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IS 10772 (1983): quick setting lime pozzolana mixture [CED  
4: Building Limes and Gypsum Products]



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REAFFIRMED 2009  
IS : 10772 - 1983

*Indian Standard*  
SPECIFICATION FOR  
QUICK SETTING LIME POZZOLANA MIXTURE

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# Indian Standard

## SPECIFICATION FOR QUICK SETTING LIME POZZOLANA MIXTURE

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14-1-359, New Aghapura, Hyderabad

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**IS : 10772 - 1983**

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*Representing*

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AMENDMENT NO. 1    DECEMBER 1986

TO

IS:10772-1983    SPECIFICATION FOR QUICK SETTING  
LIME POZZOLANA MIXTURE

(Page 4, clause 3.1) - Substitute the following for the existing clause:

3.1 Quick setting lime pozzolana mixture shall be manufactured by intergrinding hydrated class C lime (see IS:712-1984<sup>†</sup>), pozzolana such as calcined clay (see IS:1344-1981<sup>†</sup>), flyash (see IS:3812-1981<sup>†</sup>) or rice husk ash, together with type IV gypsum (see IS:1290-1973<sup>II</sup>), and/or suitable hardening accelerators in suitable proportions to comply with the requirements of this specification.

NOTE 1 - The lime reactivity value of pozzolanas when tested in accordance with the procedure given in IS:1727-1967<sup>†</sup> shall not be less than 3.0 N/mm<sup>2</sup>.

NOTE 2 - The gypsum content shall not exceed 5 percent by mass of lime and pozzolana content. When other types of accelerators are used such as metallic sulphates, chlorides, alum, metallic silicofluorides, silicates and carbonates, any particular accelerator shall not exceed 1 percent of lime and pozzolana content by mass.'

(Page 4, foot-note with '†' mark) - Substitute 'third revision' for 'second revision'.

(EDC 4)

## AMENDMENT NO. 2 SEPTEMBER 1991

TO

### IS 10772 : 1983 SPECIFICATION FOR QUICK SETTING LIME POZZOLANA MIXTURE

[ *Page 6, Table 2, Sl No. (i), col 6* ] — Substitute 'IS 4031 ( Part 1 ) : 1988\*' for 'Clause 3 of IS 4031 : 1968\*'.  
1988\*

[ *Page 6, Table 2, Sl No. (ii) (a), col 6* ] — Substitute 'IS 4031 ( Part 5 ) : 1988†' for 'Clause 7 of IS 4031 : 1968\*'.  
1988†

[ *Page 6, Table 2, Sl No. (iii), col 6* ] — Substitute 'IS 4031 ( Part 7 ) : 1988‡' for 'Clause 9 of IS 4031 : 1968\*'.  
1988‡

[ *Page 6, Table 2, Sl No. (iv), col 6* ] — Substitute 'IS 4031 ( Part 13 ) : 1988§' for 'Clause 15 of IS 4031 : 1968\*'.  
1988§

[ *Page 6, Table 2, Sl No. (v), col 6* ] — Substitute 'IS 4031 ( Part 3 ) : 1988||' for 'Clause 5 of IS 4031 : 1968\*'.  
1988||

( *Page 6, Table 2, foot-note marked with '\*' mark* ) — Substitute the following foot-notes for the existing one:

\*\*Methods of physical tests for hydraulic cement : Part 1 Determination of fineness by drying sieving ( *first revision* ).

†Part 5 Determination of initial and final setting time ( *first revision* ).

‡Part 7 Determination of compressive strength of masonry cement ( *first revision* ).

§Part 13 Measurement of water retentivity of masonry cement ( *first revision* ).

||Part 3 Determination of soundness ( *first revision* ).

( *Page 7, clause 9.1* ) — Substitute 'IS 3535 : 1986\*' for 'IS 3535 : 1966\*'.  
1966\*

( *Page 7, foot-note* ) — Insert '( *first revision* )' at the end.

( CED 4 )



**AMENDMENT NO. 3 JULY 2011**  
**TO**  
**IS 10772 : 1983 SPECIFICATION FOR QUICK SETTING**  
**LIME POZZOLANA MIXTURE**

[Page 4, clause **3.1**, line 4 (*see also Amendment No. 1*)] — Substitute ‘pulverized fuel ash (IS 15648 : 2006§)’ for ‘flyash (*see IS : 3812-1981§*)’.

(Page 4, footnote marked §) — Substitute the following for the existing:

‘§Specification for pulverized fuel ash for lime pozzolana mixture.’

(CED 4)

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Reprography Unit, BIS, New Delhi, India

# *Indian Standard*

## SPECIFICATION FOR QUICK SETTING LIME POZZOLANA MIXTURE

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 27 December 1983, after the draft finalized by the Building Limes Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** Shortage of cement has posed a great problem for continuation of the construction activities in the country at present and the situation is not likely to improve in near future. It is, therefore, imperative that cheaper and substitute cementing material be made available for mass scale use so that the various construction programmes could be sustained. Quick setting lime pozzolana mixture with its proven cementing quality and in terms of its workability and inherent strength is ideal for such purpose and it can be safely used to replace cement in all fields of construction work except reinforced concrete such as levelling course in foundation; footing under masonry walls, columns and ordinary bases, concrete under floors; filling haunches over masonry arch; mortars in masonry, pointing and plastering and concrete for blocks.

**0.3** These materials are essentially scientifically processed mixtures of hydrated lime and pozzolanic materials like flyash, burnt clay/rice husk ash, bagasse ash, etc, together with admixtures like gypsum and/or hardening accelerators. These accelerators help in reducing the initial setting time and also in improving the early strength.

**0.4** In the formulation of this standard, considerable assistance has been rendered by the Central Building Research Institute, Roorkee.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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\*Rules for rounding off numerical values ( revised ).

## **1. SCOPE**

**1.1** This standard covers the requirements for lime pozzolana mixtures which tend to set fast, for use in construction works except reinforced concrete.

## **2. TERMINOLOGY**

**2.1** For the purpose of this standard, the definitions given in IS : 6508-1972\* shall apply.

## **3. MANUFACTURE.**

**3.1** Quick setting lime pozzolana mixture shall be manufactured by intergrinding hydrated class C lime ( *see* IS : 712-1973† ), pozzolana such as burnt clay ( *see* IS : 1344-1981‡ ), flyash ( *see* IS : 3812-1981§ ), rice husk ash, bagasse ash or other suitable pozzolanas manufactured from locally available material, together with type IV gypsum ( *see* IS : 1290-1973|| ) and/or suitable hardening accelerators in suitable proportions to comply with the requirements of this specification.

NOTE 1 — The lime reactivity value of pozzolanas when tested in accordance with the procedure given in IS : 1727-1967¶ shall not be less than 3.0 N/mm<sup>2</sup>.

NOTE 2 — The gypsum content shall not exceed 6 percent by mass of lime and pozzolana content. When other types of accelerators are used such as metallic sulphates, chlorides, alum, metallic silicofluorides, silicates and carbonates, any particular accelerator shall not exceed 1 percent of lime and pozzolana content by mass.

## **4. CLASSIFICATION**

**4.1** These materials may be classified in the following three types based on physical requirements:

Type 1

Type 2

Type 3

## **5. CHEMICAL REQUIREMENTS**

**5.1** The materials shall conform to the requirements given in col 3 of Table 1 when tested in accordance with the methods given in col 4.

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\*Glossary of terms relating to building lime.

†Specification for building limes ( *second revision* ).

‡Specification for calcined clay pozzolana ( *first revision* ).

§Specification for flyash for use as pozzolana and admixture.

||Specification for mineral gypsum ( *second revision* ).

¶Methods of test for pozzolanic materials ( *first revision* ).

TABLE 1 CHEMICAL REQUIREMENTS

( Clause 5.1 )

SL No.	CHARACTERISTICS	REQUIREMENTS	REFERENCE TO METHOD OF TEST
(1)	(2)	(3)	(4)
i)	Available lime, percent, <i>Min</i>	25	IS : 1514-1959*
ii)	Carbon dioxide, percent, <i>Max</i>	2	IS : 6932-1973†
iii)	Magnesium oxide, percent, <i>Max</i>	6	IS : 1727-1967‡
iv)	Sulphate content as SO <sub>3</sub> , percent, <i>Max</i>	3	IS : 1727-1967‡
v)	Free moisture, percent, <i>Max</i>	2	Appendix A of IS : 4098-1983§
vi)	Loss on ignition, percent, <i>Max</i>	20	IS : 6932-1973†

\*Methods of sampling and tests for quick lime and hydrated lime.

†Methods of tests for building limes.

‡Methods of tests for pozzolanic materials ( *first revision* ).§Specification for lime pozzolana mixture ( *first revision* ).

## 6. PHYSICAL REQUIREMENTS

6.1 The materials when tested in accordance with the methods given in col 6 of Table 2 shall conform to the requirements given in col 3 to 5.

## 7. STORAGE

7.1 The mixture shall be stored in such a manner as to permit easy access for proper inspection and identification, and in a suitable weather-tight building to protect the mixture from dampness and to minimize warehouse deterioration.

## 8. DELIVERY

8.1 The mixture shall be packed in bags ( jute, multiply paper, HDPE or cloth ), bearing the manufacturer's name or his trade-mark, if any. The type and net mass of the mixture shall be legibly and indelibly marked in each bag. The bag shall be in good condition at the time of delivery.

**TABLE 2 PHYSICAL REQUIREMENTS**  
( Clause 6.1 )

SL No.	CHARACTERISTICS	REQUIREMENTS			REFERENCE TO METHOD OF TESTS
		Type 1	Type 2	Type 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Fineness, residue by mass on 150-micron IS Sieve, percent, <i>Max</i>	5	5	5	Clause 3 of IS : 4031-1968*
ii)	Setting time, hours :				
	a) Initial, <i>Min</i>	0.5	0.5	0.5	Clause 7 of IS : 4031-1968*
	b) Final, <i>Max</i>	24	24	24	
iii)	Compressive strength:				Clause 9 of IS : 4031-1968*
	a) Average of at least 3 mortar cubes at 7 days, N/mm <sup>2</sup> , <i>Min</i>	2.5	1.0	0.4	
	b) Average of at least 3 mortar cubes at 28 days, N/mm <sup>2</sup> , <i>Min</i>	6.0	2.5	1.0	
	c) Average of at least 3 mortar cubes at 90 days, N/mm <sup>2</sup> , <i>Min</i>	8.0	4.0	1.5	
iv)	Water retention, percent, <i>Min</i>	70	70	70	Clause 15 of IS : 4031-1968*
v)	Soundness, expansion, mm, <i>Max</i>	10	10	10	Clause 5 of IS : 4031-1968*

NOTE — Types 1, 2 and 3 may be obtained with the pozzolana having lime reactivity values of 70, 50 and 30 kgf/cm<sup>2</sup> respectively.

\*Methods of physical tests for hydraulic cement.

## 8.2 The bags may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

**8.3** The net mass of each bag shall be 50 kg with a permissible tolerance of  $\pm 2.5$  percent per bag.

## **9. SAMPLING AND CRITERIA FOR CONFORMITY**

**9.1** Requirements for process inspection and lot inspection shall be as laid down in IS : 3535-1966\* with the exception of 5.8.1.

**9.2** The individual laboratory samples of quick setting lime pozzolana mixture shall be tested for magnesium oxide, carbon dioxide and water retention. For all other requirements a composite sample shall be tested.

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\*Methods of sampling hydraulic cements.

# INTERNATIONAL SYSTEM OF UNITS ( SI UNITS )

## Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

## Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

## Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	$1 \text{ N} = 1 \text{ kg.m/s}^2$
Energy	joule	J	$1 \text{ J} = 1 \text{ N.m}$
Power	watt	W	$1 \text{ W} = 1 \text{ J/s}$
Flux	weber	Wb	$1 \text{ Wb} = 1 \text{ V.s}$
Flux density	tesla	T	$1 \text{ T} = 1 \text{ Wb/m}^2$
Frequency	hertz	Hz	$1 \text{ Hz} = 1 \text{ c/s (s}^{-1}\text{)}$
Electric conductance	siemen	S	$1 \text{ S} = 1 \text{ A/V}$
Electromotive force	volt	V	$1 \text{ V} = 1 \text{ W/A}$
Pressure, stress	pascal	Pa	$1 \text{ Pa} = 1 \text{ N/m}^2$

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### INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Balakrishna Shah Zafar Marg, NEW DELHI 110002

Telephones : 26 60 21, 27 01 31

Telegrams : Manakamastha

Regional Offices :

Telephone :

Western : Novelty Chambers, Grant Road

BOMBAY 400002 89 65 28

Eastern : Chowringhee Approach

CALCUTTA 700012 27 50 90

Southern : C.I.T. Campus, Adyar

MADRAS 600113 41 24 42

Northern : B-9, Phase VII

SAS NAGAR 8 38 86

(MOHALLA) 16

Branch Offices :

Pushpak Nurmohamed Shaikh Marg, Khamapur

'F' Block, Unity Bldg, Narasimharaja Square

Gangotri Complex Bhadbhada Road, T

22E Kalpana Area

5-8-30C, L. N. Gupta Marg

R 14 Yudhister Marg, C Scheme

117/418 B Sarvodaya Nagar

Pathpur Industrial Estate

Hentex Bldg (2nd Floor), Rly Station

HYDRABAD 500001

JAIPUR 302005

KANPUR 208005

PATNA 300018

TRIVANDRUM 695001

Printed at Printograph, New Delhi