Technical / applicative comparison between pure and modified cellulose ethers

Pentachem Srl

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Differences between Pentachem's cellulose ethers for adhesives:

- **PENTA EC 4119 (30.000 – 40.000 mPa.s)**
  - Mortars for gas-beton;
  - C1 class tile adhesives;
  - Self-wetting adhesives;
  - Mortars for ETICS

- **PENTA EC 4111 (30.000 – 35.000 mPa.s)**
  - Smooth finishes and mortars for ETICS

PENTA EC 4120 (17.000 – 21.000 mPa.s)

- Cement-based adhesives from C1 premium to C2TES1

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PURE – are made of cotton or wood pulp

+ good resistance to adhesion with low % of RDP

- low water uptake

- reduced open time

- high vertical slip

- short recording time

- sticky rheology

classes C0 and C1

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MODIFIED - derive from hpmc or hemc + characterizing substitutions

+ high resistance to adhesion for all the classes of adhesives

+ high water uptake of the admixtures

+ extended open time (E class)

+ vertical slip equals to zero (T class)

+ long recording time

+ easy to trowel with excellent rheology

+ improves water and heat resistance and adhesion strength

all the classes (from C1TE and up)

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C2 TE

	Dos. (%)
Cem. 52.5	35,0
Silica sand (0,3 – 0,5 mm)	57,3
Filler (< 90 µ)	5,0
RDP	2,0
Ca for	0,3
Cellulose ether	0,4

data	HPMC pure	PENTA EC 4120
Initial adhesion	1.5 Mpa	1,25 Mpa
Adhesion after 30'	0,3 Mpa	1,05 Mpa
Heat	1,02 Mpa	1,25 Mpa
Water	1,05 Mpa	1,20 Mpa
Vertical slip	falls	0,25 mm

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C2TE S1

	Dos. (%)
Cem. 52.5	35,0
Silica sand (0,3 – 0,5 mm)	54,95
Filler (< 90 µ)	5,0
RDP	4,0
Ca for	0,6
Cellulose ether	0,45

data	HPMC pure	PENTA EC 4120
Initial adhesion	1.8 Mpa	2,10 Mpa
Adhesion after 30'	0,2 Mpa	0,91 Mpa
Heat	1,20 Mpa	1,80 Mpa
Water	0,80 Mpa	1,10 Mpa
Vertical slip	falls	0,35 mm

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Resistance to adhesion test:

(internal test)

Result: T 5’ 1,45 N/mm^2

Norm: T 5’ > 1,00 N/mm^2

Result: T 30’ 0,88 N/mm^2

Norm: T 30’ > 0,60 N/mm2

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Vertical slip resistance test for the definition of T class **:**

(internal test)

Result: 0 mm

Norm: < 0,5 mm

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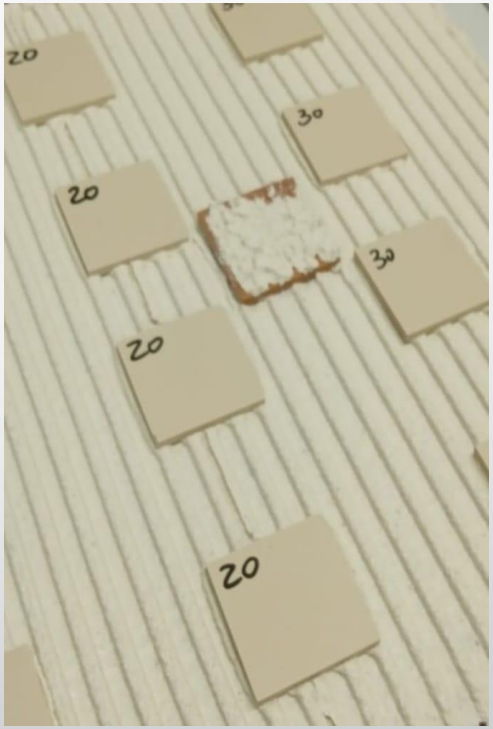

Transferability test at 30', i.e. the % of coverage of the tile by the adhesive after 30'

Recordability test, i.e. the ability to rotate the tile by 45° after 30'

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excellent rheology and easy application

Technical insight into the new cellulose ether PENTA EC 4120

	Data	Methods
Composition:	Methyl Hydroxypropyl cellulose	
State:	Powder	Visual
Colour:	Ivory white	Visual
Bulk density:	0.450 ± 0.100 kg/dm^3	IST. 10.07
Granulometry:	Min. 90% < 0.180 mm	IST. 10.09
Humidity:	Max. 4,0%	IST. 10.04
Water solubility:	Totally soluble	IST. 10.21
Hydrogen-ion concentration (pH):	7,0 – 8,0	IST. 10.05
Water retention:	min. 65% after 8 min.	IST. 10.08
Viscosity at 20°C:	17.000 ÷ 21.000 mPa.s (solution 2% Brookfield RV, spindle 6, 20 rpm)	IST. 10.30
Surface activity:	Weak	

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