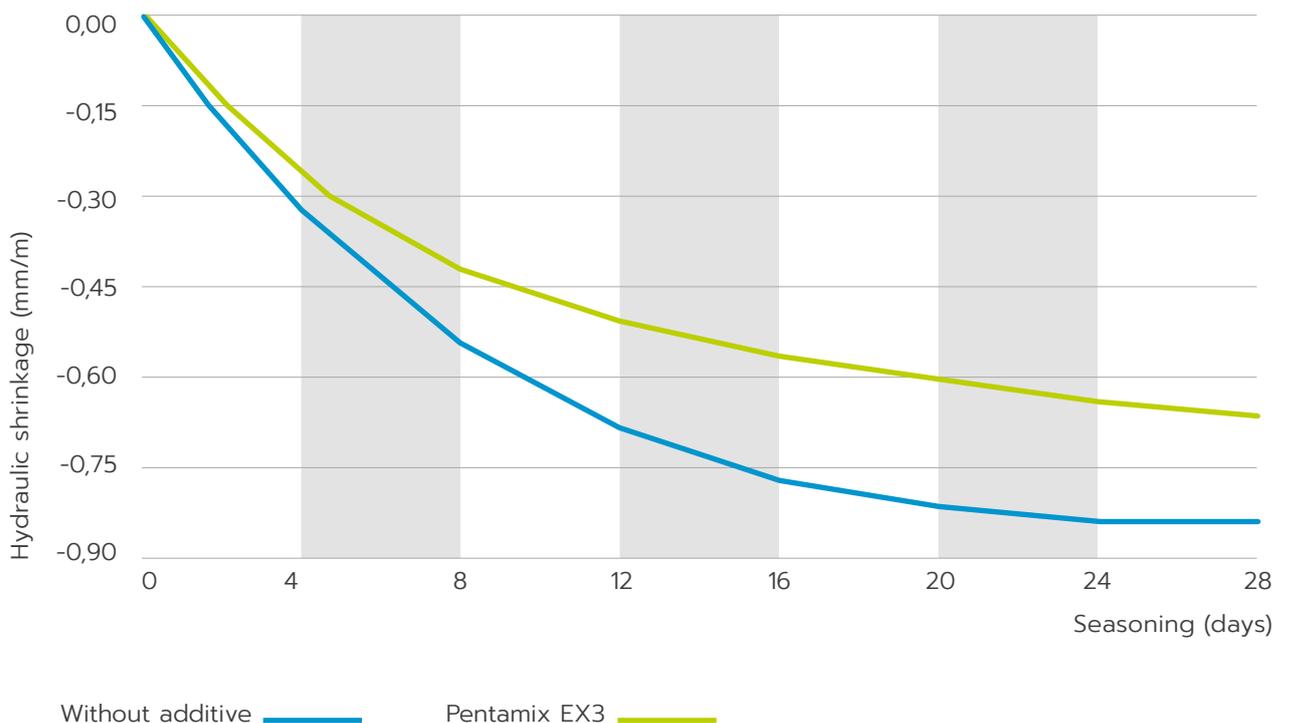
It is a shrinkage reducing agent in powder form that lowers the transition tensions between the plastic and the early hardening phases, which always occur in the cementbased admixtures.

It is a good ally for solving the problem of the shrinkage in all the cement-based systems and it is an extremely versatile product, easy to put in the mixture.

Moreover, **Pentamix EX 3** stands out for being a low VOC emission product, capable of respecting the parameters of the most demanding regulations such as the French VOC Regulation A+.



ACTION OF PENTAMIX EX 3 ON THE HIDRAULIC SHRINKAGE OF A STANDARD CEMENT MORTAR



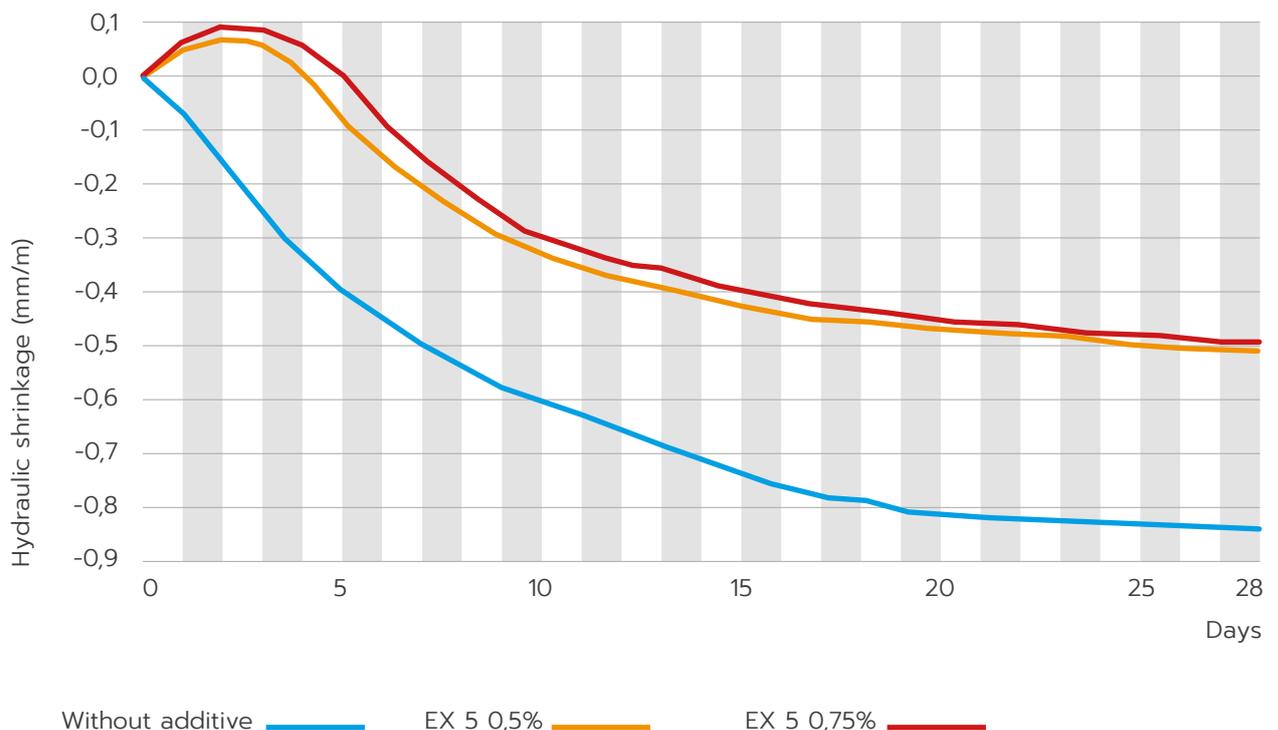
Pentamix EX 5

It is a shrinkage-compensating and reducing additive in powder form. Within the first few hours, depending on the dosage, it balances the plastic shrinkage through a controlled and non-violent expansion, while in the second phase it reduces the hydraulic shrinkage and the mortar's dimensional stress. With the right dosage, it is possible to avoid the shrinkage completely.

The additive has a light accelerating effect on alumina cement and this can bring to a reduction of its dosage. It is recommended for all the cases requiring a light and checked initial expansion, like structural mortars of class R3 and R4.



TRENDS OF SHRINKAGES AT DIFFERENT DOSAGES ON A STANDARD MORTAR OF PENTACHEM





Superplasticizers

Superplasticizers are used in order to increase the flow and reduce the dosage of water in cement and/or gypsum-based mixtures, thus improving rheological properties, incrementing the mechanic resistances, and preventing cases of segregation.



BENEFITS OF THE USE OF SUPERPLASTICIZERS FROM THE PENTAFLOW PC LINE:





PENTAFLOW				
PC 5	PC 101	PC 102	PC 11 F	PC 20 F

COMPOSITION	polycarboxylates
STATE	powder

FEATURES (MIN=1 MAX=4)

Flow in gypsum	2	3	4	n.d	4
Flow in cement	3	2	2	3	4
Development of mechanical strengths	4	3	3	4	4
Delay of setting time	2	2	2	4	4
Creation of air	3	3	3	3	3
Speed of solubilisation	3	3	3	4	4
Thermostability	2	3	3	3	3

CEMENT-BASED SELF-LEVELLING

Underlayments					
Low thickness					
High thickness					
High thickness lightweighth					

GYP SUM-BASED SELF-LEVELLING

Anhydrite-based self-levelling					
Ceramic gypsum					

FLUID / HORIZONTAL USE

Anchoring mortars					
Repair mortars					
Injection mortars					

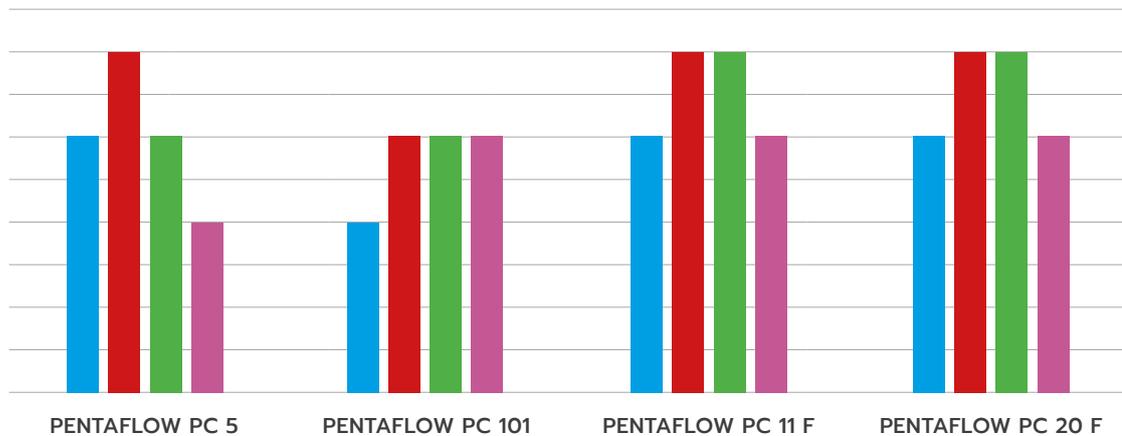
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Pentaflow PC Line

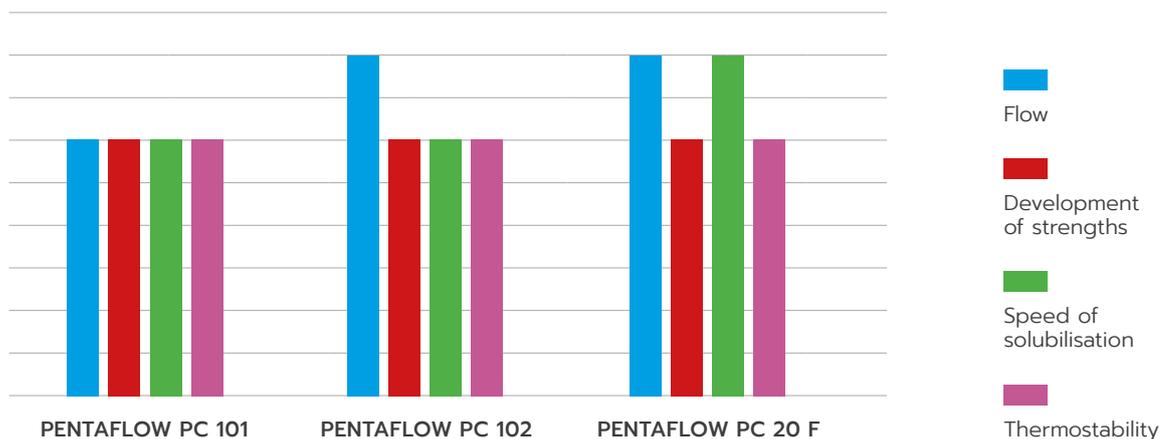
These are polycarboxylic superplasticizers in powder form with active matter exceeding 95%. They are extremely versatile and effective products offering the following benefits:

- High dispersion ability.
- Extreme effectiveness in water reduction.
- Application both in premixed cement-based and/or gypsum-based mortars and in concrete.
- Very high performances at lower dosages than the competitors' products.

PENTAFLOW PC FOR CEMENT



PENTAFLOW PC FOR GYPSUM





Depending on the technical and formulation specifics, the different products of the Pentaflow PC line have all the following features, albeit at different degrees:

- **Flow:** capacity to develop high and homogeneous flow.
- **Development of strengths:** capacity to improve the mechanical strengths.
- **Preservation of the workability:** capacity to preserve over time the developed flow.
- **Speed of solubilisation:** capacity to take action as soon as they are dispersed in the admixture.
- **Thermostability:** capacity to remain stable under thermal stress.

**ALTHOUGH THESE ARE EXTREMELY VERSATILE PRODUCTS,
EVERY ADDITIVE IS SPECIFIC FOR A CERTAIN TYPE OF APPLICATION.**

PENTAFLOW PC 5

PCE for high resistances at short and long seasonings; suggested for cement-based products.

PENTAFLOW PC 11 F

PCE for quick solubilisations; suggested for quick cement-based products.

PENTAFLOW PC 20 F

PCE for high flows, even with very fine granulometries, and excellent strengths even at very short seasonings.

PENTAFLOW PC 101

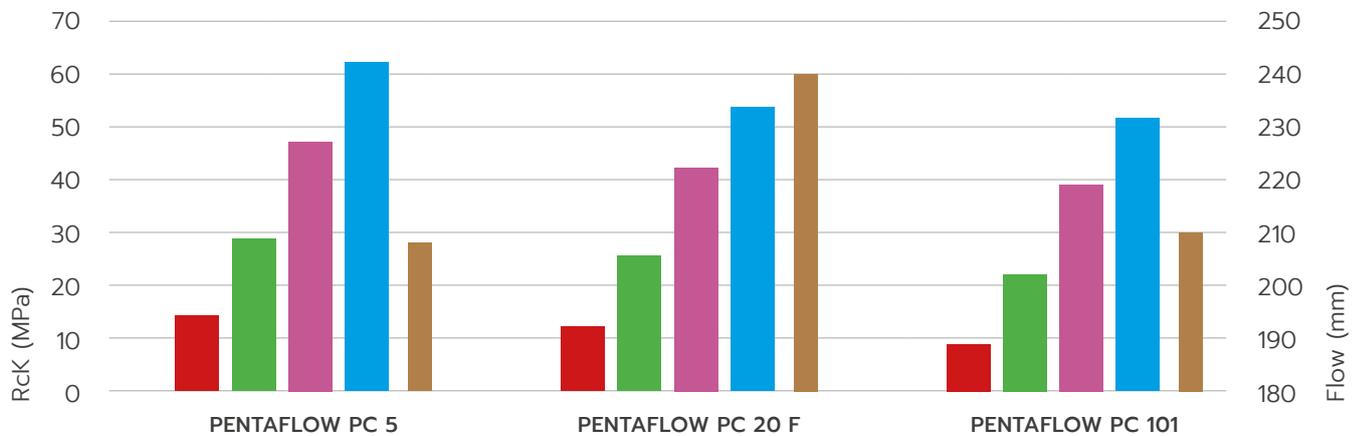
PCE for good flows and resistances; suggested for cement and gypsum-based products.

PENTAFLOW PC 102

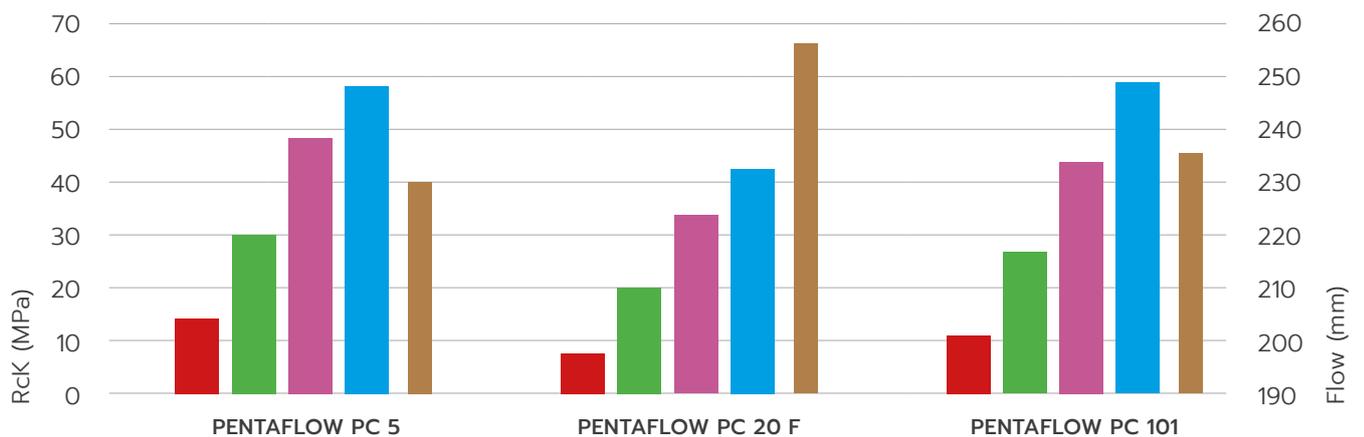
PCE for high flows and resistances; suggested for gypsum-based products.

Pentaflow PC Line

FLOW AND MECHANICAL STRENGTHS ON A STANDARD MORTAR WITH **0.10%** DOSAGE ON CEMENT



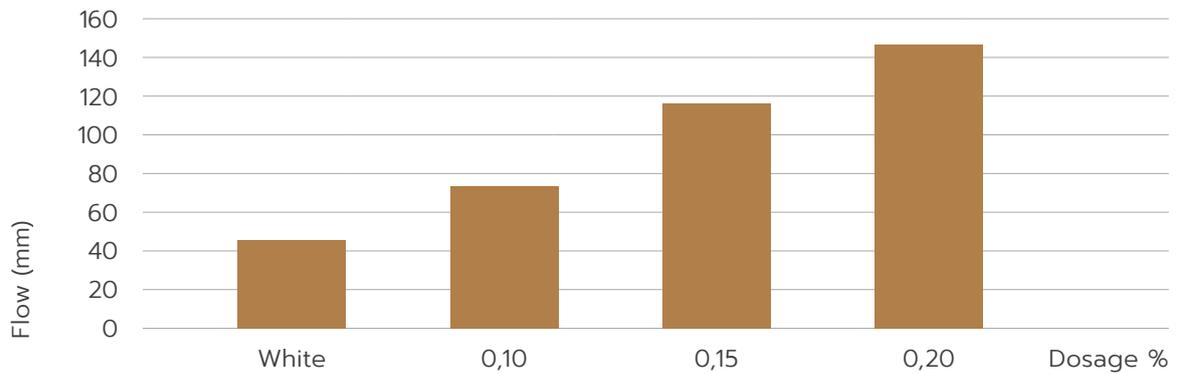
FLOW AND MECHANICAL STRENGTHS ON A STANDARD MORTAR WITH **0.15%** DOSAGE ON CEMENT





Together with a very high flow vis-à-vis the additives for cement only, **Pentaflow PC 101** and **Pentaflow PC 102** allow obtaining a proportional performance between the increase in additive dosage and the fluidity.

TESTS HAVE BEEN PERFORMED ON A PASTE OF HEMIHYDRATE GYPSUM AT THE SAME WATER CONTENT

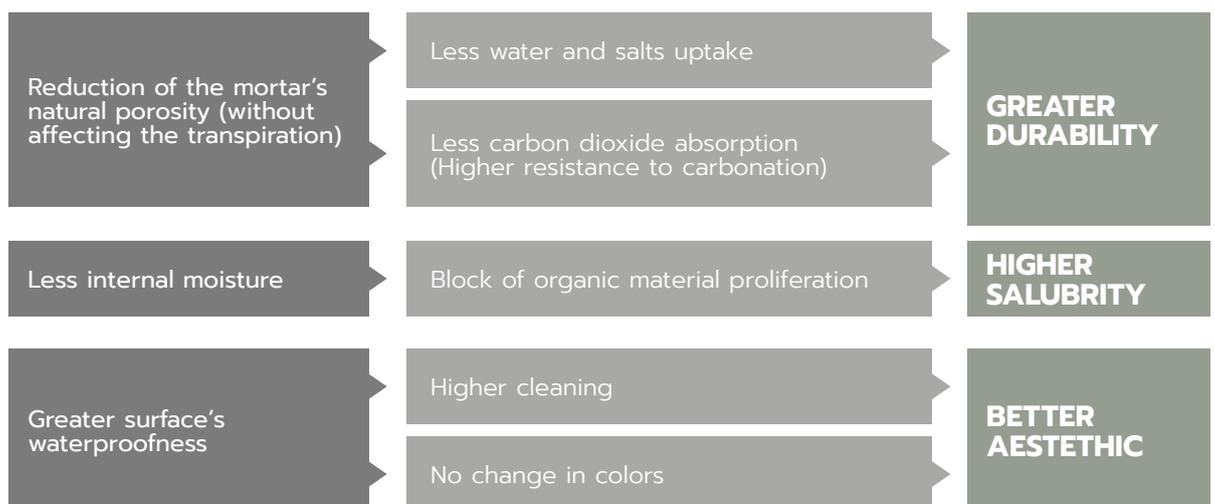


Waterproofing agents

Water is one of the main causes of buildings decay. Infiltrations and the recurring exposures to water and the salts contained in it can cause many damages like delamination, swelling, cracks, separations, and a general deterioration of the building. Finally yet importantly, they can create an ideal place for the proliferation of mold, moss and seaweed.

In order to contrast these threats, **Pentachem** developed a line of waterproofing additives capable of giving a protection durable and stable over time.

BENEFITS OF THE USE OF A WATERPROOFING AGENT OF THE **PENTAPROOF** LINE:



PENTAPROOF

	20 P	30 P	50 P	CA	GS 43	GSP 65
COMPOSITION	stearates	silicone	salts*	mix	silicone	
STATE	powder				liquid	powder

FEATURES (MIN=1 MAX=4)

Waterproofing under pressure	4	3	4	2	n.a.	n.a.
Capillary waterproofing	1	3	2	4	3	3
Preservation of R _c K	4	4	4	1	4	4
Durability of the effect	3	3	3	4	4	4
Wettability of the mortar	2	4	1	3	3	3
Resistance to salt aggression	2	3	1	4	3	3
Beading effect	2	4	2	3	4	4

VERTICAL MORTARS

Structural repair mortars						
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FLUID / HORIZONTAL USE

Concretes						
Tile grouts						

CEMENT BASED MORTARS

Plasters						
Rough finishes						
Skim coatings						
Screeds						

GYP SUM BASED MORTARS

Plasters						
Skim coatings and putties						
Screeds						
Plasterboards						

HYDRAULIC LIME BASED MORTARS

Plasters						
Finishes ≤ 0.8 mm						



WATERPROOFING AGENTS FOR CEMENT

PENTAPROOF 20 P / 30 P / 50 P / CA

They are mass waterproofing agents based on mix of fatty acids of metal salts and silicones with high dispersing capacity.

The vast range of waterproofing agents allows selecting the optimal product able to answer to the most varied needs.

PENTAPROOF 20 P

Suggested for construction mortars and concrete.

PENTAPROOF 30 P

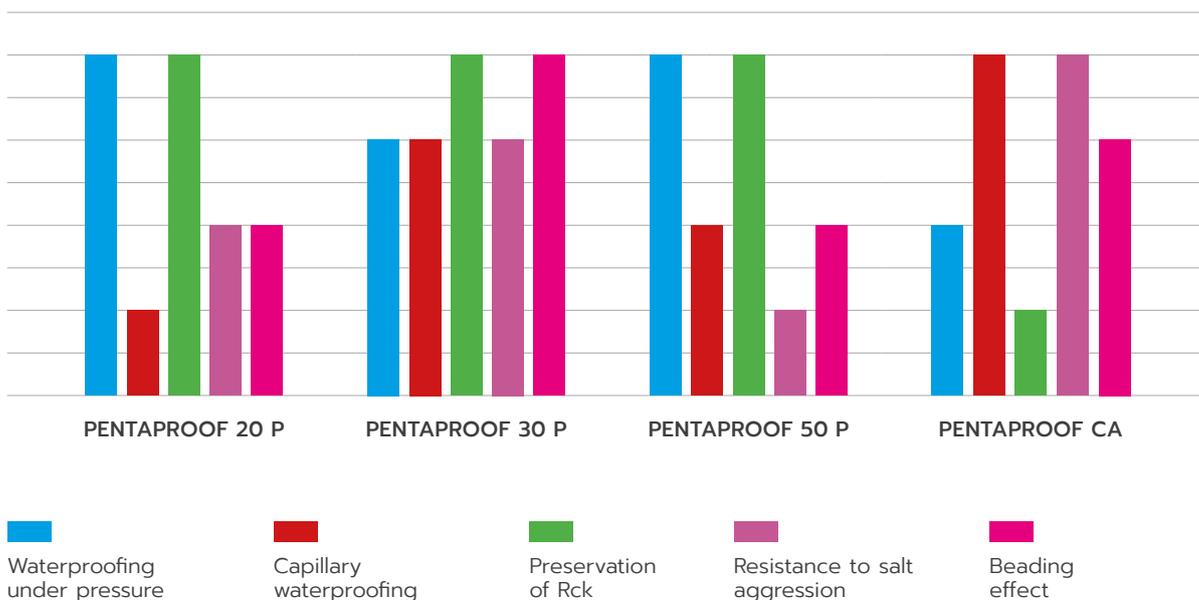
Suggested for colored tile grouts, skim coatings, and mortars subjected to water in positive and negative thrust.

PENTAPROOF 50 P

Suggested for external plasters and repair mortars subjected to high-pressure water.

PENTAPROOF CA

Suggested for plasters, skim coatings, tile grouts, and mortars exposed to salty water.





WATERPROOFING AGENTS FOR GYPSUM

**PENTAPROOF
GS 43 / GSP 65**

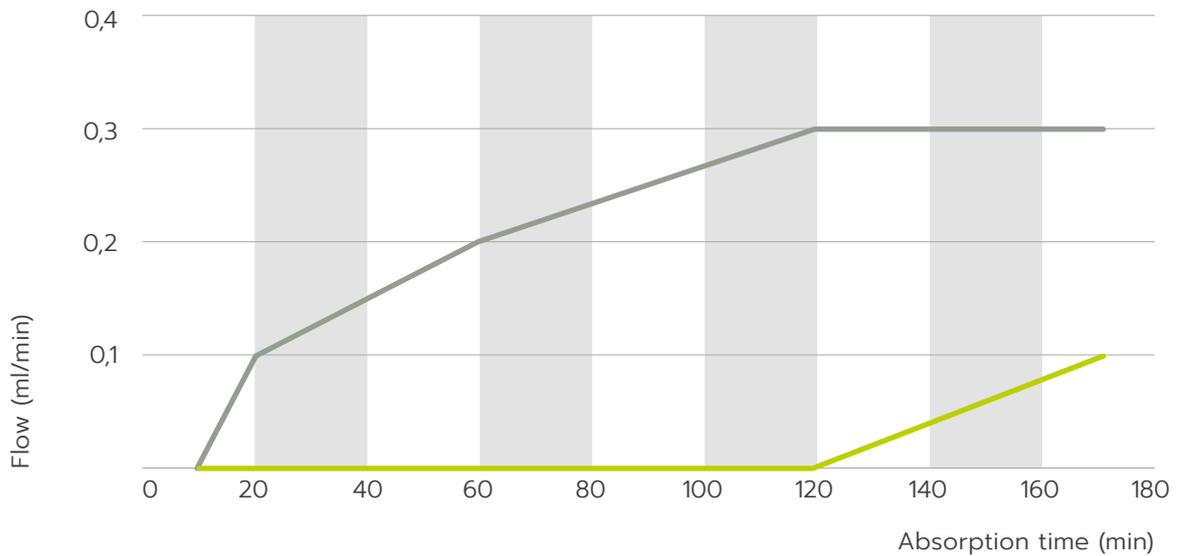
PENTAPROOF GS 43

liquid; suggested
for gypsum blocks
and plasterboards.

PENTAPROOF GSP 65

powder; suggested
for gypsum-based
premixed.

PENETRATION TEST WITH KARSTEN TUBE



PENTAPROOF GS 43 ———

PENTAPROOF GSP 65 ———

Cellulose ethers

Cellulose ethers are additives used to increase water retention and to enhance the viscosity of the admixtures without affecting their ease of application. **Pentachem's** cellulose ethers are divided into two categories:

PENTA EC: pure and modified cellulose ethers, highly stable and with a very high and constant water retention. They are suggested for mortars, plasters, and tile adhesives.

PENTA ECP: cellulose ethers with delayed solubility, soluble in cold water without creating lumps and without altering the colors. They are suggested for water-based paints.



VISCOSITY AT 20°C (SOLUTION 2%, BROOKFIELD RV)

PURE GRADES

Penta EC 05	ca 500 mPa.s	Spindle 2 - 20 rpm
Penta EC 20	18.000 ÷ 23.000 mPa.s	Spindle 6 - 20 rpm
Penta EC 70	65.000 ÷ 80.000 mPa.s	Spindle 7 - 12 rpm

CELLULOSE ETHERS WITH DELAYED SOLUBILITY

Penta ECP 5	4.000 ÷ 6.000 mPa.s	Spindle 4 - 20 rpm
Penta ECP 15	13.000 ÷ 18.000 mPa.s	Spindle 6 - 20 rpm



	PENTA EC 05	PENTA EC 20	PENTA EC 70	PENTA ECP 5	PENTA ECP 15
COMPOSITION	pure hpmc				
STATE	powder				

CEMENT BASED

Plasters		●			
Smooth finishes		●	●		
Tile adhesives			●		
Self-levelling mortars	●				
Adhesives for heat insulation		○	○		

GYP SUM BASED

Plasters		●			
Smooth finishes			●		
Skim coatings			●		

WATER BASED

Paints and varnishes				●	●
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○ suggested ● recommended



Modified cellulose ethers

Contemporary building materials require constantly more advanced products. **Pentachem** has developed new modified cellulose ethers, high-performance grades with specific and different characteristics depending on the particular use of the product.

BENEFITS OF THE USE OF A MODIFIED CELLULOSE ETHER OF THE PENTA EC LINE:

• Improved water retention

• Extended open time

• Excellent thixotropy

• Great rheology

• Easy application



VISCOSITY AT 20°C (SOLUTION 2%, BROOKFIELD RV)

MODIFIED CELLULOSE ETHERS		
Penta EC 03	ca 300 mPa.s	Spindle 2 - 50 rpm
Penta EC 4120	17.000 ÷ 21.000 mPa.s	Spindle 6 - 20 rpm
Penta EC 4125	12.000 ÷ 16.000 mPa.s	Spindle 6 - 20 rpm
Penta EC 4135	10.000 ÷ 15.000 mPa.s	Spindle 5 - 20 rpm
Penta EC 6120	35.000 ÷ 40.000 mPa.s	Spindle 6 - 20 rpm
Penta EC 25 M	20.000 ÷ 28.000 mPa.s	Spindle 6 - 20 rpm
Penta EC 52 G	4.000 ÷ 6.000 mPa.s	Spindle 5 - 20 rpm





PENTA EC 03	PENTA EC 4120	PENTA EC 4125	PENTA EC 4135	PENTA EC 6120	PENTA EC 25 M	PENTA EC 52 G
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COMPOSITION	modified hpmc
STATE	powder

CEMENT BASED

Plasters						●	
Smooth finishes		○			●		
Tile adhesives		●	●	●			
Adhesives for heat insulation		●	○	○			
Tile grouts	●						
Fluid and self-levelling mortars	●						

GYP SUM BASED

Plasters					○	●	
Smooth finishes					●		●
Skim coatings					●		●

○ suggested ● recommended

MODIFIED CELLULOSE ETHERS FOR CEMENT- BASED TILE ADHESIVES:

- **Penta EC 4120** - Recommended for all types of cementitious adhesives from C1 to C2TES1 with prevalence of calcareous aggregates and amount of polymers less than 3%. Excellent also for ETICS.
- **Penta EC 4125** - Recommended for all types of cement-based adhesives from C1 to C2TES1 with both calcareous and siliceous aggregates and polymer amounts up to 8%.
- **Penta EC 4135** - Recommended for all types of cement-based adhesives and particularly for those containing high percentages of polymers and prevalence of siliceous aggregates, classes C2 to C2TES2.

MODIFIED CELLULOSE ETHERS FOR SMOOTH FINISHES, SKIM COATINGS AND PLASTERS:

- **Penta EC 6120** - Recommended for fine and very fine cement and gypsum-based skim coatings.
- **Penta EC 25 M** - Recommended for cement and gypsum-based plasters.
- **Penta EC 52** - Recommended for gypsum-based skim coatings and finishes.

Redispersible resins in powder

The resins in powder of **Pentachem** are products redispersible in water used to increase the adhesion and the flexural strengths of the admixtures, as well as to enhance their resistance to abrasion.





PENTARESIN

P 3	P 104	RP 1011
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COMPOSITION	v.v.a.	p.v.a.	p.v.v.a.
STATE	powder		

FEATURES (MIN=1 MAX=4)

Adhesion	3	4	3
Flexibility	2	3	2
Heat resistance	4	4	3
Water resistance	2	4	2

CEMENT BASED

Plasters			
Smooth finishes			
Tile adhesives C1			
Tile adhesives C2			
Deformable tile adhesives			
Monocomp. cementitious sleaths			

GYPSUM BASED

Plasters			
Smooth finishes			
Skim coatings			
Joint fillers			

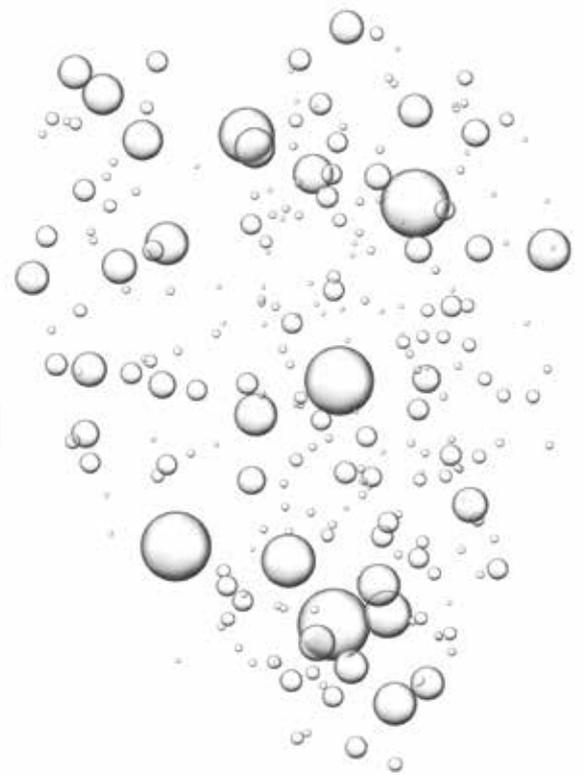
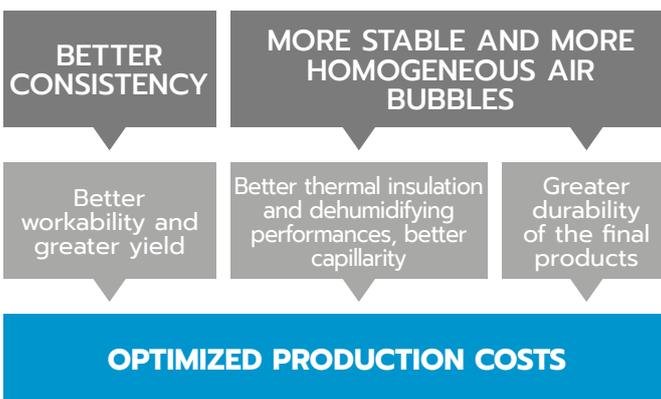
suggested
 recommended

v.v.a. = vinyl versatate acrylic
 p.v.v.a. = polyvinyl versatate acetate
 p.v.a. = polyvinyl acetate

Air entraining agents

Air entraining agents are additives able to influence and modify the density in a mortar by creating stable and homogeneously distributed air bubbles

ADVANTAGES OF THE USE OF AN AIR ENTRAINING AGENT OF THE LINE PENTAMIX AER:



Pentamix AER line regroups air-entraining agents in liquid and powder form. They are suggested for cement and gypsum-based mortars, plasters, and for cellular concretes.

Pentamix AER 205 and **Pentamix AER 206** are products in powder form that can develop highly stable and homogeneous air bubbles. Thanks to their chemical characteristics, they improve the workability and the pumpability of the mortar.

Pentamix AER 228 is a semi-synthetic wetting/air-entraining agent in powder form that develops micro air bubbles to improve the consistency of the mortars and to prevent the appearance of lumps in the gypsum-based mixtures.

Pentamix AER 905 is a liquid foaming agent, not of animal origin, which enables the production of particularly homogeneous mixtures free from segregation for a long time after mixing.

Pentamix AER 906 is a semi-synthetic liquid air-entraining agent particularly suitable for use with cements processed with new generation grinding aids.

Pentamix AER 907 is a liquid product suggested for high quality cellular concrete. It allows developing a stable and performing product, even at very low densities.

PENTAMIX

	AER 205	AER 206	AER 228	AER 905	AER 906	AER 907
COMPOSITION	sls		semi synthetic	synthetic	semi synthetic	proteic
STATE	powder			liquid		

FEATURES (MIN=1 MAX=4)

Air development	3	4	2	4	4	4
Stability of the air bubble	3	4	4	4	4	4

CEMENT-BASED SELF-LEVELLING

Blocks in cellular concrete						
High thickness lightweight						

VERTICAL MORTARS

Masonry mortars						
Rendering mortars						

FLUID / HORIZONTAL USE

Cellular cement						
Lightweight concrete						
Traditional grouts						

CEMENT BASED PLASTERS

Plasters with hydrated lime						
Plasters without hydrated lime						
Dehumidifying plasters						
Skim coatings						

GYP SUM BASED PLASTERS

Plasters with hydrated lime						
Plasters without hydrated lime						
Skim coatings						
Blocks in gypsum						

HYDRAULIC LIME BASED

Plasters						
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 suggested

 recommended

Set accelerators and retarders

Set **accelerators** and **retarders** are additives allowing the correction and management of setting and hardening times in cement and/or gypsum-based admixtures.

Set accelerators of **Pentachem** speed up setting and hardening times, improving mechanical strengths and thus allowing working at very low temperatures.

Set retarders of **Pentachem**, on the other side, extend setting times, thus prolonging working times without affecting the final strengths.



Set accelerators



	LEGARAPID 2H	PENTARAPID CR 1001	PENTARAPID AG 3	PENTARAPID AG 4
COMPOSITION	mix of salts	aluminates	salts	
STATE	powder			

FEATURES (MIN=1 MAX=4)

Setting-time acceleration	4	4	4	4
Fast development of strenghts	3	3	1	4

CEMENT-BASED SELF-LEVELLING

Low thickness				
High thickness				

VERTICAL MORTARS

Structural repair mortars				
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FLUID / HORIZONTAL USE

Repair mortars				
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CEMENT BASED PLASTERS

Plasters with hydrated lime				
Plasters without hydrated lime				
Thermal plasters				

GYP SUM BASED PLASTERS

Plasters with and without hydrated lime				
Skim coatings and putties				

suggested

recommended

Set retarders

PENTATARD		
AT	AC	G3
tartaric	citric	proteic
powder		

COMPOSITION
STATE

CEMENT-BASED SELF-LEVELLING			
Low thickness			
High thickness			
High thickness lightweight			

VERTICAL MORTARS			
Structural repair mortars			

FLUID / HORIZONTAL USE			
Repair mortars			

CEMENT BASED			
Plasters with hydrated lime			
Thermal plasters			
Skim coatings and putties			

GYPSUM BASED			
Plasters with hydrated lime			
Plasters without hydrated lime			

 suggested

 recommended



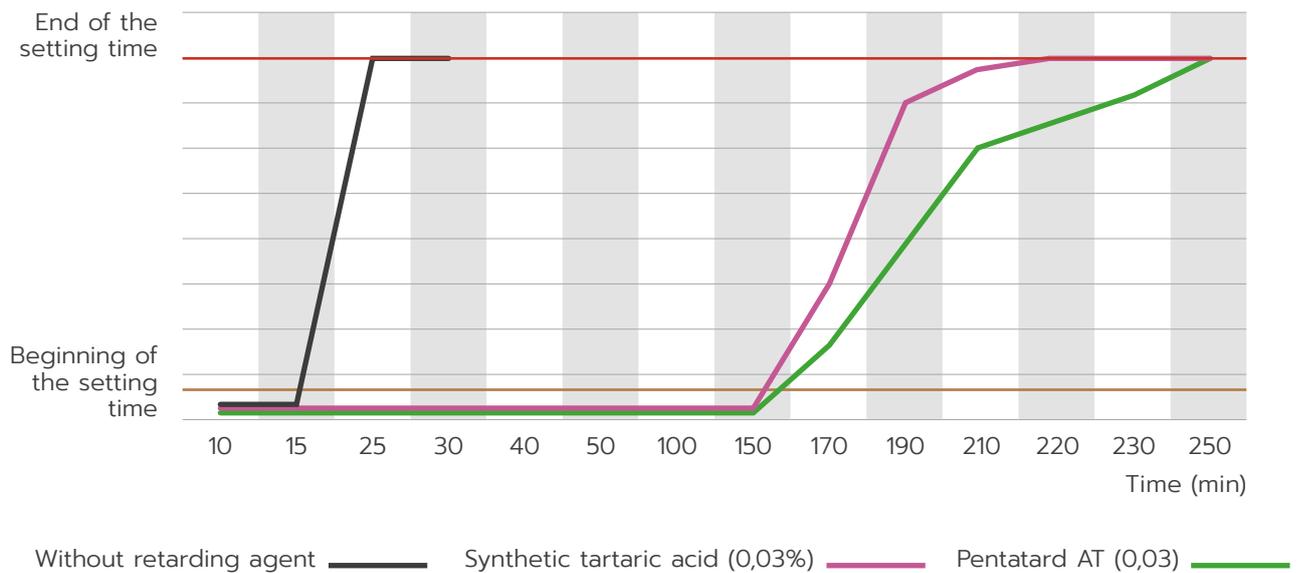
Pentatard AT

Pentatard AT is a set retarder based on very fine 100% natural tartaric acid, which is produced according to an industrial processing cycle that pays attention to the environment and to energy saving.

Thanks to its composition, the additive develops a more stable and manageable time lapse between the start and the end of the setting time than the time lapse developed by synthetic tartaric acid, thus allowing a better control of the delay.



EFFECTS OF PENTATARD AT ON THE SETTING TIME IN A GYPSUM-BASED PLASTER



Additives for repair mortars

For the rehabilitation of damaged concrete, **Pentachem** provides a list of additives, both raw materials and solution additives, to prepare and modify repair mortars specific for the technical and application requirements of the customers.





PENTAMIX EX 3 / EX 4 / EX 6 / EX 9	PENTAMIX EX 5	PENTARESIN P 3	ANTIFOAM PS 5 / PS 201	FIBERCHEM	PENTAGEL S2/M	PENTAMIX IT.1
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TYPE	r.m			add.		
STATE	powder			solid	powder	

VERTICAL MORTARS

Structural repair mortars							
Masonry mortars							
Rendering mortars							

FLUID / HORIZONTAL USE

Anchoring mortars							
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suggested recommended

r.m. = raw material
add. = additive

PENTAMIX IT.1

It is a solution additive in powder form suggested for thixotropic repair mortars. It regroups in one additive all the different chemical components necessary for a basic repair mortar and it gives to the final products the following features:

- High thixotropy
- Anti-shrinkage
- High strengths
- Low scraps during the application

Depending on the needs of the customers and on the kind of application, the thixotropic mortar prepared with **Pentamix IT.1** can be further modified with the following additives.

PENTAMIX IT.1	
Waterproofness	Pentaproof 30 P Pentaproof 50 P
Higher strengths	Pentaflow PC 5 Fiberchem
Better adhesion	Pentaresin P 3
Acceleration / Delay	Pentarapid CR 1001 Pentatard AT
Shrinkage compensation	Pentamix EX 3 Pentamix EX 5 Fiberchem
Workability	Pentaflow PC 5 Penta EC

Additives for self-levelling mortars

Fluid and self-levelling mortars are admixtures that, thanks to their composition, can reach autonomously the features of fluidity and self-levelling.

Depending on their thickness and their application, they can be divided into different products.



	Thickness (cm)	Binders	Applications
UNDERLAYMENT OR EXPOSED FLOOR	0 - 1	<ul style="list-style-type: none"> Portland cement Alumina cement Hemihydrate gypsum Sulphoaluminate cement 	Regularization of screeds and substrates
LOW-THICKNESS SCREED	0.5 - 3	<ul style="list-style-type: none"> Portland cement Alumina cement Anhydrite gypsum Hemihydrate gypsum Sulphoaluminate cement 	Regularization of screeds and underlayments
HIGH-THICKNESS SCREED	3 - 10	<ul style="list-style-type: none"> Portland cement Alumina cement Anhydrite gypsum Hemihydrate gypsum Sulphoaluminate cement 	Covering of floor heating
LIGHT SCREED	Variable	<ul style="list-style-type: none"> Portland cement 	Insulation for the floorings
ANCHORING MORTAR	> 1	<ul style="list-style-type: none"> Portland cement Alumina cement Sulphoaluminate cement 	Concrete repair
INDUSTRIAL FLOORING	15 - 20	<ul style="list-style-type: none"> Portland cement Alumina cement Hemihydrate gypsum Sulphoaluminate cement 	Floorings subjected to high levels of traffic and high abrasion



PENTACHEM DEVELOPED A COMPLETE RANGE OF CHEMICAL ADDITIVES FOR THESE KINDS OF SELF-LEVELLING SCREEDS. IN PARTICULAR, IT OFFERS:

1. Raw materials such as:

- Defoamers to modify density, mechanical strengths, and aesthetic.
- Shrinkage reducing and compensating agents to avoid cracks and breaks.
- Superplasticizers to increase the fluidity and reduce the water.
- Air entraining agents to modify density and thermal performances.
- Additives that counteract segregation to avoid bleeding effect.

2. Solution additives (mixtures of active materials carefully mixed and calibrated among themselves, regrouped in one single additive). Depending on the needs of the customers and on the kind of application, the fluid or self-levelling mortars can be further modified with the following additives:

Higher R _c K	PENTAFLOW PC 5 ANTIFOAM PS 5 / PS 201
Better flow	PENTAFLOW PC 5 PC 101 / PC 20 F
Better aesthetic	ANTIFOAM PS 5 / PO 300
Variation of density	PENTAMIX AER 907 LINEA ANTIFOAM
Better adhesion to concrete	PENTARESIN RP 1011
Better homogeneity	PENTA EC 03
Check of setting and hardening times	PENTATARD AT



	PENTAMIX AER 906	PENTAMIX AER 907	LINEA ANTIFOAM	PENTA EC 03	PENTAFLOW PC 5	PENTAFLOW PC 20 F
TYPE	r.m.					
STATE	liquid		powder			

CEMENT BASED SELF-LEVELLING						
Low thickness			◐	◐	◐	◐
High thickness			◐	◐	◐	◐
High thickness lightweight	◐	◐		◑		

GYPSUM BASED						
High thickness anhydrite			◑	◐		◐
High thickness hemihydrate			◑	◐		◐

◑ suggested ◐ recommended

r.m. = raw material





	PENTAFLOW PC 101	PENTAFLOW PC 102	PENTAMIX EX 3	PENTAMIX EX 5	PENTAMIX EX 6 / EX9	PENTAFLOW SA.2
TYPE	r.m.					add.
STATE	powder					

CEMENT BASED SELF-LEVELLING						
Low thickness						
High thickness						
High thickness lightweight						

GYPSUM BASED						
High thickness anhydrite						
High thickness hemihydrate						

suggested recommended

r.m. = raw material
add. = additive



Additives for tile adhesives

Premixed tile adhesives are products studied and developed for the horizontal and vertical application of layers made of tile or other stone materials.

Depending on the characteristics of the product, cement-based tile adhesives are divided into different categories. The following table shows the tile adhesives classification methods according to European Standard EN 12004:

TILE ADHESIVES Resistance to initial adhesion $\geq 0,5 \text{ N/mm}^2$ Resistance to adhesion after 20' $\geq 0,5 \text{ N/mm}^2$	C1
TILE ADHESIVES Resistance to initial adhesion $\geq 1,0 \text{ N/mm}^2$ Resistance to adhesion after 20' $\geq 0,5 \text{ N/mm}^2$	C2
FAST SETTING Resistance to adhesion after 24 h $\geq 0,5 \text{ N/mm}^2$ Resistance to adhesion after 10' $\geq 0,5 \text{ N/mm}^2$	F
VERTICAL SLIP $\leq 0,5 \text{ mm}$	T
EXTENDED OPEN TIMES Resistance to adhesion after 30' $\geq 0,5 \text{ N/mm}^2$	E
DEFORMATION Transverse deformation $\geq 2,5 \text{ mm}$ and $< 5 \text{ mm}$	S1
HIGH DEFORMATION High transverse deformation $\geq 5 \text{ mm}$	S2

PENTACHEM IN PARTICULAR OFFERS:

Penta EC 4120 - For all cement-based adhesives from C1 to C2TES1

Penta EC 4125 - For all cement-based adhesives, MULTIPURPOSE grade

Penta EC 4135 - For high-performance cement-based adhesives, C2 to C2TES2 grade



New generation tiles require high-performance cement-based adhesives to reach standards and regulations and to meet the needs of customers and applicators.

As a result of its long experience, **Pentachem** has developed a line of modified cellulose ethers, for the realization of high-quality cement-based adhesives able to give the following characteristics:

- high adhesion strengths
- extended open time
- high thixotropy even with large quantities of RDP
- smooth mixtures easy to apply



	PENTA EC 4120	PENTA EC 4125	PENTA EC 4135	PENTARESIN P 3	PENTARESIN P 104	PENTAMIX FUG
COMPOSITION	hpmc		hpmc		rdp/ds*	
TYPE	r.m.				add.	
STATE	powder					

CLASSES						
C1	◐	◐	◐	◐		
C 1 T	◐	◐	◐	◐		
C 2	◐	◐	◐	◐	◐	
C 2 T	◐	◐	◐	◐	◐	
C 2 E	◐	◐	◐	◐	◐	
C 2 TE	◐	◐	◐	◐	◐	
C 1 F	◐	◐	◐	◐	◐	
C 1 FT	◐	◐	◐	◐	◐	
C 2 F	◐	◐	◐	◐	◐	
C 2 FT	◐	◐	◐	◐	◐	
C 2 FE	◐	◐	◐	◐	◐	
C 2 TE S1	◐	◐	◐		◐	
C 2 TE S2			◐		◐	
Tile grouts						◐

◐ suggested

◐ recommended

* sulfonic dispersant

r.m. = raw material
add. = additive



Additives for mortars and plasters

Pentachem offers a complete range of additives for the preparation of plasters, finishes, and skim coatings based both on cement and gypsum.

Depending on their thickness and their purposes, these products are divided into:

PLASTERS	15/2 CM
FINISHES AND MONOLAYERS	1/1.5 CM
SKIM COATINGS	1/3 MM
PUTTIES	3/4 MM

THICKNESS

Pentagel line is the result of a ten-year research, which was carried out focusing on the choice of the best raw materials for producing additives stable in time and efficient in every situation.



THE ADVANTAGES OF THE USE OF **PENTAGEL** ADDITIVES IN PREMIXED PLASTERS ARE:

- Better thixotropy
- Better adhesion
- Easy levelling
- Easy application
- Less waste
- Elimination of problems related to cracking and segregation



PENTAMIX ADX 125	PENTAMIX AER 205	PENTA EC 6120	PENTAGEL IGM 807 sr	PENTASTUC GS 52	PENTAGEL I 100/N M	PENTAGEL RS 619
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TYPE	r.m.	add.
STATE	powder	

CEMENT BASED

Plasters							
Finishes ≤ 0,8mm							
Skim coatings							

GYPSUM BASED

Plasters							
Finishes							
Putties							

HYDRAULIC LIME BASED

Plasters							
Skim coatings and putties							

POLYMER BASED

Plasters							
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suggested

recommended

r.m. = raw material
add. = additive

