

Secil NATURAL LIME NHL 5

NHL 5 - NATURAL HYDRAULIC LIME

TC.E.077.0

1. DESCRIPTION

Secil NATURAL LIME NHL 5 is a hydraulic binder composed in its majority by calcium silicates and aluminates and calcium hydroxide. It is obtained by the burning of marlstone, followed by grinding.

Secil NATURAL LIME NHL 5 is classified as NHL 5 according to the NP EN 459-1:2010.

Secil NATURAL LIME NHL 5 is a unique binder. Besides featuring hydraulic properties it also suffers a carbonation process..

2. FIELD OF APPLICATION

In the production of mortars as the only binder or mixed with other hydraulic and non-hydraulic binders, giving them workability and flexibility, reducing significantly retraction in hydraulic mortars (for ex: masonry, render and finishing mortars).

In the production of rehabilitation mortars, as only binder, in the execution of internal and external renders, over ancient substrates.

In different civil engineering uses, such as, soil treatment

3. PRODUCT CHARACTERISTICS

Physical Characteristics	Value	Standard
Color	Beige	-
Specific mass (kg/dm ³)	0,65 ± 0,05	EN 459-1
Density (g/cm ³)	2,7	-
Fineness %	90 µm ≤ 15,0 200 µm ≤ 5,0	EN 459-1
Blaine (cm ² /g)	9400	-
Expandability alternative method (mm)	≤ 20	EN 459-1
Free Water (%)	≤ 2,0	EN 459-1
Air content (%)	≤ 5	EN 459-1
Penetration (mm)	>10 e < 50	EN 459-1
Setting time (h)	initial final	> 1,0 ≤ 15,0
EN 459-1		
Mechanical Characteristics	Value	Standard
Mechanical Compressive strength 7 days (MPa)	≥ 2,0	EN 459-1
Mechanical Compressive Strength 28 days (MPa)	≥ 5,0 e ≤ 15	EN 459-1
Chemical Characteristics	Value	Standard
Sulphates (SO) (%)	≤ 2,00	EN 459-1
Free Lime (Ca(OH) (%)	≥ 15,00	EN 459-1

4. PRODUCTION OF MORTARS

The dosage of **Secil NATURAL LIME NHL 5** in a mortar must be adequate for the intended final use. In rendering and bedding mortars **Secil NATURAL LIME NHL 5**, has an important role as only binder or mixed with others.

Previously mix **Secil NATURAL LIME NHL 5** with the aggregate and afterwards add water in the necessary amount in order to obtain a good workability.

For your orientation, in what concerns mix ratios, we advise consultation of our chart in chapter 5 of this document.

Secil Argamassas

Secil Martingança, S.A.
Customer Support: Apartado 2 | 2406 – 909 – Maceira – LRA – Portugal
Tel: +351 244 770 220 | Fax: +351 244 777 997 | E-mail: comercial@secilmartinganca.pt



www.secilmartinganca.pt

Secil NATURAL LIME NHL 5

NHL 5 - NATURAL HYDRAULIC LIME



Lime kilns



Bag Filters



Burnt limestone

Complementary Advice

- ▶ The excess of mixing water is prejudicial to the physical properties of the render;
- ▶ Always use the minimum quantity necessary to ensure a good workability of the mortar;
- ▶ The mixing water must be free from any impurities (clay, organic material), whenever possible, tap water must be used;
- ▶ Once the mixing ratio is determined for a specific mortar, keep the dosages and mixing times constant.

Restrictions

Do not apply mortars to temperatures below 5°C and above 30°C, always avoiding applications in strong winds or high solar exposure.

Do not use softended mortars or that have already initiated their setting process.

Avoid rapid drying of the mortars, spraying the substrate 1 or 2 hours before application, and spraying again as soon as the mortars show sufficient resistance. Repeat this procedure 1, 2 and 7 days after.

6. SOIL TREATMENT

The addition of **Natural Hydraulic Lime** to certain deep clay and humid soils allow their stabilization, improving their resistance by reducing the plasticity index and increasing compactiveness, thus increasing the CBR (California Bearing Ratio, support capacity index).

The addition of **Natural Hydraulic Lime** reduces the soil humidity contributing for the agglutination of its particles and creating a much more compact agglomerate.

5. RECOMMENDED TRACES / RATIOS

Recommended Mortar Ratios /Traces	Raw Materials (by volume)			Compressive Strength (MPa)		Elasticity Module (MPa)
	NHL 5	Fine sand (< 1,2 mm)	River sand (< 4,0 mm)	7 days	28 days	28 days
Masonry Mortar (sand:binder) = (2:1)	1,0	1,0	1,0	1,8	3,4	10100
Render Mortar (sand:binder) = (3:1)	1,0	1,5	1,5	0,5	1,3	5700
Render Mortar (sand:binder) = (4:1)	1,0	2,0	2,0	0,4	0,5	3100
Screed Mortar (sand:binder) = (3:1)	1,0	-	3,0	1,0	1,8	8300

Obs: These values are merely indicative, obtained in laboratory testings. A utilização de agregados de diferentes origens ou características devem ser previamente ensaiados

Secil Argamassas

Secil Martingança, S.A.
Customer Support: Apartado 2 | 2406 – 909 – Maceira – LRA – Portugal
Tel: +351 244 770 220 | Fax: +351 244 777 997 | E-mail: comercial@secilmartinganca.pt



www.secilmartinganca.pt

Secil NATURAL LIME NHL 5

NHL 5 - NATURAL HYDRAULIC LIME

Application Process

The quantity of **Secil NATURAL LIME NHL 5** to be used must be between 0,5 and 5 % (being 3% the typical value) of the soil mass to be treated, from which all stones of large dimensions must be withdrawn.

Start with spreading **Secil NATURAL LIME NHL 5**, mixing and homogenizing it with the soil in treatment. Afterwards, compact the treated soil, increasing the resistance to rainwater penetration and making it more apt to work as a foundation base.

These procedures are well documented on video files, at www.secilmartinganca.pt. You may also request copies of these files from our Commercial Services.

7. HYGIENE AND SAFETY

(DOES NOT DISMISS CONSULTATION OF THE PRODUCT SAFETY FILE)

- ▶ May cause skin irritation;
- ▶ May cause damage to eyes;
- ▶ May cause respiratory irritation;
- ▶ Keep away from children;
- ▶ Use protective gloves/ garments/ eye protection/ face protection;

- ▶ **If in contact with eyes:** wash carefully with water for several minutes. Seek immediate medical advice;
- ▶ **If in contact with skin:** wash abundantly with water and soap;
- ▶ Do not inhale powder or vapours;
- ▶ **If inhaled:** Remove patient to fresh air and keep at rest in a position comfortable for breathing;
- ▶ Dispose of content / packaging according to legislation in force.

8. PACKAGING AND VALIDITY

Packaging

- ▶ 25 kg paper bags on plastified pallets.
- ▶ In bulk for use in silo systems

Validity

Secil Natural Hydraulic Lime must be transported, handled and stored in its original packaging (should only be opened for immediate use), away from humidity and exposure to heat.

In these conditions are respected, it can be stored for a **12 month** limit time period.

Once the application conditions of our products are beyond our reach, we will not be held responsible for its incorrect usage. It is the client's duty to verify the suitability of the product for the predicted use. In any case, our responsibility is limited to the value of goods supplied. The information shown on this file may be changed without previous notice. In case of doubt, and if you should need any additional information, please contact our technical services.

Draft Version Octobre 2011
TC.E.077.0



DESIGNATION: **Secil NATURE LIME NHL 5**

REFERENCE STANDARD: EN 459-1:2010

PREDICTED USE: Preparation of binder for mortars, production of other construction products and civil engineering uses.

Produced by Secil Martingança, S.A., whose Quality Management System is certified by APCER with the n° 2003/CEP.2132