

Roundtower Natural Hydraulic Limes

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NHL2	NHL3.5	NHL3.5 White	NHL5	Why is this important?
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Physical Properties

	NHL2	NHL3.5	NHL3.5 White	NHL5	
Colour	White(70 Value)	Off-White	White(71 Value)	Pale Buff	Our NHL3.5 White is one of the brightest Natural Hydraulic Lime available on the market- it is the best material to use where sand colour reproduction is of priority.
Fineness to 90 µ	1.10%	4.80%	0.50%	5.40%	The exceptional fineness of Roundtower Natural Hydraulic Limes gives an excellent plasticity and encourages high quality plastering workmanship.
Fineness to 200 µ	0.20%	0.60%	0.00%	0.70%	
Expansion (soundness)	0.2 mm	1.1 mm	0.5 mm	1.2 mm	The near zero expansion of NHL binders and the elasticity of pure NHL mortars are such that joint free construction is possible.
Bulk Density	0.597 kg/dm3	0.816 kg/dm3	0.594 kg/dm3	0.861 kg/dm3	Binders are bought by weight and used by volume. Bulk density is important in evaluating economy comparisons.
Real Density	2.75 g/cm3	2.71 g/cm3	2.64 g/cm3	2.75 g/cm3	
Plasticity/Blaine value	7610 cm ² /g	8436 cm ² /g	10250 cm ² /g	7979 cm ² /g	The Blaine value establishes the area that a gramme of lime can cover. A high value gives the lime a natural "Fatty", plastic consistency, much loved by the user. A high value also ensures minimal shrinkage and associated cracking.
Free water	1.00%	0.82%	0.99%	0.84%	Free water is the moisture that is not combined with the material. Excessive free water(>2%) can cause a premature hydraulic set. Roundtower's low Free Water content allows for long shelf life under normal enclosed warehouse conditions.

Mechanical Properties

	NHL2	NHL3.5	NHL3.5 White	NHL5	
Setting Times	585 mn	153 mn	437 mn	138 mn	Early initial set with slow long term hardening.
Compressive Strength 7 days				2.49 Mpa	Early strength achievement is excellent in fighting frost attack.
Compressive Strength 28 days	5,42 Mpa	4,61 Mpa	4,90 Mpa	6,06 Mpa	If applied properly, NHL mortars will achieve great durability.

Chemical Properties

	NHL2	NHL3.5	NHL3.5 White	NHL5	
SO ₃	1.25%	1.19%	1.11%	1.28%	Less than 3% has no detrimental effect on Lime or Lime mortars. The minute amounts of SO ₃ present come from the fuel used during calcination and not the raw material.
Free Lime	41.63%	27.00%	42.10%	24.30%	A high percentage of free lime gives mortars exceptional workability and self-healing properties. Roundtower NHLs have a very high free lime content which is also an excellent factor in promoting vapour permeability in a wall.
CaSO ₄ (Gypsum)	<1%	<1%	<1%	<1%	The presence of Gypsum can cause expansion, efflorescence and failures, especially in marine climates. Roundtower Natural Hydraulic Limes are all suitable for use in marine conditions.
C ₃ S (Tricalcium silicate)	0%	0%	0%	0%	Indicates possible cement additions.
C ₃ A (Tricalcium Aluminate)	<1%	<1%	<1%	<1%	Reacts with Sea Salts and other Sulphates. Can affect brick and stone.
Potassium (K or K ₂ O)	<.5%	<.5%	<.5%	<.5%	Presence of Alkalies, Potassium or Sodium, can cause Alkali/Silica reaction. Reacts with the silicates in cement and sand producing gradual disintegration.
Sodium (Na or Na ₂ O)	<.1%	<.1%	<.1%	<.1%	
Quicklime (CaO)	0	0	0	0	Unslaked lime will expand when hydrated. Makes products unstable.
Additions (Waterproofers, plasticisers, water retainers, pozzolans, air entrainers)	0	0	0	0	Due to absence of setting agents, NHL mortars can be re-worked up to 24 hours. Essential for minimising waste on site.
Active Clay(SiO ₂ +Al ₂ O ₃ +FeO ₂)	c.10%	c.15%	c.15%	c.25%	The percentage of Active Clay will indicate a mortars hydraulicity. Roundtower Natural Hydraulic Limes conform to the standard EN-459.
Loss on Ignition	25%	19%	17.26%	14.85%	The loss on ignition is the sum of the free water, bound water and carbon dioxide.

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