



SPECIALTIES

Dry Mortars Applications

Emsland Group

Starch Based Building Material Additives





Introduction

Emsland in Dry Mortar

As a leading potato starch producer Emsland Group has more than 20 years of experience with dry mortar starch additives. Our dedicated building application center is located in Emlichheim, the headquarters of the Emsland Group. In Emlichheim we also dispose of the most modern production equipment, dedicated for the production of high quality modified starch based additives for building applications.

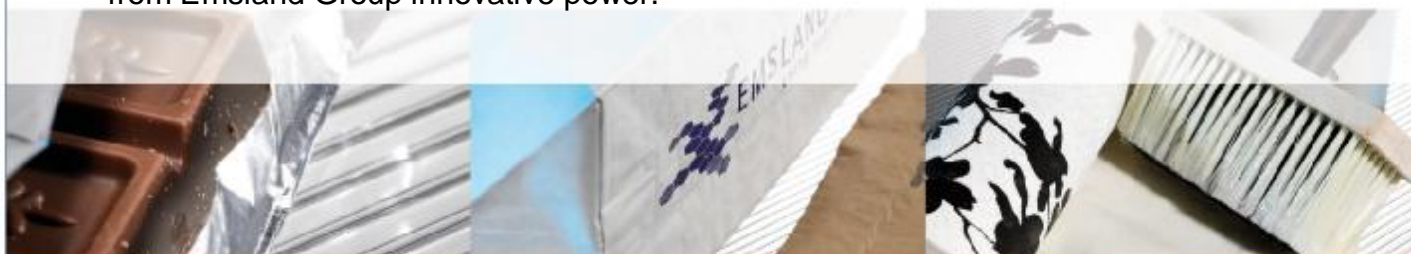


Open innovation



Together with our customers we are constantly creating new solutions for dry mortar applications. The best condition therefore is a trusting customer partnership. We offer customers a wide range of products and services specially designed to meet their specific needs and demands.

Often this has ended in new and innovative additives for our customers. In addition we give education and training to generate the best performance for our customers. This leads to sustainable relationships, where our customers benefit continuously from Emsland Group innovative power.



Product selection guide

	Cement dry mortar		Gypsum mortars			
	Tile adhesive	Rendering mortar	Manual plaster	Machine plaster	Joint filler	Finishing plaster
Emset KH 6 <i>Multi purpose</i>	+++	++	+++	+	+	+
Emset KH 4 <i>Cost effectiveness</i>	++	++	++	+	+	+
Emset KCH 25 <i>Low effect on cement setting</i>	++	++	++	+	+	+
Emset MC 5 <i>Ideal for finishing</i>	+	+	+	+	+	+++
F 7890* <i>Multi purpose</i>	++	++	++	+	++	+
F 9110* <i>Fast swelling for machine applications</i>	+	+	++	+++	+	+

* F products are currently only available for trial quantities.



Standard lime – cement render and lightweight cement render

Formulations in parts by weight:

<i>Component</i>	Limecement render	Lightweight cement render
Portland cement (CEM1 32.5R)	8 – 12	18 – 25
Hydrated lime	6 – 8	0 – 5
Quartzsand, 0.2 – 0.8 mm	80 – 85	
Limestonesand		60 – 75
Limestonedust		5 – 7
Expanded polystyrene / perlite		1 – 2
Starch ether (Emset KH 6)*	0.01 – 0.03	0.01 – 0.03
Hydrophobic agent	0.15 – 0.25	0.1 – 0.2
Air-entraining agent	0.015 – 0.03	0.03 – 0.05
Methyl cellulose, viscosity (15.000 mPa.s, unmodified)	0.08 – 0.12	0.1 – 0.12

Preferred product = Emset KH 6

- Very good workability
- Excellent anti sagging
- Alternative product 1: Emset KH 4
 - Less effect on cement setting
 - Good workability
 - Good anti sagging
- Alternative product 2: Emset MC 5
 - Advised for thin layer finishes
 - Gives very smooth mortar





Repair mortar

<i>Component</i>	Parts by weight
Portland cement (CEM1 32.5R)	30 – 35
Aluminate cement	0 – 5
Quartzsand, 0.2 – 0.8 mm	40 – 45
Anhydride	10 – 40
Redispersible powder	30 – 50
Starch ether (Emset KH 6)*	0.01 – 0.03
Cellulose Ether (medium viscous)	0.15 – 0.25
Cellulose fibres	0 – 0.05

Preferred product = Emset KH 6

- Very good workability
- Excellent anti sagging
- Alternative product 1: Emset KH 4
 - Less effect on cement setting
 - Good workability
 - Good anti sagging



Cementitious tile adhesives

<i>Component</i>	<i>Specification</i>	Low cost tile adhesive	C1T tile adhesive	C2T tile adhesive
Portland cement	CEM 1 (42.5R)	30	25 – 30	35 – 45
Limestone flour	< 0.1 mm		5 - 10	
Quartz sand	0 ~ 0.3 mm	70	55 – 65	55 – 65
Redispersible polymer powder	VAE based		0 – 2	1 – 3
Hydrophobic agent	Magnesium stearate		0 – 0.5	0 – 0.5
Cellulose ether	Unmodified 25,000 mPa.s	0.2	0.2 – 0.3	0.2 – 0.4
Starch ether	Emset KH 6 *	0.1	0.03 – 0.06	0.03 – 0.06





Tile adhesive classification:

<i>method</i>	C1	C1T	C2	C2T
Adhesion (EN1348)	$\geq 0.5 \text{ N/mm}^2$	$\geq 0.5 \text{ N/mm}^2$	$\geq 1 \text{ N/mm}^2$	$\geq 1 \text{ N/mm}^2$
Open time $\geq 20 \text{ Min}$ (EN 1346)	$\geq 0.5 \text{ N/mm}^2$	$\geq 0.5 \text{ N/mm}^2$	$\geq 0.5 \text{ N/mm}^2$	$\geq 0.5 \text{ N/mm}^2$, $\geq 30 \text{ Min}$
Sagging (EN 1308)		$\leq 0.5 \text{ mm}$		$\leq 0.5 \text{ mm}$

Preferred product: Emset KH 6

- Very good anti sagging
- Excellent open time
- Very good workability
- Alternative product 1 : Emset KCH 25
 - Low effect on cement setting
 - Good workability
 - Good anti sagging
 - Good open time





Gypsum, gypsum – lime, and lightweight gypsum plaster

<i>Component</i>	Gypsumplaster	Gypsum – lime plaster	Gypsum Lightweight plaster
Gypsum	74 – 98	40 – 50	70 – 100
Limestone		20 – 35	
Hydrated lime	1.5 – 5	15 – 20	2 – 5
Perlite		0.3 – 0.8	3 – 5
Starch ether (Emset KH 6)*	0.02 – 0.05	0.02 – 0.05	0.03 – 0.10
Air-entraining agent	0.015 – 0.03	0.015 – 0.03	0.01 – 0.03
Setting retarder	0.025 – 0.05	0.025 – 0.04	0.025 – 0.04
Methyl cellulose, (viscosity 30 000 mPa.s unmodified)	0.16 – 0.23	0.16 – 0.23	0.2 – 0.24

Preferred product = Emset KH 6

- Very good workability
- Excellent anti sagging
- Alternative product 1: F9110
 - Specially for spray on applications
 - Very good workability
 - Excellent anti sagging
- Alternative product 2: Emset MC 5
 - Advised for thin layer finishing plasters
 - Gives very smooth plaster



Gypsum based fillers

Component	Joint Filler	Crack Filler plaster
Gypsum	30 – 60	60 - 75
Limestone	40 - 70	25 – 40
Hydrated lime	1.5 – 5	1,5 – 5
Starch ether (Emset KH 6)*	0.02 – 0.05	0.02 – 0.05
Setting retarder	0.025 – 0.05	0.025 – 0.04
Methyl cellulose, (viscosity 30 000 mPa.s unmodified)	0.25 – 0.35	0.25 – 0.35
Synthetic binder (PVOH and/or redispersible powder)	0,5 – 1,5	0,3 – 0,5

Preferred product = Emset KH 6

- Very good workability
- Excellent anti sagging
- Alternative product 2: Emset MC 5
 - Advised for thin layer finishing plasters
 - Gives very smooth filler





EMSLAND GROUP

'using nature to create' – this guiding principle characterises the company philosophy behind the Emsland Group. Harvested raw materials are processed into innovative trendsetting quality products in tune with nature. The most important raw material is the potato. Starch from this crop forms the basis for the success of the Emsland Group.

With a unique and creative range of products, expertise and local service, the Emsland Group has gained a foothold in the market and is not only Germany's largest producer of potato starch, but is also a global leader in manufacturing refined starch products, proteins and fibres as well as potato flakes and granules. For many years now, alternative raw materials such as peas and beans have been included in our processing procedures. This step has formed the basis for the creation of new starches, protein and fibre products with the aim to tap into new markets.

TECHNOLOGY AND RESEARCH

The Emsland Group has specialised in processing and refining renewable raw materials. Starches and other products from potatoes, cassava, corn, peas and beans are successfully developed and produced for different applications.

Thanks to an innovative and extensive range of products, services and a lot of technical expertise, Emsland Group has been able to establish itself at a global level. In order to adapt to this position in the market and to secure it long term, the outcome of our research activity is implemented consistently. This also involves the investment in new technologies.

This way, it is possible to carry out a large part of the production according to company-own formulae and specially developed technologies. In competition which is becoming increasingly stronger, it is not only important to the client to have a reliable business associate but also one which offers creative and trendsetting product solutions.

QUALITY DIRECTIVES

The Emsland Group has made an excellent name for itself in the starch industry – not only through continuous investment in the latest technologies, but also through its qualified staff. Without the specialist competencies and dedication of each individual person in the Emsland Group, it would not be possible to assure quality or to achieve quality improvements.

In order to secure the quality requirement for the future as well, a dedicated team of staff capable of implementing expertise and identifying with the company aims is indispensable. The Emsland Group has clear quality directives and is certified. Further details can be found at www.emsland-group.de.

In the research laboratory new formulae are developed and tested. Running parallel to this, the continuity of product quality is subjected to the closest scrutiny in the quality laboratory. We only allow top-grade products to be shipped around the world. In the end, it is not only existing clients which should remain, but new clients should also be convinced of the quality of our products. Performance and service are key factors in trustworthy teamwork.

Disclaimer:

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