



Interior plaster

Formulation
guidelines
by Lamberti

Science of Surface

Today, much more than in the recent past, building coatings are required to have mechanical characteristics, durability over the time and high resistance to increasingly aggressive atmospheric agents in order to respond effectively to the ongoing climate changes and to the widespread regulations in the world for energy saving.

At the same time, it is no longer possible to disregard the development of sustainable construction products to meet the medium and long-term objectives to zero the balance on greenhouse gas emissions with favorable product life cycle assessments in a circular economy perspective.

We have made our mission of these issues: to intimately link the performance aspect to that of social and environmental responsibility, by developing a unique product line based on natural sources.

This innovative approach is ingeniously applied in:

- Gypsum & Cement base dry mix
- Gypsum plasterboard and cement boards
- Ready mix solutions for wet systems since it could be used as a solution to change industrial characteristics and to achieve decorative effects as well.

For these fields of the Construction Industry, we developed the whole unique product line that consists of ESACOL®, ESA-ONE®, ESAMID, ESAPON and DEFOMEX additives, most of them composed by natural sources, such as our Guar Gum and Starch.

Plasters, skim coats, joint fillers, tile adhesives, coloured renderings, self-levelling floorings, waterproofing plasterboards and putties are the main applications where our specialties have been applied in the dry mix mortar and pasty systems with a demonstrated history of success over the last 30 years.

Dry Mix for Construction

Our widest range of sustainable natural polymer derivatives

Our chemical additives are capable of solving issues caused by heavy rain, critical freeze-thaw cycles, high humidity.

Our solutions

Lamberti additives and premixes.

Plaster is a building material used for the protective and/or decorative coating of walls and ceilings. Gypsum based mortars, joint compound, fillers, levelling and finishing plasters are normally utilised to prepare walls and ceilings before painting and are considered the most common types of plaster currently in use.

Plasters for interior use need to satisfy a large number of parameters such as open and setting time, high adhesion and good workability. The adjustment and control of these characteristics guarantees ease of application and durability of construction work. The use of additives allows the producer to adjust these parameters.

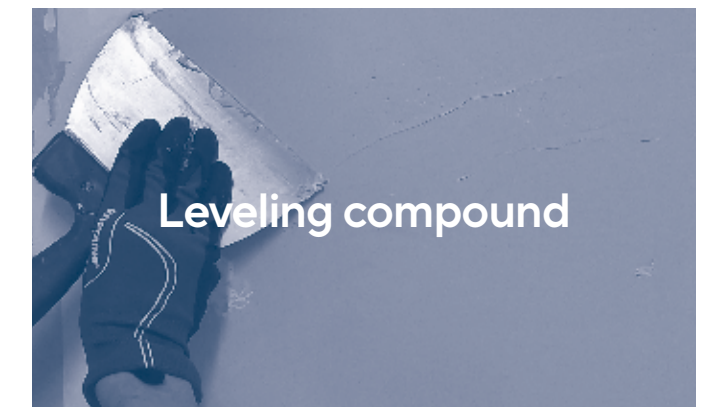
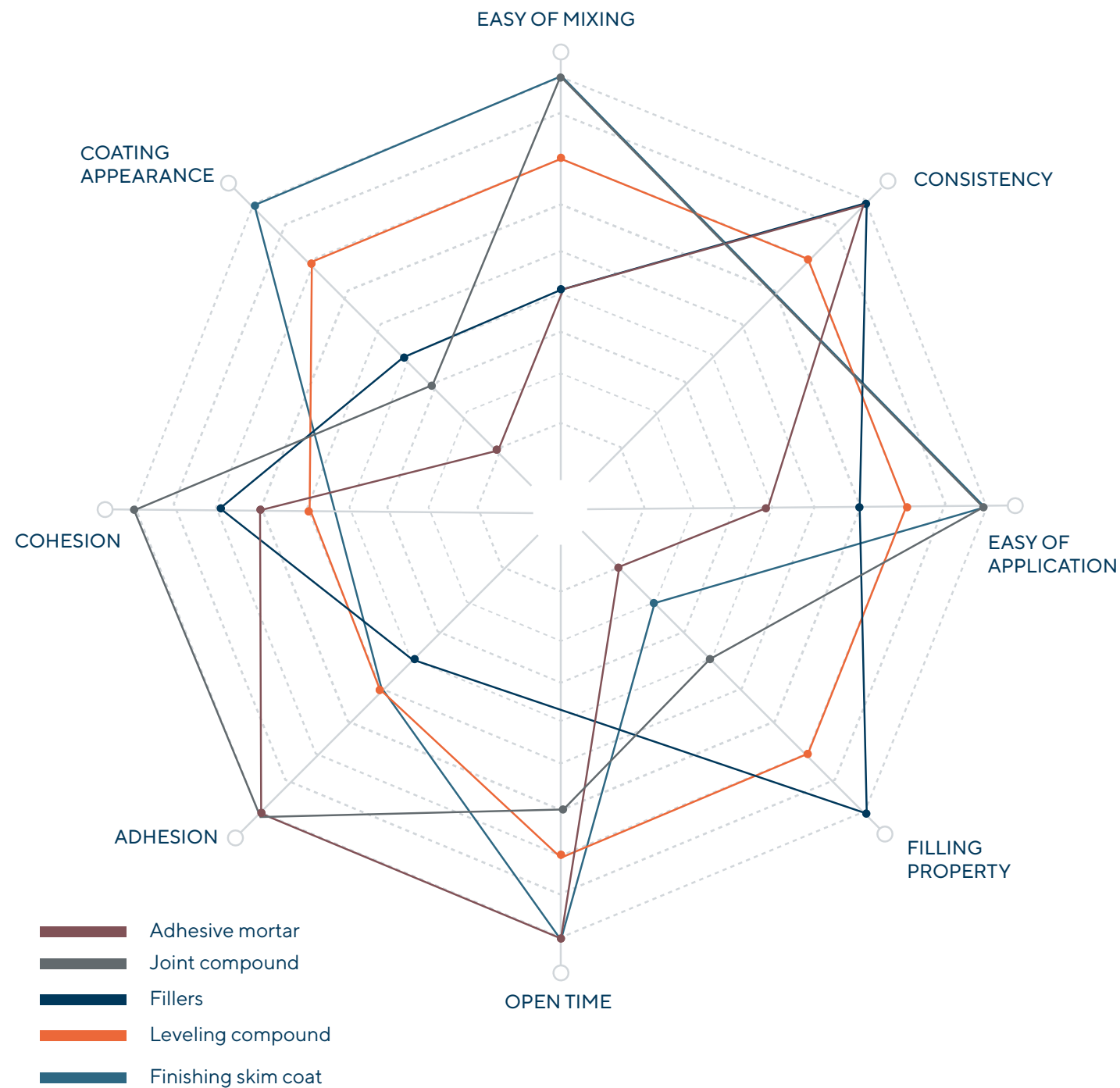
Lamberti has a wide range of additives such as **Esacol**[®], **Esamid**, **Esatec**, **Esapon**, and **Carbocel**[®], **Defomex** that can help formulators to set the parameters of their plaster formulations. From the complexity of using many additives came the idea of simple formulated solutions.

Esa-one[®] technology facilitates the production process of building products. It simplifies inventory management, guarantees consistent quality and assures quality control. The Lamberti Group development of the Esa-one products provides a technical security to its customers and offers a wide range of innovative solutions. The standard formulas presented in this document are the starting point of the support that can be provided by Lamberti and our team.

 **Esa-One**[®] **Esacol**[®] **Carbocel**[®] **Defomex** **Esamid** **Esapon**

Interior plaster

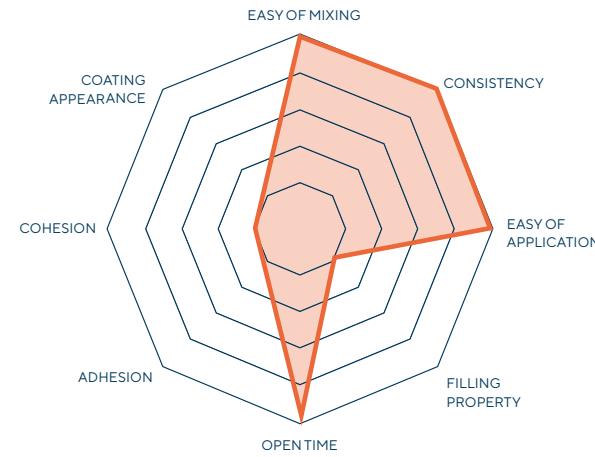
Many applications, different properties required.





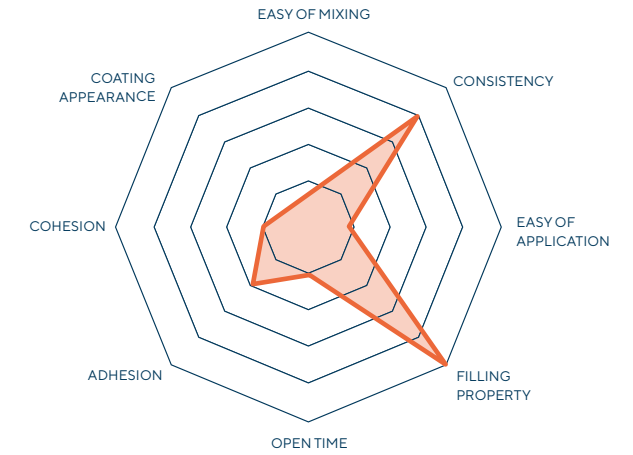
Guar gum base water retentive agents.

Lamberti offers a wide range of thickener with a high capacity to maintain water in the system. Allowing to control open time, workability, shrinkage.



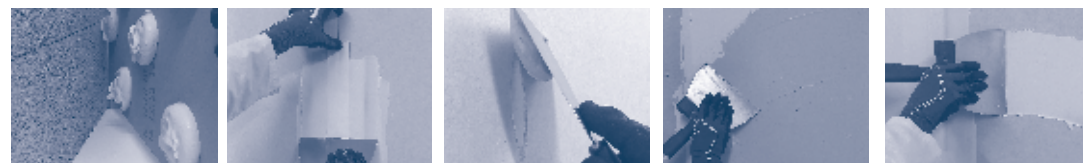
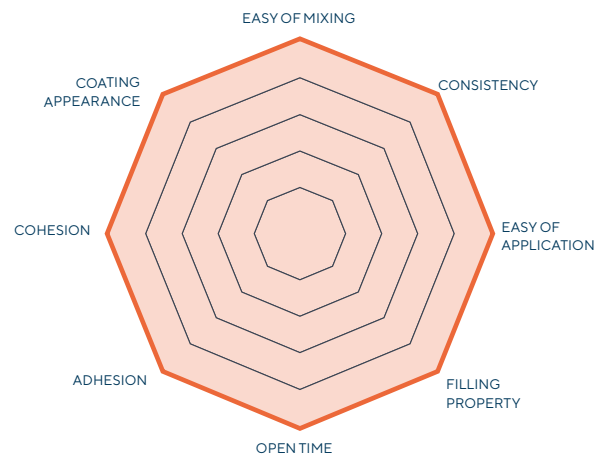
Carboxymethylcelluloses.

These cellulose derivatives improve filling properties, increase the consistency at low dosage, boost the water retention.



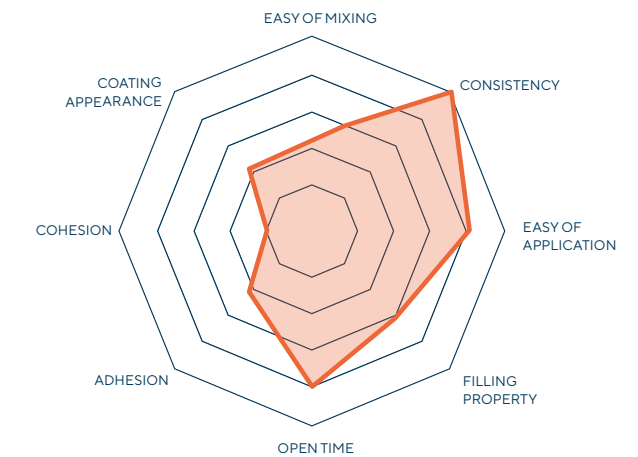
Formulated solutions.

The Esa-one technology is based on the simplification of the production of powder or paste plasters. It consists in designing a powder-based premix that will give to the plaster, after adding fillers and binders (gypsum, cement, lime), all the characteristics required by our customer.



Starch derivatives.

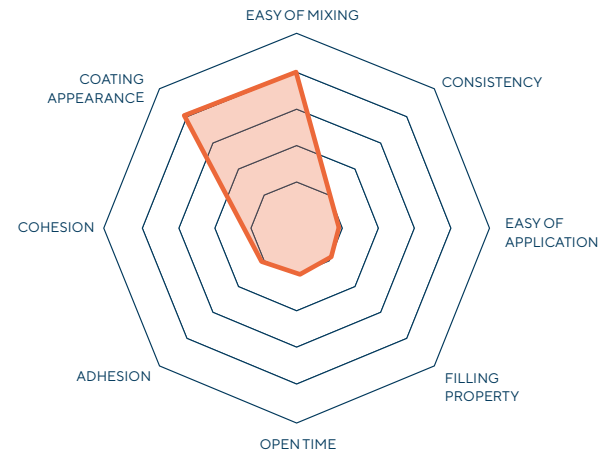
Composed by various chemically modified starches, the Esamid range contains additives able to adjust the consistency of a plaster but also to enhance the open time, or prevent skin formation on gypsum based adhesive mortar.





Surfactants.

Able to control the air entrained into the system during the mixing, Esapon additives can also improve stability and prevent lump formation.



Guidance formula

Adhesive mortar.

Adhesive mortars are used to seal insulating lining complexes (Plasterboards) onto masonry walls. They contain a very large amount of gypsum.

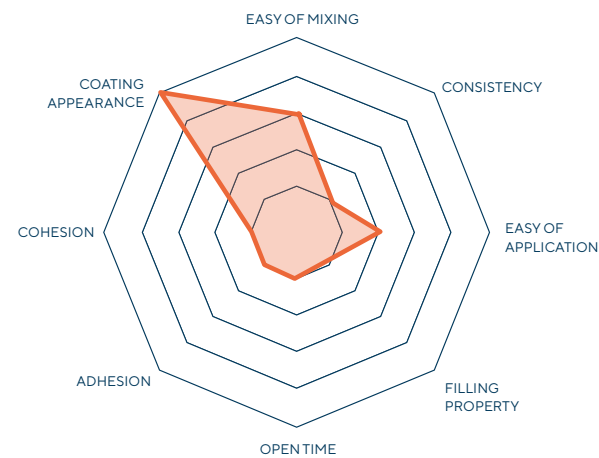
Requirements:

- Open time
- Adhesion
- Cohesion
- Low cost



Defoamers in powder form.

The Defomex range has been designed to prevent bubble formation during the mixing phase or when the plaster is applied onto the wall.



Additive based orientation formula

Esacol HS20	0,10%	Retention and workability
Esacol 55MU	0,13%	Retention and workability
Esamid P12	0,16%	Open time
Esatec RFG10	0,20%	Extension of the setting time
Mikhart 40	30,00%	Filler, Calcium carbonate
Gypsum	69,41%	Hydraulic binder

Esa-one solution

Esa-one Putty S	1,0%
Gypsum	69,0 - 99,0%
Mikhart 40	0 - 30,0%
Mixing water	50,0%

Expected technical characteristics

Setting time	4 h
Water retention	> 90%
Adherence to concrete	> 1MPa
Open time	60 min

Guidance formula

Joint compound (fast setting).

Joint fillers are used to cover the gap between two plasterboards. The so-called "fast" joint plasters have a setting of less than four hours, allowing the application of the second coat within the same day. They necessarily contain gypsum.

Requirements:

- Ease of implementation
- Ease of application
- Homogeneous setting time
- Good tape adhesion



Additive based orientation formula		
Esacol HS20	0,12%	Water retention and workability
Esacol HD15	0,12%	Lump prevention and workability
Esacol 55MU	0,24%	Water retention and workability
Esamid P12	0,20%	Open time and consistency
Setting accelerator	0,02%	
Esatec 310H	0,01%	Consistency adjustment
Esatec RFG10	0,16%	Extension of the setting time
Esatec 194	0,70%	Adhesion and cohesion
Esatec 285	0,80%	Cohesion
Mikhart 15	67,77%	Filler, calcium carbonate 15µm
Gypsum	30,00%	Hydraulic binder

Esa-one solution	
Esa-one Joint Quick	4,0%
Gypsum	25,0%
Mikhart 15	71,0%
Mixing water	50,0%
Expected technical characteristics	
Setting time	4h
Water retention	> 94%
Band pulling resist. (dry)	> 1000 g
Band pulling resist. (wet)	> 500 g

Guidance formula

Joint compound (drying).

Without gypsum, these joint bonding plasters contain resins which allow to bond the tape after drying. Esa-one JSP has been specially formulated to give the plaster a very high adhesive power and a satisfactory level of bonding (delamination of the strip) 24 hours after application.

Requirements:

- Paste easy to prepare without lump
- Ease of application
- Water retention to avoid shrinkage
- Fast adhesion of the strip
- Good cohesion



Additive based orientation formula		
Esacol HD15	0,23%	Water retention & lump less mixing
Esacol 55MU	0,30%	Water retention and workability
Esamid P12	0,25%	Open time and consistency
Esatec 310H	0,03%	Consistency adjustment
Esatec 194	0,80%	Adhesion et cohesion
Esatec 285	1,00%	Cohesion
Cellulose fiber	0,20%	Homogenization of the drying
Mikhart 15	97,19%	Filler, calcium carbonate 15µm

Esa-one solution	
Esa-one JSP	4,0%
Mikhart 15	96,0%
Mixing water	44,0%
Expected technical characteristics	
Setting time	Drying
Water retention	> 95%
Band pulling resist. (dry)	> 1000 g
Band pulling resist. (wet)	> 500 g

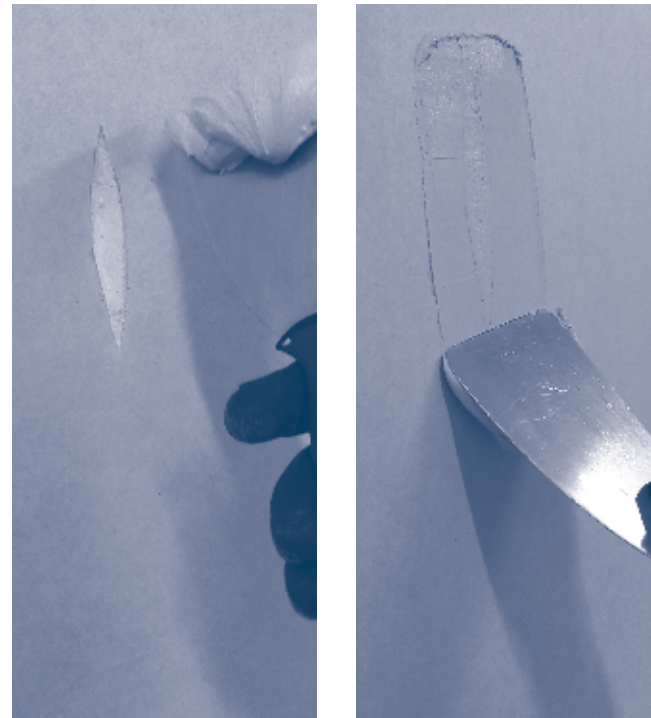
Guidance formula

Filler.

Containing a large amount of gypsum, fillers are used to fill cracks and holes before applying finishing coats or paints. Esa-one Fill S gives a quick setting time, allowing quick preparation of the walls before applying a skim coat or a paint.

Requirements:

- Workability
- Water retention
- No shrinkage
- Cohesion



Additive based orientation formula

Esacol HS20	0,35%	Water retention and workability
Esacol 55MU	0,10%	Water retention and workability
Carbocel 69HV	0,02%	Filling effect
BRD1107 (gelatine)	0,15%	Extension of the setting time
Setting accelerator	0,08%	
Esatec 285	0,60%	Cohesion
Mikhart 40µm	28,70%	Filler, calcium carbonate 40µm
Gypsum	70,00%	Hydraulic binder

Esa-one solution

Esa-one Fill S	3,5%
Gypsum	75,0%
Mikhart 15	21,4%
Mixing water	44,0%
Expected technical characteristics	
Setting time	60 min
Water retention	> 93%

Guidance formula

Levelling compound.

Levelling compounds are used to prepare walls before painting. They allow to correct the irregularities of the walls before the application of the finishing coats. The application capacity in thin or thick layers of Esa-one S4201 allows the covering of deformations and imperfections of the walls before painting. It gives excellent adhesion to the wall and good surface hardness.

Requirements:

- Ease of mixing
- Ease of application
- Open time
- Appearance of the dry film
- Good cohesion



Additive based orientation formula

Esacol HS20	0,20%	Water retention and workability
Esacol 55MU	0,20%	Water retention
Carbocel 69HV	0,04%	Filling effect
Esamid P12	0,40%	Consistency and open time
BRD1107 (gelatine)	0,40%	Extension of the setting time
Mikhart 15	20,00%	Filler, calcium carbonate 15µm
Mikhart 40	38,76%	Filler, calcium carbonate 40µm
Gypsum	40,00%	Hydraulic binder

Esa-one solution

Esa-one S4201	2,0%
Mica	6,4%
Gypsum	63,8%
Mikhart 15	27,8%
Mixing water	50,0%
Expected technical characteristics	
Setting time	> 4h
Water retention	> 88%

Guidance formula

Finishing skim coat (gypsum based).

Finishing plasters are used to prepare walls before painting. They make possible to obtain a smooth surface, without irregularities before painting. A finishing coat must be easy to apply. The mixing should be fast and lump-free. The coating must have a good glide (effortless application) and a long open time (possibility to work on large surfaces) without crimping (premature drying of the coating during application). The dry film must have very good resistance to distemper (the first layer takes off by the application of the second one) and must not have "flouring" effect (powdering of the film created by a lack of coating of the fillers by the binder).



Requirements:

- Ease of mixing
- Ease of application
- Open time
- Appearance of the dry film
- Good cohesion

Additive based orientation formula		
Esacol HD15	0,20%	Thickening and lump-free mixing
Esacol 55MU	0,20%	Water retention and workability
Esamid S40	0,50%	Smooth appearance of the coating
BRD1107 (gelatine)	0,60%	Extension of setting time & adhesion
Esatec 285	0,60%	Cohesion
Mikhart 15	77,90%	Filler, calcium carbonate 15µm
Gypsum	20,00%	Hydraulic binder

Esa-one solution	
Esa-one MA+	4,0%
Gypsum	20,0%
Mikhart 15	76%
Mixing water	50,0%
Expected technical characteristics	
Setting time	> 4h
Water retention	> 94%

Guidance formula

Finishing skim coat (without gypsum).

It is possible to formulate skim coat without gypsum. These drying plasters, which are more economical, keep the properties required for a finishing plaster. Esa-one MA+ is ideal for the production of these coatings, but Esa-one CO1 has been specially formulated for it.



Requirements:

- Ease of mixing
- Ease of application
- Open time
- Appearance of the dry film
- Good cohesion

Additive based orientation formula		
Esacol HD15	0,20%	Lump-free mixing & water retention
Esacol 55MU	0,20%	Water retention and workability
Esamid S40	0,50%	Smooth appearance of the coating
Esatec 310H	0,02%	Consistency adjustment
BRD1107 (gelatine)	0,60%	Extension of setting time & adhesion
Esatec 285	1,60%	Cohesion
Mikhart 15	96,88%	Filler, calcium carbonate 15µm

Esa-one solution	
Esa-one CO1	1,5%
Mikhart 15	98,5%
Mixing water	40,0%
Expected technical characteristics	
Setting time	Drying
Water retention	> 95%

The Lamberti Group

Explore, Design, Provide, Evolve.

We design and produce customized chemical solutions for different industries: not simply products or formulations, but sets of skills, capabilities, visions, developed with dedication and attention to our customers. Our science is made of experience, technology, and precision, for tailoring and delivering high performing solutions to our customers. Our ability to fit any market evolution demonstrates our capacity to be creative and innovative.

The history of our company is continually written by people's living stories.

Since 1911, our experience stems from over a century of history. From the initial affiliation

to the textile industry, we have learned the value of being part of structured eco-systems. Over time, we have invested in industrial plants and laboratories to cover all geographies. We have fostered a network of relationships, a rich wellspring of experience that gives value to our people.

We want to do better, creating a positive legacy for the future of the planet and living species.

Sustainability became a crucial challenge for Lamberti that we addressed with the subscription to international programs (RSPO and Ecovadis) as well as with the voluntary publication of the Group's Sustainability Report (2020).

Our technologies per market

	Cellulosics	Hydrocolloids	Acrylics	Waterbased polyurethanes	Oleochemicals
Agriculture	•	•	•	•	•
Personal care	•	•	•	•	•
Food and regulated industries	•	•			
Oil&gas	•	•	•		•
Mining and civil engineering	•	•	•		•
Ceramics and glassware	•		•	•	•
Surfactants					•
Wetend paper	•	•			
Drymix for construction	•	•			
Textile printing and finishing	•	•	•	•	•
Architectural paints	•	•	•	•	•
Coated and functional paper	•	•	•	•	•
Industrial coating			•	•	•
Digital inks			•	•	•
Inks ingredients			•	•	•
Leather finishing			•	•	
Synthetic materials		•	•	•	•



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