

6. SPECIFICATIONS FOR HYDRATED LIME

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GENERAL

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GENERAL

1 Ambient Conditions

All materials shall be in every respect suitable for storage use and operation in the conditions of temperature and humidity appertaining in Sri Lanka.

The annual average temperature is 28 °C while the relative humidity varies generally from 70% during the day to 90% at night.

2 Suitability for Potable Water

Hydrated Lime will come into contact with potable water shall not constitute a toxic hazard, shall not support microbial growth,

3 Definitions

The definitions given in the relevant standards which are referred to in the specification shall apply for the terms used in this specification.

4 Inspection and Testing

The Manufacturer shall supply, furnish and prepare the necessary test samples of materials and supply the labour facilities and appliances for such testing as may be required to be carried out on his premises according to this specification. If there are no facilities at his own works for making the prescribed tests the Contractor shall bear the cost of carrying out the tests elsewhere.

The Engineer and nominated Inspection authority shall have full access to all parts of the plant that are concerned with the testing, furnishing or preparation of materials for the performance and testing of work under this Specification.

The Contractor shall furnish the Engineer with reasonable facilities and space (without charge) for the inspection, testing and obtaining of such information, as he desires regarding the character of material in use and the progress and manner of the work.

Further all materials shall be tested to the appropriate tests at the manufacturer's premises and shall be supported by a test certificate from the manufacturer.

The format for test certificate shall be in accordance with the format given in the schedule of particulars.

Engineer will appoint an inspection team comprising of 02 officers of NWSDB. The manufacturer should provide Laboratory facilities and other chemicals, supporting staff and perform the test in presence of this inspection team. The certificate of acceptance of goods issued by the inspection team is compulsory to deliver materials from the manufacturer's plant.

Contractor is held responsibility for the assuring quality of the goods supplied by him until the final delivery point. Hydrated Lime is tested at the Employer's final delivery point by the employer and goods shall conform to the standard for the acceptance.

5 Marking

All markings shall be legible and durable unless otherwise specified and shall be as specified in this specification.

6. Protection During Delivery

The contractor shall provide protection to the approval of the Engineer, prior to the materials leaving the place of manufacture and shall maintain such protection until the items reach their destination in order to guard effectively against damage during transit and storage and the ingress of foreign matter inside the packages.

All details of the proposed method of providing such protection shall be submitted at the time of tendering.

The cost of providing protection shall be included in the unit prices tendered in the Bills of Quantities.

7. Storing, Handling and Hauling of Materials.

All materials shall be stored in an approved location and in such a manner as to preserve their quality and condition.

Storage shall be in accordance with the manufacturers recommendation and shall be stored in a dry place with a proper packing.

Materials and components shall be handled in such a manner as to avoid any damage or contamination and in accordance with all applicable recommendations of the manufacturers.

The contractor shall give instructions to the shipper on precautions to be taken in the handling of materials during loading, towage delivery and unloading and shall give particulars of these instructions to the purchaser.

8. Manufacturer's Certificate

The Contractor shall supply to the Engineer a certificate stating that each item supplied has been subjected to the tests laid down herein and conforms in all respects to this Specification or such other Specification which has been submitted to and approved by the Engineer. In addition to this, contractor shall provide certificate for the conformity to the Standards (SLS 682 1984) from the independent testing agencies mentioned in General condition of contract. Testing at Manufacturers factory by Employer will perform as specified.

9. Quality and Workmanship

Hydrated Lime which are intended to supply shall be manufactured in compliance with the ISO 9001 quality system standards. Quality assurance certification should be from an organization accredited to issue such certification and the manufacturer shall have this certification valid during the supply and delivery of the materials. Document evidence regarding accreditation together with the scope of certification should be provided.

TECHNICAL SPECIFICATION FOR HYDRATED LIME

1.0 GENERAL

Hydrated Lime shall be in the form of a fine white power which is free from lumps and hard caking. It shall be substantially free from foreign mater and core and shall conform to SLS 682 – 1984 standard..

Note : Core is that fraction of limestone which has resisted dissociation the kiln. It results from incomplete calcinations or under burning.

2.0 PARTICLE SIZE

2.1 Not less than 99.5 per cent by mass of the material shall pass through a 600 μm sieve and not less than 98.0 per cent by mass shall pas through a 75 – μm sieve when tested as prescribed in Appendix B of SLS 682 – 1984.

3.0 CALCIUM HYDROXIDE CONTENT

3.1 The material shall contain not less than 80 per cent by mass of calcium hydroxide when tested as prescribed in Appendix C of SLS 682 – 1984.

4.0 BASICITY FACTOR

4.1 Basicity factor of the material shall be not less than 0.72 when tested as prescribed in Appendix D of SLS 682 – 1984.

Note : The basicity factor of a lime or limestone product is a measure of available alkalinity. It represents the grams of calcium oxide equivalent per gram of lime or limestone product used for comparing the relative neutralizing values.

5.0 PACKAGING

Hydrated Lime shall be packed in 25/50 Kg. quantities in paper (or Suitable) bags having a polythene inner liner as per the standard SLS 682 – 1984 and shall be free from dirt, any foreign matters likely cause decomposition of the material.

5.1 Marking.

Each package shall be legibly and indelibly marked with the following information.

- (a) Name of the product
- (b) Grade (for chlorinated lime):

- (c) Name and Address of the manufacturer and/or local distributor (including country of origin):
- (d) Trade mark, if any
- (e) Net mass of the Contents, in Kilograms :
- (f) The words “keep away from heat and moisture” :
- (g) Date of manufacture :
- (h) Batch or code Number
- (i) The words “National Water Supply and Drainage Board” or NWSDB”

6.0 SAMPLING

The method of drawing representative samples of material for ascertaining conformity to the requirements of this specification shall be as prescribed below :

6.1 Lot

In any consignment all the packages containing the same quantity of Hydrated Lime of one batch of manufacture or supply shall constitute a lot.

6.2 General Requirements of sampling

6.2.1 in drawing, handling and preparation of sample the following precautions shall be observed :

6.2.1.1 Sampling and preparation of sample shall be conducted as expeditiously as possible in order to avoid undue exposure of the material to the air.

6.2.1.2 Samples shall not be take from broken packages.

6.2.1.3 Sampling instrument shall be clean and dry when used.

6.2.1.4 Samples shall be placed in clean, dry and air-tight glass or suitable containers.

6.2.1.5 The material being sampled, the instruments and the containers for samples shall be protected from adventitious contamination.

6.2.1.6 The sample containers shall be air-tight after filling and marked with necessary details of sampling.

6.2.1.7 Samples shall be stored in the shade.

6.3 Sampling Instruments

A sampling tube having a core diameter of not less than 25 mm shall be used.

6.4 Scale of Sampling

6.4.1 Each lot shall be tested separately for ascertaining its conformity to the requirements of this specification.

6.4.2 The number of packages to be selected from a lot shall be in accordance with Table 1.

9 Table 1 – Scale of Sampling

Number of Packages in the lot	Number of Packages to be selected
Up to 08	02
09 to 27	03
28 to 64	04
65 to 100	05
101 to 300	06
301 to 500	07
501 to 800	08
801 to 1300	09
1301 to above	10

6.4.3 The packages shall be selected at random. In order to ensure randomness of selection random number tables as given in SLS 428 shall be used.

6.5 Preparation of Sample

- 6.5.1 A representative sample of material shall be obtained from each package selected as in 6.4.2 in accordance with method given in 6.5.2.
- 6.5.2 The sampling tube shall be inserted into a package being sampled so that it will take a core material from substantially the entire length of the package.
- 6.5.3 The material obtained from each package shall be thoroughly mixed and reduced by coning and quartering to obtain a test sample of not less than 150g.

6.6 Number of Tests

- 6.6.1 Each package selected as in 6.4.2 shall be examined for packing and marking requirements. (This may be done at the place of sampling)
- 6.6.2 The sample prepared as in 6.5.3. shall be tested for requirements specified in 1.0, 2.0,3.0 and 4.0 of this specification.

7.0 Method of Test

The materials shall be tested by the appropriate methods prescribed in Appendix B to D of SLS 682 – 1984.

8.0 Conformity to Standard

A lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied.

- 8.1.1 Each package examined as in 6.6.1 satisfies the relevant packages and marking requirements.
- 8.1.2 The sample tested as in 6.6.2 satisfy the relevant requirements.

9.0 Age from the date of manufacturing

Hydrated lime to be supplied shall be new and age from the date of manufacturing shall be not more than 02(two) months when supplying.