

***Chemical Composition and Physical Properties of Ordinary Portland cement  
[CEM I 42.5N]***

NO	DESCRIPTION (EN 197-1 CEM I 42.5)		UNIT	VALUE	range
<b>CHEMICAL COMPOSITION</b>					
1	Silicon Dioxide	SiO <sub>2</sub>	%	19.4	19.0 - 20.0
2	Aluminum Oxide	Al <sub>2</sub> O <sub>3</sub>	%	5.6	5.2 - 5.70
3	Ferric Oxide	Fe <sub>2</sub> O <sub>3</sub>	%	3.38	3.3 - 3.8
4	Calcium Oxide	CaO	%	63.88	63.0- 64.5
5	Magnesium Oxide (Max 5.0)	MgO	%	0.86	0.7 – 2.2
6	Sulfur Trioxide (Max 3.5)	SO <sub>3</sub> <3.5	%	2.64	2.3 - 3.0
7	Chloride < 0.10	Cl <sup>-</sup> <0.1	%	0.06	0.02 - 0.08
8	Insoluble residue (Max 5.0)	I.R< 5	%	0.49	0.30 - 1.5
9	Loss On ignition	L.O.I< 5	%	3.5	2.5 - 4.0
10	Free-Lime < 2	F-CaO< 2	%	1.5	0.6 – 1.8
11	Chromium Hexavalent (Max 2.0)	Cr VI< 2	ppm	1.6	0.7 - 1.8
12	Alkali Equivalent	Na <sub>2</sub> O equivalent	%	0.67	0.50 - 0.75
13	Sieve 45		%	9.0	7.0 – 12.0
14	Sieve 90		%	0.00	0.00- 0.2
<b>PHYSICS TEST</b>					
1	Fineness (Blaine)		Cm <sup>2</sup> /g	3050	2850-3300
2	Water consistency		%	27.2	26.5-29.0
3	Initial setting time	Min 60	Minutes	132	120 - 150
4	Final setting time		Minutes	195	180 - 220
5	2Day (Compressive Strength)	Min 10	MPa	19.9	18 - 21
6	28Day (Compressive Strength)	42.5-62.5	MPa	46	44.0 -48.0
7	Soundness	Max 10mm	mm	1.15	0.6 – 4.0


