

# Physical & Mechanical Data

	NHL 5	NHL 3.5	NHL 2
Combined Silica bands	12-16	8-12	4-8
Available lime%	15-20 (>3)	20-25 (>6)	50-60 (>8)
Density (lbs/ft <sup>3</sup> (gr/litre))	*650/750 (600-1000)	*600/660 (500-900)	* 450/520 (400-600)
Surface cover (ft <sup>2</sup> /oz(cm <sup>2</sup> per gram))	244 (8000)	274(9000)	362(11000)
Granulometry:			
Residue @ 0.09mm	7%	6.5%	5%
Whiteness Index (Y)	67	72	76
Compressive strength psi (N/mm <sup>2</sup> )			
28 days (min. values)	**725(5-9)	**507(3.5- 8)	**322(2-5)
28 days (max. values)	**2175(5-15)	**1450(3.5-10)	**1015(2-7)
Flexural strength psi (N/mm <sup>2</sup> )(28 d)	*333 (2.30)	290 (2)	145 (1)
Soundness ( <i>max. 2mm</i> )***	<1/32" (1mm)	<1/32" (1mm)	<1/32" (1mm)
Set, beginning ( <i>1-15 h</i> )****	3-4	5-6	8-10

**FIGURES IN BRACKETS AND ITALICS REFER TO THE INCOMING EU 459-1 NORMS**

- \* Measured in accordance with EU Norms EN 459 on EU Std. Mortars (see below)
- \*\* Depending on dosages and sands used (values relates to lab. tests using EU Std. Sand on mortars @ 1:1.3 mix ratio as per EN 459-1/2 norms).
- \*\*\* Expansion (soundness) measured according to EN459-2/5.3.2.2 and French Norm and not using Le Chatellier Test still allowed in the EU norms under 459-1/5.3.2.1 (expansion value up to \_" (20mm) !!)
- \*\*\*\* On mortars. Not on lime paste.

**Tests on common mortar mixes**

**United States**

<b>Binder : Sand Ratio</b>	<b>1 : 2</b>			<b>1 : 2.5</b>			<b>1 : 3</b>		
	<b>NHL 5</b>	<b>NHL 3.5</b>	<b>NHL 2</b>	<b>NHL 5</b>	<b>NHL 3.5</b>	<b>NHL 2</b>	<b>NHL 5</b>	<b>NHL 3.5</b>	<b>NHL 2</b>
<b>Set (beginning) hours</b>	3-4	5.3	8.45	3.3	6	9	3.3	6	9.3
<b>Elasticity Moduli</b>									
28 days <b>psi</b>	1566	1306	1309	1595	1305	1421	1450	1301	1305
6 months	2610	2356	1827	2472	1958	1744	2045	1805	1711
12 months	2684	2216	1815	2506	1975	1744	2342	1907	1725
<b>24 months</b>	3117	2535	1934	2613	1999	1740	2527	1982	1704
<b>Compressive strength</b>									
7 days <b>psi</b>	284	109	90	145	83	77	128	77	68
28 days	319	273	215	290	213	197	217	194	181
6 months	1010	1029	557	857	774	435	770	571	418
12 months	134	1087	580	1224	855	420	942	565	420
24 months	1567	1251	616	1277	870	435	1131	576	399
<b>Permeability (vapour exchange)</b>									
Gr. of air x m <sup>2</sup> x hour x mmHG	0.55	0.62	0.68	0.60	0.64	0.70	0.69	0.70	0.71
<b>Shrinkage %</b>	0.013	0.044	0.060	0.025	0.060	0.084	0.035	0.067	0.089

**Tests on common mortar mixes**

**European**

<b>Binder : Sand Ratio</b>	<b>1 : 2</b>			<b>1 : 2.5</b>			<b>1 : 3</b>		
	<b>NHL 5</b>	<b>NHL 3.5</b>	<b>NHL 2</b>	<b>NHL 5</b>	<b>NHL 3.5</b>	<b>NHL 2</b>	<b>NHL 5</b>	<b>NHL 3.5</b>	<b>NHL 2</b>
<b>Set (beginning) hours</b>	3-4	5.3	8.45	3.3	6	9	3.3	6	9.3
<b>Elasticity Moduli</b>									
28 days <b>N/mm<sup>2</sup></b>	10800	9010	9025	11000	9000	9800	10000	8970	9000
6 months	18000	16250	12600	17050	13505	12030	16900	12450	11800
12 months	18510	15280	12515	17280	13620	12030	16150	13150	11900
<b>24 months</b>	21500	17480	13375	18020	13785	12000	17430	13670	11750
<b>Compressive strength</b>									
7 days <b>N/mm<sup>2</sup></b>	1.96	0.75	0.62	1	0.57	0.53	0.88	0.53	0.47
28 days	2.2	1.88	1.48	2	1.47	1.36	1.5	1.34	1.25
6 months	7.31	7.1	3.84	5.91	5.34	3	5.31	3.94	2.88
12 months	9.28	7.5	4	8.44	5.9	2.9	6.5	3.9	2.9
24 months	10.81	8.63	4.25	8.81	6.00	3.00	7.80	3.97	2.75
<b>Permeability (vapour exchange)</b>									
Gr. of air x m <sup>2</sup> x hour x mmHG	0.55	0.62	0.68	0.60	0.64	0.70	0.69	0.70	0.71
<b>Shrinkage mm x m<sup>1</sup></b>	0.13	0.44	0.60	0.25	0.60	0.84	0.35	0.67	0.89