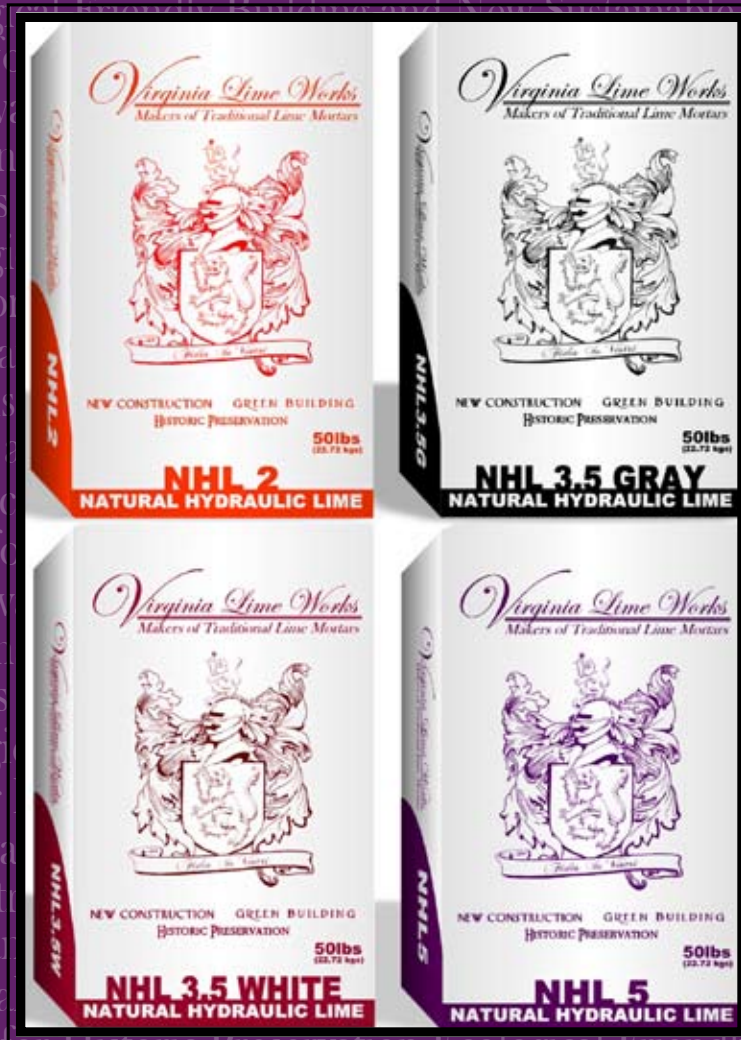


Virginia Lime Works

Makers of Traditional Lime Mortars



NATURAL HYDRAULIC LIME



Easy to use and available in a variety of setting times and strengths for almost any application, Virginia Lime Works Natural Hydraulic Limes offer a range of solutions for traditional masonry preservation, ecologically friendly building and sustainable construction. Natural Hydraulic Limes (or NHL) are made from burning limestone with a naturally occurring silica in a limekiln and slaking (or hydrating it) it to a powder. These limes are breathable, flexible, environmentally friendly, are made in accordance with the European Norm 459 (EN459) and are available in 4 different grades: NHL2, NHL3.5Gray, NHL3.5White, and NHL5.

MORTAR GRADE INFORMATION

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Very High	High	Moderate	Low	Very Low
•••••	••••○	•••○○	••○○○	•○○○○

Mortar Class	Lime	Mix (lime/sand)	Capillarity	Frost Resistance	Sulphate Resistance	Carbonation
A	PUTTY	1/3	•••••	••○○○	•••••	•••••
	NHL2	1/3	•••••	••○○○	••••○	••••○
B	PUTTY	1/2	•••••	••○○○	•••••	••••○
	NHL2	1/2	••••○	••○○○	••••○	•••••
	NHL3.5	1/3	••○○○	•••○○	•••••	•••○○
C	NHL3.5	1/2	••○○○	•••••	•••••	••○○○
D	NHL3.5	1/1.5	••○○○	•••○○	•••••	••○○○
	NHL5	1/3	••○○○	•••••	•••••	••○○○
E	NHL3.5	1/1	••○○○	•••○○	•••••	••○○○
	NHL5	1/2	•○○○○	•••••	•••••	••○○○

Proposed Range of Mortar Durability classes for Building Elements		Building element of stone, brick, or blockwork exposure condition
A		Inner leaf of cavity wall and internal walls
A-B		Backing to external solid walls
A-B	Unrendered	External walls including outer leaf of cavity walls in sheltered and moderate conditions.
B	Rendered	
B		External walls as facing to solid construction
C-D	Below Damp Proof Course but no more than 6" above finished ground level	Work below or near ground level
	Below ground or above ground but not within 6" of ground	
C-D		Sills and Cornices
		External Free-Standing Walls (excluding capping or coping)
C-E		Copings, cappings, and plinths
		Chimneys and Finials
		Retaining Walls
D-E		Sewer Bed Walls and other unlined walls intended for water retention externally
E		Embankment walls, culverts, sluices, and engineering work normally below water.

PRODUCT TECHNICAL INFORMATION

NHL2

Whiteness	73.6	Fineness up to 90 μ	3.7	Bulk Density (kg/dm ³)	0.585	Real Density (g/cm ³)	2.53	
Expansion (mm)	0.2	Fineness up to 200 μ	0.6	Setting Times (min)	800	Penetration (mm)	19.5	
Blaine Value (cm ² /g)	13256	Free Water (%)	0.88	SO ₃ (%)	1.68	Free Lime (%)	31.8	
COMPRESSIVE STRENGTH INFORMATION (PSI) <small>(CAN VARY DUE TO SAND TYPE AND WATER CONTENT)</small>								
<i>Mix Design</i>	<i>7 Days</i>	<i>14 Days</i>	<i>28 Days</i>	<i>56 Days</i>	<i>91 Days</i>	<i>182 Days</i>	<i>365 Days</i>	<i>730 Days</i>
1 Lime: 1 Sand	56.56	200.15	343.74	487.63	587.40	730.99	874.58	1018.17
1 Lime: 2 Sand	29.01	36.82	108.78	168.24	210.30	269.77	329.24	388.70
1 Lime: 3 Sand	24.66	50.76	76.87	102.98	120.38	146.49	172.59	198.70

NHL3.5 White

Whiteness	74.9	Fineness up to 90 μ	0.9	Bulk Density (kg/dm ³)	0.576	Real Density (g/cm ³)	2.65	
Expansion (mm)	0.1	Fineness up to 200 μ	0.1	Setting Times (min)	247	Penetration (mm)	14.7	
Blaine Value (cm ² /g)	11891	Free Water (%)	0.64	SO ₃ (%)	1.65	Free Lime (%)	27.2	
COMPRESSIVE STRENGTH INFORMATION (PSI) <small>(CAN VARY DUE TO SAND TYPE AND WATER CONTENT)</small>								
<i>Mix Design</i>	<i>7 Days</i>	<i>14 Days</i>	<i>28 Days</i>	<i>56 Days</i>	<i>91 Days</i>	<i>182 Days</i>	<i>365 Days</i>	<i>730 Days</i>
1 Lime: 1 Sand	87.02	253.82	406.11	565.65	659.92	812.21	964.50	1109.54
1 Lime: 2 Sand	49.31	156.64	263.97	371.30	445.26	552.60	659.92	767.25
2 Lime: 5 Sand	34.81	94.27	168.24	242.21	292.98	366.96	440.91	515.88

NHL3.5 Gray

Whiteness	-	Fineness up to 90 μ	5.9	Bulk Density (kg/dm ³)	0.754	Real Density (g/cm ³)	2.60	
Expansion (mm)	0.3	Fineness up to 200 μ	1.0	Setting Times (min)	156	Penetration (mm)	14.7	
Blaine Value (cm ² /g)	10033	Free Water (%)	0.33	SO ₃ (%)	2.18	Free Lime (%)	20.9	
COMPRESSIVE STRENGTH INFORMATION (PSI) <small>(CAN VARY DUE TO SAND TYPE AND WATER CONTENT)</small>								
<i>Mix Design</i>	<i>7 Days</i>	<i>14 Days</i>	<i>28 Days</i>	<i>56 Days</i>	<i>91 Days</i>	<i>182 Days</i>	<i>365 Days</i>	<i>730 Days</i>
1 Lime: 1 Sand	87.02	253.82	406.11	565.65	659.92	812.21	964.50	1109.54
1 Lime: 2 Sand	49.31	156.64	263.97	371.30	445.26	552.60	659.92	767.25
1 Lime: 3 Sand	29.01	76.87	145.04	214.66	262.52	330.69	400.30	468.47

NHL5

Whiteness	-	Fineness up to 90 μ	5	Bulk Density (kg/dm ³)	0.701	Real Density (g/cm ³)	2.63	
Expansion (mm)	0.4	Fineness up to 200 μ	0.8	Setting Times (min)	267	Penetration (mm)	12.8	
Blaine Value (cm ² /g)	9752	Free Water (%)	0.66	SO ₃ (%)	1.84	Free Lime (%)	16.1	
COMPRESSIVE STRENGTH INFORMATION (PSI) <small>(CAN VARY DUE TO SAND TYPE AND WATER CONTENT)</small>								
<i>Mix Design</i>	<i>7 Days</i>	<i>14 Days</i>	<i>28 Days</i>	<i>56 Days</i>	<i>91 Days</i>	<i>182 Days</i>	<i>365 Days</i>	<i>730 Days</i>
1 Lime: 1 Sand	43.51	208.85	407.56	604.81	742.59	939.84	1138.55	1335.80
1 Lime: 2 Sand	14.50	73.97	200.15	326.33	416.26	542.44	670.07	796.25
1 Lime: 3 Sand	11.60	21.76	63.82	227.71	342.29	448.17	535.19	607.71

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Possible Volumetric Mix Design by Applications*

Brick Masonry/ Repointing: 1 part NHL to 2-2.5 parts sand	Rendering/Stucco: 1 part NHL to 2-2.5 parts sand
Stone Masonry/ Repointing: 1 part NHL to 2-3 parts sand	Finish Plasters: 1 part NHL to 1-2 parts fine sand
	Grouting: 1 part NHL to 0-1 part sand

*These mixes represent general purpose mortars; richer or leaner mixes may be required depending on application.

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MIX&GO PRE-MIX NHL PLASTER
CUSTOM TINTED MIX&GO PRE-MIX NHL PLASTER
MIX&GO PRE-MIX NHL RENDER
CUSTOM TINTED MIX&GO PRE-MIX NHL RENDER

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DISTEMPER
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