

Ref : GIL/TC/23-24

Report No : 05

**TEST CERTIFICATE**  
**Ordinary Portland Cement 43 Grade**  
**Test and Compliance**

SI.NO	PARTICULARS	TEST RESULT	REQUIREMENT AS PER IS: 269-2015
<b>1.0</b>	<b>CHEMICAL REQUIREMENTS</b>		
1.1	Lime Saturation Factor	0.91	0.66 -1.02
1.2	Alumina Modules Ratio	1.09	0.66 Min
1.3	Insoluble Residue (% by mass)	1.84	5.00 Max
1.4	Magnesia (% by mass)	2.85	6.00 Max.
1.5	Sulphuric Anhydride (% by mass)	2.32	3.50 Max.
1.6	Loss on Ignition (% by mass)	1.64	5.00 Max.
1.7	Chloride Content (% by mass)	0.18	0.1 Max.
<b>2.0</b>	<b>PHYSICAL REQUIREMENTS</b>		
2.1	Fineness (M2/Kg.)	302	225 min.
2.2	Setting time (Minutes)		
	a. - Initial	140	30 Min.
	b. -Final	230	600 Max.
2.3	Soundness		
	a. - By Le Chatelier (mm)	1.00	10 Max.
	b. - Autoclave (%)	0.050	0.8 Max.
2.4	Compressive Strength (MPa)		
	a. 72 ± 1h (3 days)	31.2	23 Min.
	b. 168 ± 2 h (7 days)	40.00	33 Min.
	c. 672 ± 4h (28 days)	51.00	43 Min , 58 Max
	Temperature during the test (°C)	28	27 ± 2

The above cement complies with the requirement of IS: 269-2015 for Ordinary Portland Cement 43 Grade Date of Dispatch 26.12.2023 .

Remarks:- Ok for all construction activities with standard application.

**GREYFORCE INDUSTRIES LIMITED**

  
HOB (QC)

Corporate Office: Plot No: A1-4, Ergo Tower, 15th Floor, Unit No: 1505/06, Block: EP-GP, Sector-V, Salt Lake, Kolkata - 700091

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GIL/TC/24-25

TEST CERTIFICATE

06-06-2024

### GREY FORCE CEMENT ALL PURPOSE PORTLAND POZZOLANA CEMENT TEST & COMPLIANCE

Report No.: 014

SI.NO	PARTICULARS	TEST RESULTS	REQUIREMENT AS PER IS 1489 (PART-1):2015 <u><math>X+4.0(100-X)</math></u>
1.0	CHEMICAL REQUIREMENTS		
1.1	Insoluble Residue %( by mass)	30.26	100
	a. Maximum		0.6X
	b. Minimum		Where X is the declared % of fly ash in the given Portland Pozzolana Cement
1.2	Magnesia %( by mass)	2.84	6.00 Max.
1.3	Sulphuric Anhydride %(by Mass)	1.98	3.50 Max.
1.4	Loss on Ignition %( by mass)	1.34	5.00 Max.
1.5	Chloride Content %(by mass)	0.02	0.1 Max.
2.0	PHYSICAL REQUIREMENTS		
2.1	Fineness (M2/Kg.)	382	300 min.
2.2	Setting time (Minutes)		
	a - Initial	115	30 Min.
	b -Final	210	600 Max.
2.3	Soundness		
	a - By Le chatelier(mm)	1.0	10 Max.
	b - Autoclave (%)	0.06	00.8 Max.
2.4	Compressive Strength (MPa)		
	a-72 ± 1h (3 days)	22.30	16 Min.
	b-168 ± 2 h (7 days)	29.10	22 Min.
	C- 672 ± 4h (28 days)	47.8	33 Min.
2.5	Drying Shrinkage (%)	0.05	0.15 Max.
2.6	Declared Fly ash (%)	30	± 3%
	Temperature during the test (°C)	27	27 ± 2

The above cement complies with the requirement of IS 1489(Part-1)2015 for Portland Pozzolana cement .Cement dispatched on 01.05.2024.

Remarks: - Ok for all construction activities with standard application.

Tested by

  
Chief Chemist

## GREYFORCE INDUSTRIES LIMITED

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## PORTLAND POZZOLANA CEMENT TEST &amp; COMPLIANCE

Report No.:006

SI.NO	PARTICULARS	TEST RESULTS	REQUIREMENT AS PER IS 1489 (PART-1):2015
1.0	CHEMICAL REQUIREMENTS		
1.1	Insoluble Residue (% by mass)	26.20	$\frac{X+4.0(100-X)}{100}$
	a. Maximum		100
	b. Minimum		0.6X
			Where X is the declared % of fly ash in the given Portland Pozzolana Cement
1.2	Magnesia (% by mass)	2.03	6.00 Max.
1.3	Sulphuric Anhydride (% by Mass)	2.15	3.50 Max.
1.4	Loss on Ignition (% by mass)	1.84	5.00 Max.
1.5	Chloride Content (% by mass)	0.02	0.1 Max.
2.0	PHYSICAL REQUIREMENTS		
2.1	Fineness (M2/Kg.)	402	300 min.
2.2	Setting time (Minutes)		
	a. - Initial	125	30 Min.
	b. -Final	220	600 Max.
2.3	Soundness		
	a. - By Le chatelier(mm)	1.00	10 Max.
	b. - Autoclave (%)	0.20	00.8 Max.
2.4	Compressive Strength (MPa)		
a.	a. 72 +- 1h (3 days)	25.0	16 Min.
	b.168 +- 2 h (7 days)	34.10	22 Min.
	c. 672 +- 4h (28 days)	52.80	33 Min.
2.5	Drying Shrinkage (%)	0.048	0.15 Max.
2.6	Declared Fly ash (%)	28	± 3%
	Temperature during the test (°C)	27	27 ± 2

The above cement complies with the requirement of IS 1489(Part-1)2015 for Portland Pozzolana cement .Cement production on 05.04.2024.

Remarks: - Ok for all construction activities with standard application.

Tested by

  
Chief Chemist

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15 -02-2024

GIL/TC/23-24

### TEST CERTIFICATE COMPOSITE CEMENT CEMENT TEST & COMPLIANCE

Report No.: 009

SI.NO	PARTICULARS	TEST RESULTS	REQUIREMENT AS PER IS 16415 : 2015
1.0	<b>CHEMICAL REQUIREMENTS</b>		$X+4.0(100-X)$
1.1	Insoluble Residue % by mass	14.80	100
	a. Maximum		0.6X
	b. Minimum		Where X is the declared % of fly ash in the given Portland Pozzolana Cement
1.2	Magnesia % by mass	2.90	8.00 Max.
1.3	Sulphuric Anhydride % by mass	2.15	3.50 Max.
1.4	Sulphide sulphur	0.36	0.75 Max.
1.5	Loss on Ignition % by mass	1.42	5.00 Max.
1.6	Chloride Content % by mass	0.02	0.1 Max.
2.0	<b>PHYSICAL REQUIREMENTS</b>		
2.1	Fineness M2/Kg.	381	300 min.
2.2	Setting time Minutes		
	a. Initial	110	30 Min.
	b. Final	190	600 Max.
2.3	Soundness		
	a. - By Le Chatelier mm	1:00	10 Max.
	b. - Autoclave (%)	0.18	00.8 Max.
2.4	Compressive Strength MPa		
	a. 72 ± 1h (3 days)	29.00	23 Min.
	b. 168 ± 2 h (7 days)	40.00	33 Min.
	c. 672 ± 4h (28 days)	51.2	43 Min.
2.5	Drying Shrinkage (%)	0.04	0.15 Max.
2.6	Declared Fly & Slag	13 & 30	± 3%
	Temperature during the test (°C)	27	27 ± 2

The above cement complies with the requirement of IS: 16415 :2015 for Composite cement. Cement dispatch on 30.12.2023.

Remarks: - Ok for all construction activities with standard application.

Tested by

  
Chief Chemist

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