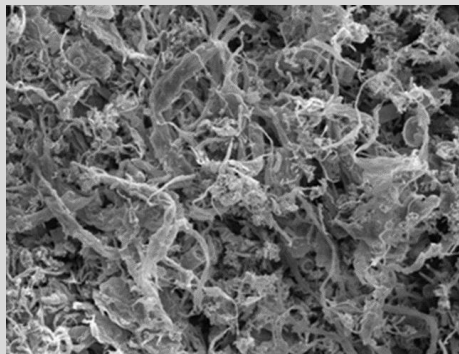


Technical information



# Armipent® Series 2 FINMA

Fibrous reinforcement / viscosity control agent



# content

This technical information describes the addition of additives to construction chemicals, with the aim of improving the shrinkage behavior and bridging cracks, in addition to improving the rheological properties and mechanical stability.

To achieve this, the Armipent® Series 2 was developed, which consists of fibrillated polyolefin fibers and inorganic particles. In the following, a brief overview of the effects of the use of Armipent® is given on the basis of test results Products in different systems.

- 1. Shrinkage behavior and crack bridging**
- 2. Rheology**
- 3. Mechanical stability**
- 4. handling**
- 5. Areas of application**
  
- 6. Summary**

# 1. Shrinkage behavior and crack bridging

When using construction chemicals, the shrinkage behavior of the materials used is an important aspect. Because this determines how many application steps are necessary, as well as the adhesion and the probability of cracking can be influenced.

Reinforcement fabrics are often used to prevent cracking. For this purpose, for example, leveling compounds are applied, then the reinforcement fabric is inserted and leveled over again.

Due to the aspects mentioned, one goal is to minimize the shrinkage in order to avoid cracking during drying as a result. By using Armipent® it is possible to minimize the shrinkage during drying and at the same time to significantly improve the formation of cracks and the bridging of cracks in comparison to the conventional cementitious leveling compounds. This is illustrated by the following versimilar illustrations.



*Comparative illustration of a cement filler after drying, applied in a thick layer (1 cm) without the addition of Armipent® (left) and with the addition of 0.75% Armipent® 542 (right).*



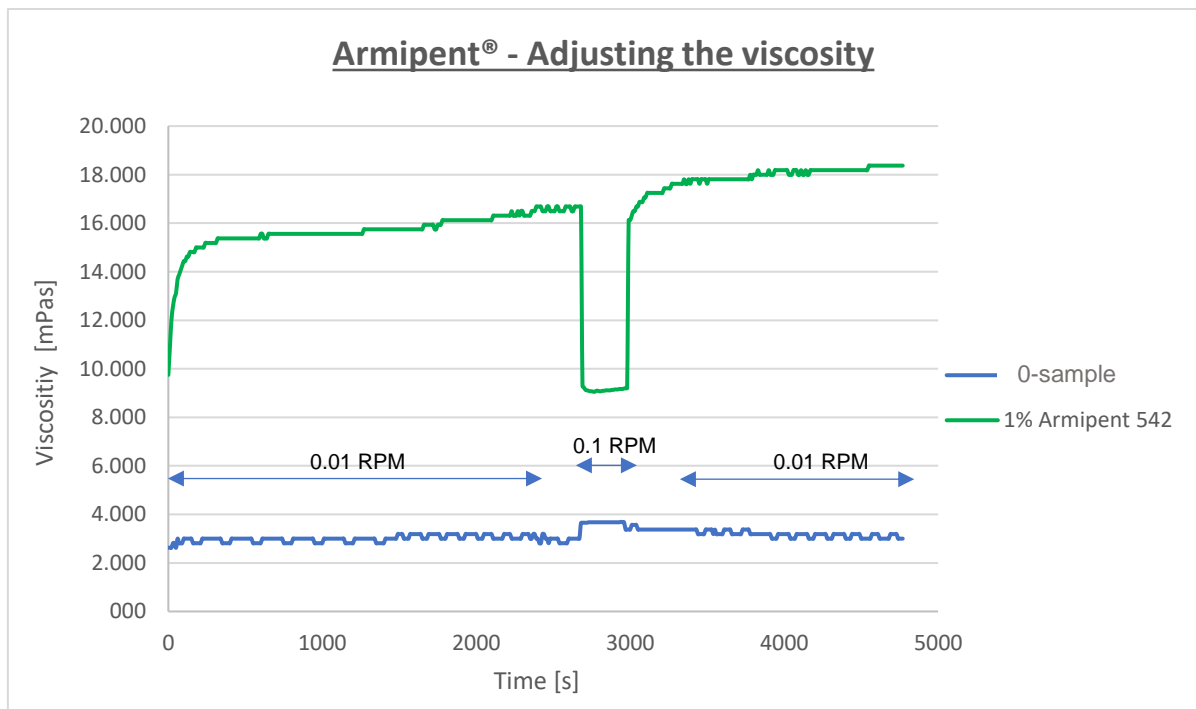
*Comparative illustration of a dispersion tile adhesive after drying, applied in a thick layer (1 cm) without the addition of Armipent® (left) and with the addition of 0.75% Armipent® 542 (right).*

It can be clearly seen that the formation of shrinkage cracks and the crack-bridging properties are significantly improved through the use of Armipent®.

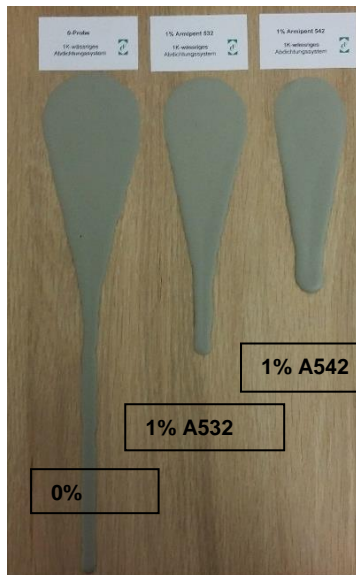
## 2. Rheology

In the case of construction chemicals, their rheological behaviour plays a very important role. For their processing it is often necessary that they are pumpable and flowable, at the same time the applied systems should not run off or drip on walls and ceilings. For this it is necessary that the system has a corresponding stability and a thixotropic behaviour.

The use of Armipent® in construction chemical systems enables relevant rheological properties to be adjusted as required while reinforcing the cured system at the same time. An example of the thickening and thixotropic effect of Armipent® is shown in the test in an aqueous 1K sealing compound, with the following measurement results.



Graphical representation of the viscosity over the course of time of an aqueous 1part sealing compound in a jump test. Viscosity in mPas at 0.01 RPM and 0.1 RPM with the viscometer Brookfield model LVDV-II + PX and the spindle SC4-29 (cylinder system) compared pure 1K sealing compound (blue) and 1K sealing compound with 1% Armipent® (green).

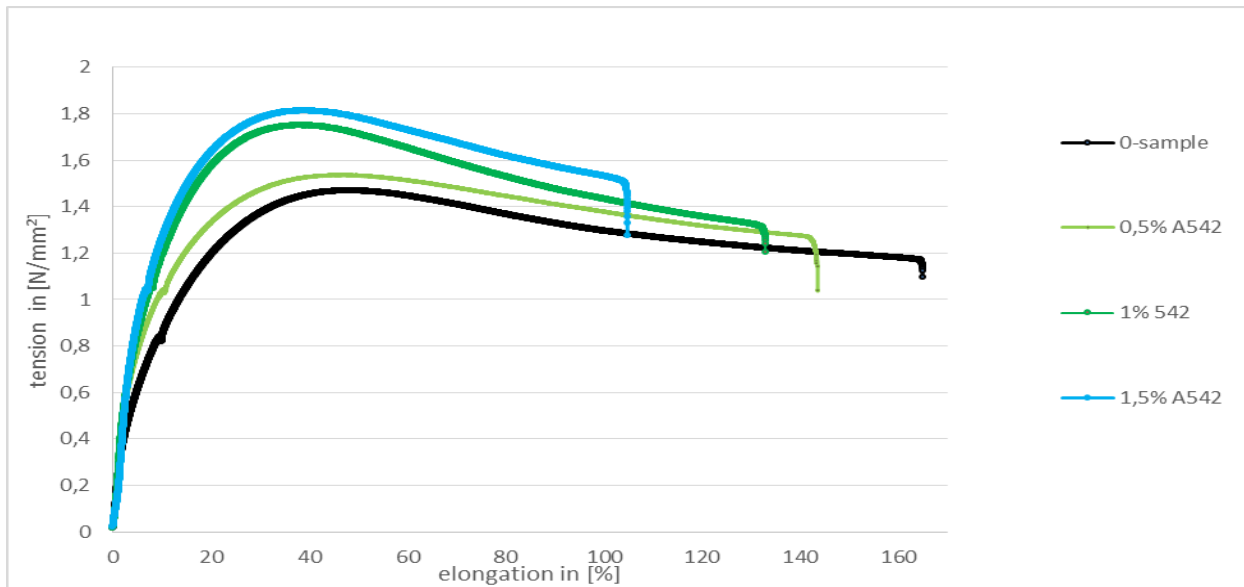


*Illustration of the run-off behavior of a cement-based system on vertical surfaces. Without Armipent® (left) with 1% Armipent® 532 (middle) and with 1% Armipent® 542 (right).*

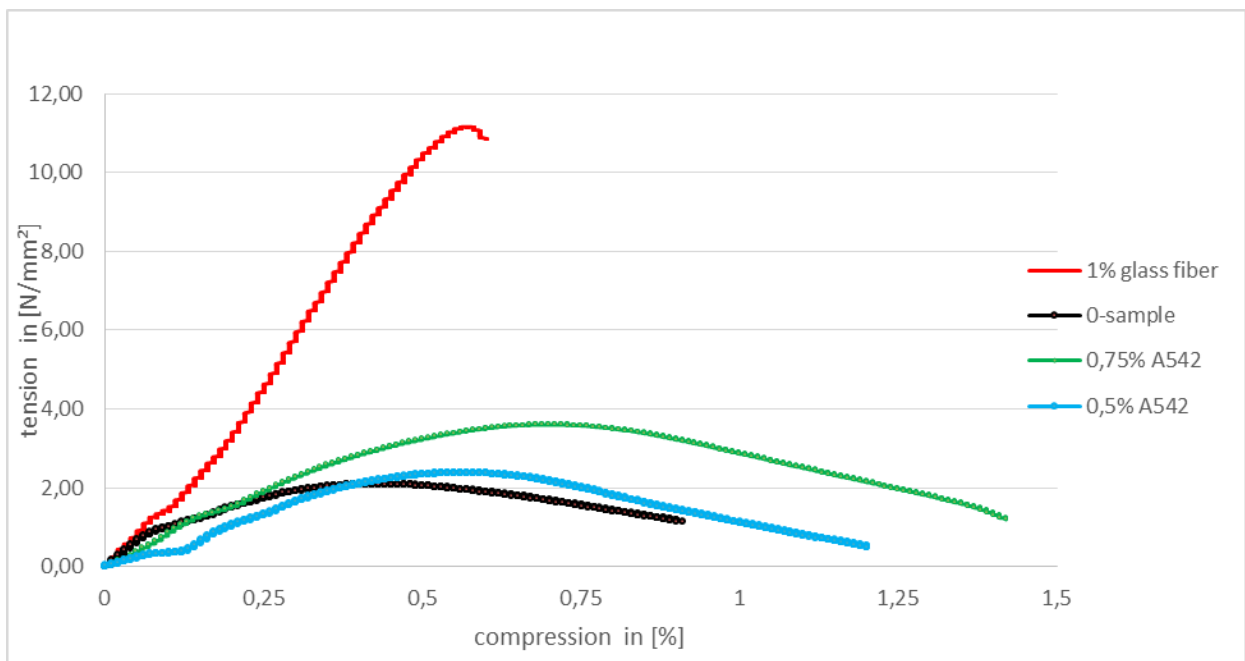
The results clearly show that the use of Armipent® enables the processing consistency to be set and at the same time has a shear-thinning effect. In addition, Armipent® ensures increased stability, which means that drainage on walls and ceilings is reduced.

### 3. Mechanical stability

When it comes to construction chemicals, it is important that they adhere well to the surface where they are applied. This adhesive tensile strength is determined by how well the material adheres to surfaces and also how well it holds together in itself. The corresponding tests for this are the pull-off test and the tensile test. Another important factor is the compressive bending strength. From this it can be deduced how the material behaves under pressure. This is particularly important in the area of the floor or mortar in masonry. The following results of tests show what influence the use of Armipent® has on these properties.



Comparison of the tensile strength of a soft 1part sealing compound with different amounts used Armipent®. Shown is the tension in  $[\text{N} / \text{mm}^2]$  as a function of the elongation in [%] of the pure sealing compound (black), the sealing compound with 0.5% Armipent® 542 (light green), with 1% Armipent® 542 (green) and with 1.5% Armipent® 542 (blue).



Comparative illustration of the compressive bending strength of a cementitious floor filler-Dimensions. Shown is the tension in  $[\text{N} / \text{mm}^2]$  depending on the compression in [%] of the pure floor leveling compound (black), the floor leveling compound with 1% glass fiber (red), floor leveling compound with 0.5% Armipent® 542 (blue) and floor leveling compound with 0.75% Armipent® 542 (green).

The results clearly show that the use of Armipent® significantly improves the adhesive tensile strength as well as the tensile and compressive strength.

## 4. handling

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When adding additives to construction chemicals, different properties of the additive must be observed in order to avoid problems later and to ensure occupational safety.

This also applies to Armipent®, a mixture of fibrillated polyolefin fibers and inorganic particles. It should be noted that the mixture can be easily incorporated into different systems, such as liquid systems or dry cement powder, and that a good homogeneous distribution of the additive in the system is guaranteed with the usual methods used. All of these aspects have been taken into account and optimized at Armipent®.

During the development of Armipent®, care was taken to ensure the lowest possible dust generation during incorporation. This is to be preferred above all for occupational health and safety reasons, even if Armipent® is free from substances hazardous to health and therefore there is no labeling requirement. Another advantage of Armipent® is that due to the mixing ratio of the inorganic particles with the fibrillated polyolefin fibers and the linear viscosity increase, Armipent® is particularly easy to dose.

## 5. Areas of application

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Due to the good rheological properties, the high-water resistance even in an alkaline environment as well as the reinforcing properties due to the shrinkage reduction and the flexible crack bridging, there are many areas of application for Armipent® in the field of construction chemicals. These are, for example: Floor / leveling compounds, mortar, leveling compounds, flexible seals, tile and surface adhesives, filling compounds, coatings, and much more.

In addition, Armipent® is available with different fiber lengths, so you can choose the option that best suits your system.

Inorganic particles in [%]	Fiber length in [µm]	100 µm	400 µm	1500 µm
45		Armipent® 532	Armipent® 542	Armipent® 5152

*Different types of Armipent®, defined by the length of the fibrillated polyolefin fiber used.*

## 6. Summary

Armipent® is a reinforcing and viscosity control agent made from fibrillated polyolefin fibers with numerous possible uses in the field of construction chemistry. The shrinkage-reducing and crack-bridging effect of Armipent® saves working time during application and increases the durability of the finished end product.

At the same time, Armipent® is not hazardous to health and there is no obligation to label your future product with Armipent®.



# Contact

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- Customer-specific requirements need individual solutions
- We can offer support and advice for the start of your development work.
- Do you need more information?  
The FINMA-Team is looking forward to your contact.

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