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भारतीय मानक

भवन निर्माण चूने का रख-रखाव और भंडारण — मार्गदर्शी सिद्धान्त

Indian Standard

HANDLING AND STORAGE OF BUILDING LIMES — GUIDELINES

ICS 91.100

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

September 1996

Price Group 2

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Building Limes and Lime Products Sectional Committee had been approved by the Civil Engineering Division Council.

This standard is being formulated to provide guidance to the users in the handling and storage of building limes.

All building limes as defined in this standard are caustic alkalis in the presence of water and can cause chemical burns to the skin. In addition, when quicklime comes into contact with water a chemical reaction occurs which generates a considerable amount of heat. This reaction often occurs very rapidly and can be vigorous in character. The most violent reactions occur if quicklime is added to water without stirring to dissipate the heat generated, resulting in severe splasing of hot lime slurry which can cause heat burns to the skin.

All building limes need to be handled with caution and necessary protective measures should be taken to minimize the possibility of discomfort or accident when handling building limes.

In all cases, prevention or adequate control of exposure should be achieved by measures other than personal protective equipment, so far as is reasonably practicable, in the light of the degree of exposure, circumstances of use of the substance, informed knowledge about its hazards and current technical developments.

The composition of the technical committee responsible for forumulation of this standard is given in Annex A.

Indian Standard

HANDLING AND STORAGE OF BUILDING LIMES — GUIDELINES

1 SCOPE

This standard covers the protective measures to be taken for handling and storage of building lime.

2 REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
4148 : 1989	Surgical rubber gloves (*first revision*)
12254: 1988	Polyvinyl chloride (PVC) industrial boots (*first revision*)
13695: 1992	Rubber boots, chemical resistant — Specification
14166: 1994	Respiratory protective devices — Full face masks

3 HANDLING

3.0 The following measures should be taken while handling building limes for protecting the various parts of the body.

3.1 Eyes

The eyes are particulary vulnerable to damage. Under no circumstances should operatives be allowed to handle building limes or operate quicklime slaking process without wearing goggles.

3.2 Mouth and Nose

For protection of mouth and nose respiratory protective equipment conforming to IS 14166:1994 or any other equipment suitable for the purpose and of a type approved by the Health and Safety Executive may be used.

3.3 Face and Neck

Especially in warmer weather, the shaven parts of the face and neck are liable to be irritated by building lime dust. These parts should be protected with a barrier cream. A cloth worn around the neck will give additional protection.

3.4 Hands, Arms and Wrists

The hands should be protected by gloves with a tight fitting wristband conforming to IS 4148:1989. Any exposed parts of the arms, hands and wrists should be protected with barrier cream.

3.5 Feet

Building lime should be prevented from reaching the feet to avoid burns of irritation. Gaiters or improvised leggings worn over the boot tops and bottom of the trousers in dry conditions, or oilskins worn over rubber boots as per IS 13695:1992 or PVC boots as per IS 12254:1988 in wet conditions, will provide suitable protection.

4 FIRST AID TREATMENT

4.0 In case of an accident, while handling building lime the following measures should be immediately taken.

4.1 Building lime on the skin should be washed off without delay. If dust has been inhaled, the nose and throat should be thoroughly irrigated with water. It is essential to avoid inhaling water.

4.2 Building lime in the eye should be removed immediately. Speed is essential. Particles should be removed with extreme care using a cotton wool bud and irrigation with eyewash solution or gently flowing clean mains water should commence immediately and continue until medical attention can be obtained.

4.3 In all cases affecting the eye, or in any severe cases of contamination, the person should receive immediate medical attention.

4.4 Wherever there is the slightest danger of building lime entering the eye it is advisable to have suitable eye irrigation bottles close to hand. The bottles should be of type which contains sterile water or sterile saline solution in pre-packed containers. After treatment, used bottles should be discarded.

4.5 In all cases after first-aid treatment the patient should consult a qualified medical practitioner.

5 STORAGE

5.1 Storage of Hydrated Lime in Bags

5.1.1 Hydrated lime normally contains less than 1 percent of free moisture when manufactured and this will not rise above this level when stored within the normal range of relative humidity. However, it absorbs carbon dioxide from the air and the rate of deterioration due to this cause is dependent upon the amount of air passing through the store. If air movement is reduced to a practical minimum, hydrated lime can be stored for up to six months without appreciable change. For this reason hydrated

lime should be stored under cover in a cool dry place with minimum of air movement and exposure to combustion gases.

5.1.2 The ideal store is a brick or concrete building with a concrete floor, or a similar construction designed to eliminate draughts through walls, floor and roof. The store should not be heated, since this would create draughts.

5.1.3 Bags of hydrated lime should be stored flat and away from walls if condensation or moisture on the walls is likely to occur. Care must be taken to ensure that stocks are rotated as very old stock will eventually deteriorate to the point of being unsuitable for many applications.

5.1.4 If hydrated lime is stored, temporarily or otherwise, in a general store, care should be taken to ensure that it does not come into contact with other chemicals with which it might react. Since this product is fully hydrated, no heat is evolved when water is added to it, and there is, therefore, no fire risk during storage.

5.2 Storage of Quicklime in Bags

5.2.1 The storage conditions described for hydrated lime are applicable to quicklime also. Quicklime should be stored to avoid any accidental contact with water which could enter the bags, for instance, at the point where they are sealed after packing. Since the product is not hydrated, any water entering the bags will cause expansion up to 2.5 times and the heat generated may cause a fire. Therefore, quicklime should not be stored with, or close to, flammable materials.

5.2.2 Quicklime may be stored in plastic bags under good storage conditions for up to three months without significant deterioration.

ANNEX A
(Foreword)
COMMITTEE COMPOSITION

Building Limes and Lime Products Sectional Committee, CED 4

Chairman	*Representing*
DR C. L. VERMA	Central Building Research Institute, Roorkee
Members	
DR S. C. AHLUWALIA DR K. M. SHARMA (*Alternate*)	National Council for Cement and Building Materials, New Delhi
COL J. K. ASHTAPUTRE SHRI D. S. SAXENA (*Alternate*)	Engineer-in-Chief's Branch, Army Headquarters, New Delhi
CHAIRMAN	Village Industries Commission, Mumbai
SHRI B. K. CHAKRABORTY SHRI P. S. SRIVASTAVA (*Alternate*)	Housing and Urban Development Corporation, New Delhi
DEPUTY DIRECTOR STANDARDS (B&F) ASSTT DESIGN ENGINEER (B&F) (*Alternate*)	Research, Designs and Standards Organization (Ministry of Railways), Lucknow
DIRECTOR RESEARCH OFFICER (MATERIAL TESTING DIVISION) (*Alternate*)	Gujarat Engineering Research Institute, Vadodara
SHRI S. P. GUJRAL	Lime Manufacturer Association of India, Delhi
SHRI R. L. GUPTA SHRI S. K. MALHOTRA (*Alternate*)	Central Building Research Institute, Roorkee
SHRI S. K. HAWA SHRI O. P. JAIN (*Alternate*)	Department of Mines and Geology, Govt of Rajasthan, Udaipur
HOUSING COMMISSIONER RESIDENT ENGINEER (HQ) (*Alternate*)	Rajasthan Housing Board, Jaipur
SHRI D. K. KANUNGO SHRI R. KAPOOR (*Alternate*)	National Test House, Calcutta
DR S. MAUDGAL	Ministry of Environment and Forests, New Delhi
SHRI Y. R. PHULL SHRI S. S SEEHRA (*Alternate*)	Central Road Research Institute, New Delhi
SHRI S. SATYANARAYANA SHRI P. SUBBA RAO (*Alternate*)	Andhra Pradesh Lime Manufacturing Association, Andhra Pradesh
SHRI J. SENGUPTA SHRI V. K. SETHI (*Alternate*)	Building Materials and Technology Promotion Council, New Delhi
SHRI A. S. SOOD SHRI K. JAICHANDRAN (*Alternate*)	Office of the Development Commissioner (SSI), Ministry of Industry, New Delhi
SUPERINTENDING ENGINEER (S&S) EXECUTIVE ENGINEER (S&S) (*Alternate*)	Central Public Works Department, New Delhi
SHRI S. B. SURI	Central Soil and Materials Research Station, New Delhi
SHRI VINOD KUMAR, Director (Civ Engg)	Director General, BIS (*Ex-officio Member*)

Member Secretary
SHRI R. S. JUNEJA
Joint Director (Civ Engg), BIS

Bureau of Indian Standards

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