

## **6. SPECIFICATIONS FOR BLEACHING POWDER**

# SPECIFICATIONS FOR BLEACHING POWDER

## 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 30 °C while the relative humidity varies generally from 70% during the day to 90% at night.

### **2 Suitability for Potable Water**

Bleaching Powder 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.

Contractor is held responsibility for the assuring quality of the goods supplied by him until the final delivery point. Bleaching Powder 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 bided 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 759: 1986) 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**

Bleaching Powder which are intended to supply shall be manufactured in compliance with the ISO 9001 : 2008 Quality Management System Standards. Any certificate regarding product conformity and quality management should be from an organization accredited to issue such certification and the manufacturer shall have this certification valid during the period of supply and delivery of the materials. Document evidence regarding accreditation together with the scope of certification should be provided.

## 10. TECHNICAL SPECIFICATIONS FOR BLEACHING POWDER

### 10.1. General Requirements

- 10.1.1 All materials to be supplied under this contract shall conform to Sri Lanka standard (SLS) 759: 1986 – Specification for chlorinated lime (Bleaching Powder) and Calcium Hypochlorite.
- 10.1.2 The material shall be white to slightly yellowish – white in appearance and shall be free from hard lumps and any visible impurities. It shall be dry and free – flowing.
- 10.1.3 The material shall be partly soluble in water and in 96 percent (V/V) solution of ethanol.
- 10.1.4 The materials shall evolve chlorine copiously on the additional of 2 mol/l solution of Hydrochloric Acid. When the material is shaken with water and filtered, the filtrate shall yield the two reactions prescribed in Appendix B of SLS 759 : 1986 which are characteristic of Calcium Salts and Chlorides.
- 10.1.5 Chlorinated Lime (Bleaching Powder) to be supplied shall be new and age from the date of Manufacture shall be not more than 02 months when shipping.

### 10.2. OTHER REQUIREMENTS

Chlorinated lime shall also conform to the relevant requirements, prescribed in Table 1 when tested according to the methods given Column (4) of the table.

**Table 1 – Requirement for Chlorinated Lime and Calcium Hypochlorite**

| No. (1) | Characteristics (2)  | Chlorinated Gr. 1 (3) | Method of Test (4)              |
|---------|--|-----------------------|---------------------------------|
| i.      | Available chlorine, percent by mass, min   | 35.0                  | as prescribed in SLS 759 : 1986 |
| ii.     | Loss of available chlorine on heating, on the basis of initial available chlorine percent by mass, max | 6.6                   | -do-                            |
| iii.    | Moisture, percent by mass, max   | 0.3                   | -do-                            |
| iv.     | Particle size :<br>Particles passing through 1.70 mm sieve, percent by mass, min.                      | } 99.5                | -do-                            |
| v.      | Bulk density, g/ml, min  | 0.8                   | -do-                            |

### **10.3. PACKING**

The material shall be packed in air –tight High Density Polyethylene (HDPE) drums (45/50 Kg) with suitable inner-linings. The containers used shall be free from grease, dirt or any other foreign matter likely to cause decomposition of the material.

### **10.4. MARKING**

Each container shall be legibly & indelibly marked or labeled with the following :

- 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 & Drainage Board” or “NWSDB”

### **10.5. SAMPLING**

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

#### **10.5.1 Lot**

All the containers containing material belonging to one batch of manufacture or supply and ordered for inspection at one time shall constitute a lot.

#### **10.5.2 General Requirements of Sampling**

10.5.2.1 Samples shall not be exposed to the atmosphere for a longer time than necessary and sampling shall be done as rapidly as possible.

10.5.2.2 to draw representative samples from the containers selected for sampling, an appropriate sampling instrument (galvanized iron sampling tube, scoop) shall be used.

- 10.5.2.3. The sampling instrument shall be clean and dry when used.
- 10.5.2.4. The samples shall be placed in clean, dry and air tight containers on which the material has no action.
- 10.5.2.5. Each sample container shall be sealed air tight after filing and marked with necessary details of sampling.
- 10.5.2.6. Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.
- 10.5.2.7 The samples shall be stored in a cool and dry place.

**10.5.3 Scale of Sampling**

- 10.5.3.1 Samples shall be obtained from each lot for ascertaining its conformity to the requirements or this specification.
- 10.5.3.2 The number of containers to be selected from a lot shall be in accordance with the Table 2.

Table 2 – Scale of Sampling

| Number of containers in the lot | Number of containers to be selected |
|---------------------------------|-------------------------------------|
| Up to 50                        | 3                                   |
| 51 to 90                        | 5                                   |
| 91 to 150                       | 6                                   |
| 151 to 300                      | 7                                   |
| 301 and above                   | 8                                   |

- 10.5.3.3 The containers shall be selected at random. In order to ensure randomness of selection, tables of random number as given in SLS 428 shall be used.

**10.5.4. Preparation of Sample**

- 10.5.4.1 Equal quantities of materials shall be drawn from different parts of each container selected as in 10.5.3.2 using an appropriate sampling instrument to for a sample of not less than 100 g. The material obtained

from each container shall constitute an individual sample to represent the container and shall be transferred to a separate sample container.

10.5.4.2 Equal quantities of material shall be drawn from different parts of each container selected as in 10.5.3.2 using an appropriate sampling instrument. The material so obtained shall be mixed to form a composite sample of not less than 300 g and transferred to a sample container.

#### 10.5.5 Number of Tests

10.5.5.1. Each container selected as in 10.5.3.2 shall be examined for packaging and marking requirements.

10.5.5.2 The composite samples prepared as in 10.5.4.2 shall be tested for requirements;

- a) Available Chlorine,
- b) Loss of available chlorine on heating and
- c) Moisture
- d) Partical Size
- e) Bulk density

### 10.6. METHOD OF TEST

10.6.1 Tests for the requirements laid down in 1.4 and 2 shall be carried out as prescribed in SLS 759 : 1986.

10.6.2 During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

### 10.7. CRITERIA FOR CONFORMITY

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

10.7.1 Each package examined as in 10.5.5.1 satisfies the relevant packaging and marking requirements.

10.7.2 Each individual sample tested as in 10.5.5.2 satisfies the relevant requirements.

10.7.3 The test results on the composite sample satisfy relevant requirements.