

DRAFT UGANDA STANDARD

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Building limes — Part 1: Specification



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Requests for permission to reproduce this document should be addressed to

The Executive Director
Uganda National Bureau of Standards
P.O. Box 6329
Kampala
Uganda
Tel: +256 414 333 250/1/2/3
Fax: +256 414 286 123
E-mail: info@unbs.go.ug
Web: www.unbs.go.ug

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Foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to coordinate the elaboration of standards and is

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- (c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of key stakeholders including government, academia, consumer groups, private sector and other interested parties.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

The committee responsible for this document is Technical Committee UNBS/TC 03, *Building and Construction*, Subcommittee SC.

This second edition cancels and replaces the first edition (US 156:1995), which has been technically revised.

Building limes — Part 1: Specification

1 Scope

This Draft Uganda Standard specifies requirements for building limes used for construction purpose.

2 Normative references

The following referenced documents referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

US 290 (all parts), *Glossary of terms used in lime products*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in US 290: 2001 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Classification

4.1 Building limes shall be classified as follows:

Class A - Eminently hydraulic lime used for structural purposes.

Class B - Semi-hydraulic lime used for masonry mortars, lime concrete and plaster undercoat.

Class C - Fatlime used for finishing coat in plastering, white washing, composite mortars, etc, and with addition of pozzolanic materials for masonry mortar.

Class D - Magnesium/dolomitic lime used for finishing coat in plastering, white washing, etc.

Class E - Kankar lime used for masonry mortars.

Class F - Siliceous dolomitic lime used for undercoat and finishing coat of plaster.

NOTE 1 Lime shall be available either in hydrated or quick form, except that of Classes A and E which shall be supplied in hydrated form.

NOTE 2 Applications indicated are only suggestive,

5 Requirements

5.1 Chemical requirements

Building limes shall conform to the requirements given in the Table 1.

Table 1 — Chemical requirements for building limes

SL No	Characteristics	A	B		C		D		E	F	
		Hydrated	Quick	Hydrated	Quick	Hydrated	Quick	Hydrated	Hydrated	Quick	Hydrated
i.	Calcium and magnesium oxides, percent, min. (on ignited basis)	60	70	70	85	85	85	85	50	70	70
ii.	Magnesium oxides, percent (on ignited basis).	max.	6	6	6	6	6	—	6	—	—
		min.	—	—	—	—	—	6	6	—	6
iii.	Silica, alumina and ferric oxide, percent, min. (on ignited basis)	20	10	10	—	—	—	—	20	10	10
iv.	Unhydrated magnesium oxide, percent, max. (on ignited basis)	—	—	—	—	—	8	8	—	8	8
v.	Insoluble residue in dilute acid and alkali percent, max. (on ignited basis)	15	10	10	2	2	2	2	25	10	10
vi.	Carbon-dioxide, percent, max. (on oven dry basis)	5	5	5	5	5	5	5	5	5	5
vii.	Free moisture content, percent, max.	2	—	2	—	2	—	2	2	—	2
viii.	Available lime as CaO, percent, min. (dry basis)	—	—	—	75	75	—	—	—	—	—

5.2 Physical requirements

Building limes shall conform to the requirements given in the Table 2.

Table 2 — Physical requirements for building limes

SL No	Characteristics		A	B		C		D		E	F	
			Hydrated	Quick	Hydrated	Quick	Hydrated	Quick	Hydrated	Hydrated	Quick	Hydrated
i.	Fineness	a) Residue on 2.36 mm Sieve percent, Max	Nil	—	Nil	—	Nil	—	Nil	Nil	—	Nil
		b) Residue on 300micronSieve percent, Max	5	—	5	—	Nil	—	Nil	5	—	5
		c) Residue on 212micron Sieve percent, Max	—	—	—	—	10	—	10	—	—	—
ii.	Residue on slaking	a) Residue on 850micron Sieve percent, Max	—	10	—	5	—	5	—	—	10	—
		b) Residue on 300micron Sieve percent, Max	—	—	—	5	—	5	—	—	—	—
iii.	Setting time	a) Initial set, Min, h	2	—	—	—	—	—	—	2	—	—
		b) Final set, Max, h	48	—	—	—	—	—	—	48	—	—
iv.	Compressive strength, Min, N/mm ²	a) at 14 days	1.75	1.25	1.25	—	—	—	—	1.0	1.25	1.25
		b) at 28 days	2.8	1.75	1.75	—	—	—	—	1.75	1.75	1.75
v.	Transverse strength at 28 days, N/mm ² Min		0.7	0.7	—	—	—	—	0.7	0.7	0.7	0.7
vi.	Workability bumps, Max		—	—	—	12	10	12	10	—	—	—
vii.	Volume yield ml/g, Min		—	—	—	1.7	—	1.4	—	—	—	—
viii.	Soundness, Le Chaterlier expansion mm, Max		5	—	5	—	—	—	—	10	—	10
ix.	Popping & pitting		Free	—	Free	—	Free	—	Free	—	—	Free

6 Packing

6.1 The hydrated lime shall be supplied, in suitable containers, such as jute bags lined with polythene or high density polythene woven bags lined with polythene or craft paper bags, preferably containing 50 kg of lime.

NOTE If the hydrated lime can be used within 30 days, use of liner may be dispensed with.

6.2 The quicklime shall be supplied in containers like metal container or similar suitable containers preferably containing 50 kg of lime.

7 Marking

The lime packages shall bear the following:

- a) type and class of lime;
- b) the brand name of manufacturer;
- c) date of manufacture;
- d) the net weight; and
- e) in case of quicklime the slaking temperature shall be indicated.

8 Storage

The lime shall be stored in such a manner as to permit easy access for proper inspection and in a suitable building to protect the lime from the dampness and to minimize warehouse deterioration.

NOTE Quicklime deteriorates rapidly and, therefore, should be used as quickly as possible.

9 Sampling and criterion for conformity

The procedure of sampling and criterion for conformity shall be as given in Annex A.

10 Test methods

For the purposes of this document, the test methods are given in DUS 156-2: 2017

Annex A (normative)

Sampling and Criterion for Conformity

A.1 Samples for testing

A.1.1 The samples for testing shall be taken by the purchaser or his representative at the manufacturer's works.

A.2 Procedures for sampling

A.2.1 General

Sampling shall be carried out as quickly as possible so that the material does not deteriorate. The total time occupied in mixing and quartering down the composite samples, and the preparation of the final test samples from this shall not exceed two hours. The final samples shall be three in number and shall be placed immediately in clean, dry and air-tight containers. When testing is not to be carried out at once, the samples shall be enclosed, marked and sealed to the satisfaction of all concerned, paying special attention to the airtightness of the containers. Tools and containers shall be of material free from rust and shall be alkali resistant.

A.2.2 Sampling

From each lot, three final test samples shall be taken as provided under A-2.2.1 for quicklime and under A-2.2.2 for hydrated lime.

A.2.2.1. Quicklime

The size of the gross sample for lump quicklime and powdered quicklime from each lot depends on the size of the lot and shall be as given in Table 3 and in A-2.2.1.1 and A-2.2.1.2.

Table 3 — Sample size

Lot size	Gross sample size for lump quick-lime	Gross sample size for powdered quicklime
Tonnes	kg	kg
Up to 100	500	250
101 to 300	1 000	500
301 to 500	1 500	750
501 to 1 000	2 000	1 000

A.2.2.1.1. When the lump quicklime or powdered quicklime is available-in bulk, the gross sample shall be made up of at least 50 equal portions taken from the lot at equal intervals of loading or unloading to make up the prescribed gross sample size. For stationary lots, the gross sample shall be collected from different parts of the stock pile in not less than 50 equal portions. The gross sample collected in the above manner shall be thoroughly mixed on a clean dry surface to about 20 kg for lump quicklime and 10 kg for powdered quicklime by coning and quartering

A.2.2.1.2 When the lump quicklime or powdered quicklime is presented for sampling in packages, at least 25 percent of the packages shall be opened and equal portions of the material shall be collected from different parts of the packages to make up the prescribed gross sample size, The gross sample collected in the above manner shall be thoroughly mixed on a clean dry surface to about 20 kg for lump quicklime and 10 kg for powdered quicklime by coning and quartering method.

A.2.2.2 Hydrated lime

The final samples, each of not less than 5 kg, shall be taken direct in the same manner as described under A-2.2.1.1 and A-2.2.1.2 for powdered quicklime.

A.2.3 Material for physical and chemical tests

Subsequently, at the time and place at which the tests and chemical analysis are to be carried out, the sample taken as described under A-2.2.1 and A-2.2.2 shall be crushed to pass through 2.36 mm Sieve and thoroughly mixed. Slightly more quantity of lime than is sufficient for conducting the tests shall be taken. For chemical tests only, from the material finally chosen, a small quantity from the sample shall be ground and rejected in order to ensure absence of contamination in the grinding equipment; and then about 100 g of the sample shall be rapidly ground with as little exposure to the air and water vapour as possible to pass through 300 micron Sieve and placed in a small air-tight container. The remaining quantity shall be used for physical tests.

A.3 Criterion for conformity

A.3.1 The test sample prepared for each lot shall be subjected to various physical and chemical tests. The lot shall be declared conforming to this specification only if the sample passes all the prescribed tests.

Bibliography

- [1] IS 712: *Third Edition, Building Limes — Part 1: Specification*

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