

Wall-ACE

Wall Insulation Novel Nanomaterials Efficient Systems

External high performance insulating render

Tina Oertel, t.oertel@quick-mix.de

HONEST toolbox

ENERSENS
absolute insulation

KWARK®:
SILICA Aerogel



Insulating
thermal coating
finishing



Internal high
performance
insulating
plaster



Insulating
interior patching
filler



High performance
insulating
materials filled
bricks



External high
performance
insulating render



EXTERNAL HIGH PERFORMANCE INSULATING RENDER

is a premixed ready to use, highly insulating sprayable mortar, based on silica-aerogel and inorganic binders



Close-up, fresh mortar

$$d_{\text{fresh}} \sim 350 \text{ kg/m}^3$$



Close-up, dry material

$$d_{\text{bulk}} \sim 150 \text{ kg/m}^3$$



PROPERTIES

- Sprayable insulation
- Based on innovative silica-aerogel technology
- Very high amount of air micropores in the plaster matrix
- Breathable
- Reduces the risk of mould growth
- Provides a long-lasting, continuous insulation layer
- Thermal bridges reduction

COMPOSITION

- Special, hydraulically setting binder mixture, natural mineral lightweight aggregates
- Silica-aerogel, special air entrainment agent to ensure a stable microporous structure
- Additives to control and improve the processing and product properties
- Free of expanded polystyrene -> easier to recycle

TECHNICAL SPECIFICATIONS



Delivery of the external render as dry mortar in a silo

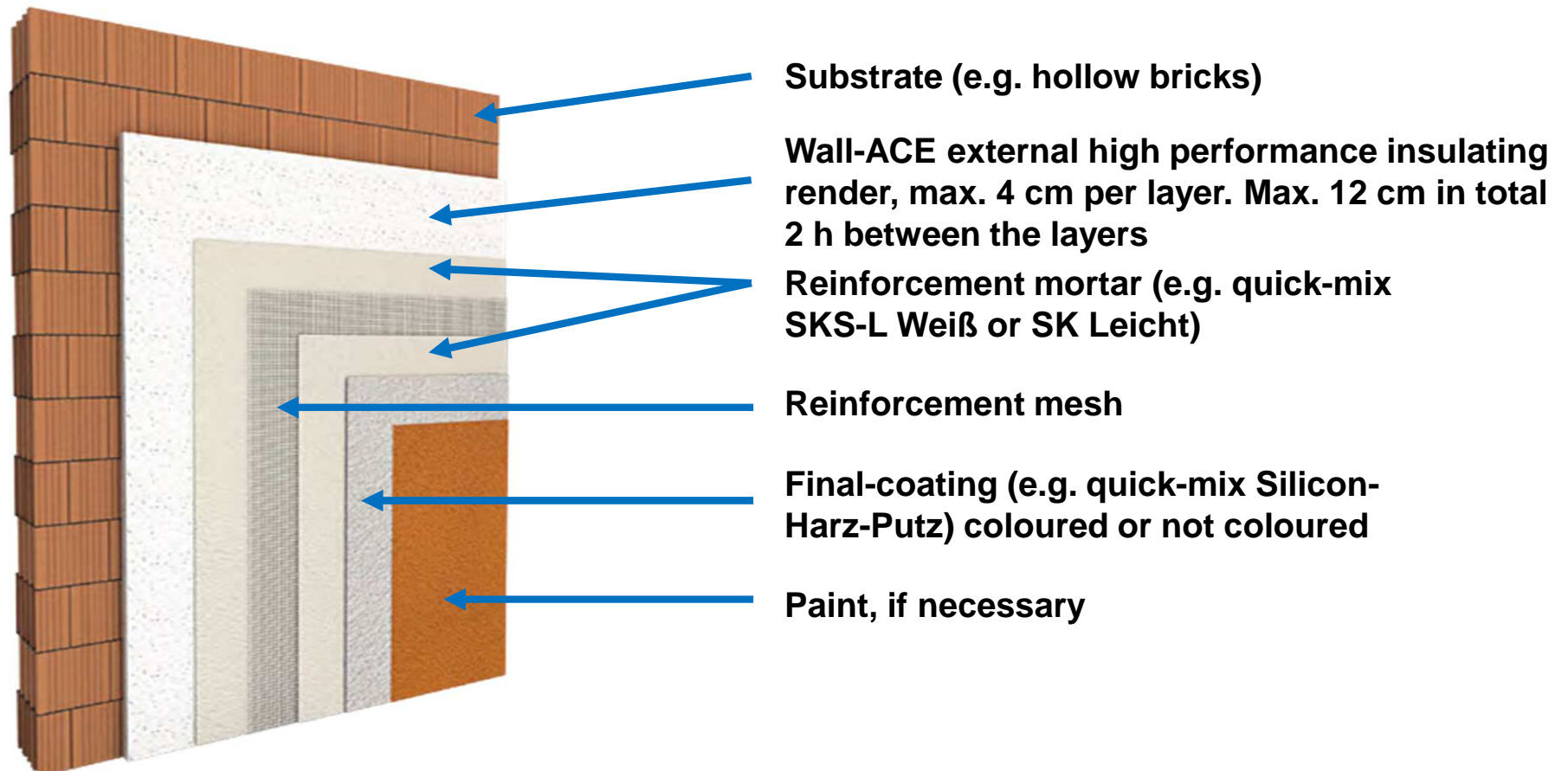
Product type	Sprayable thermal insulation
Category	External render
Max. grain size	Ca. 3.5 mm
Fire behaviour	A1 in accordance to DIN EN 13501
Dry mortar density	< 0.20 kg/dm ³
Compressive strength	0.7 N/mm ²
Capillary water absorption	W _{c0} in accordance to EN 998-1
water vapor permeability μ	2
Thermal conductivity λ	<= 0.030 W/mK

CONSUMPTION / YIELD

- Approx. 1,6 kg / m² per cm layer thickness
- Yield: approx. 7000 ltr. of fresh mortar per ton of dry material

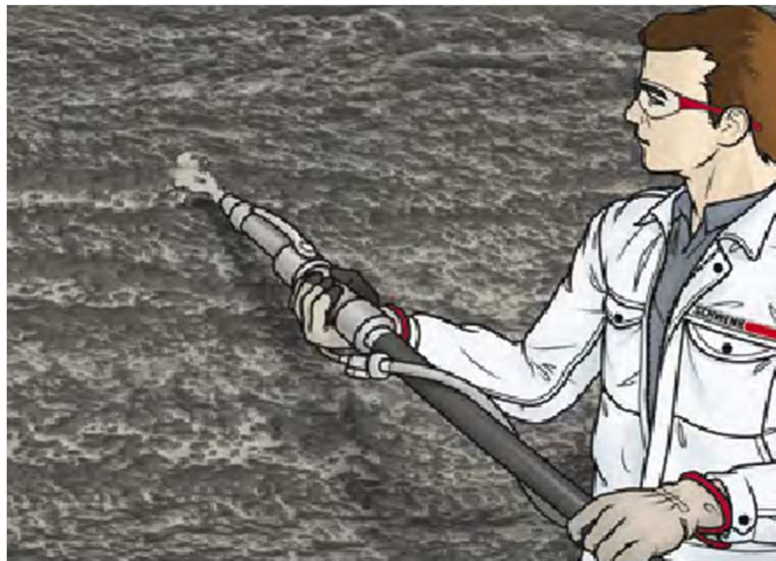
SET-UP OF THE WALL-ACE EXTERIOR SOLUTION

The Wall-ACE external render is not a stand-alone plaster, but a part of exterior solution, Which contains at least a mesh and a reinforcement mortar. It is necessary to ensure the required mechanical stability



APPLICATION

- For new building construction and building retrofit
- For all common types of masonry and stable old plaster surfaces
- As a decoupling layer in the renovation of old buildings
- As exterior insulation and as interior insulation
- On walls and ceiling surfaces
- Not suitable in the foundation area



- The Wall-ACE external render is applied with the plastering machine
- Manual application is recommended only for small areas or in the course of reparation work

Use of the render on different masonry types



Wall-ACE external render in new construction as **external insulation** on highly heat-insulating masonry



Wall-ACE external render in old building as **external insulation** on masonry



Wall-ACE external render in the old building as **interior insulation**

SUBSTRATE



Before processing, the substrate must be evaluated for:

- Load capacity
- Cleanliness
- Absorbency
- Protection against moisture

PROCESSING

While drying and processing:



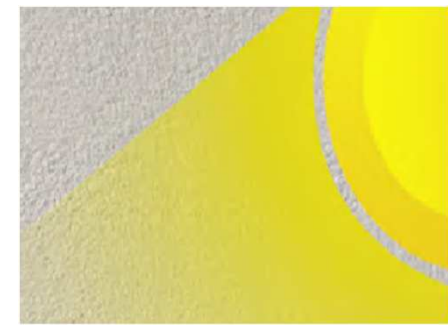
Protect against frost



Protect against wind



Protect against moisture



Protect against solar radiation

DEMONSTARTION SITE



Wall-ACE external render with reinforcement mortar and finishing coat at the INCAS FACT platform (CEA) In France, July 2018



CONCLUSION

- Full mineral composition, easy to recycle
- Prevents thermal bridges through a continuous insulation layer
- Short hardening times and good workability
- Up to 12 cm thickness is possible in one day
- Application in new building and in refurbishment sector
- Matched to other products of the HONEST toolbox
- TRL 7 reached (prototype used at construction site of a real building)



Thank you for your attention!