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METHOD FOR BULK & BIGBAG & PRODUCTION LINE SAMPLING OF SIZED PERLITE ORE	2

SCOPE

This method describes a sampling procedure for bulk of perlite ore.

SIGNIFICANCE OF TEST

Since the unexpanded perlite product gradation is mostly dependent on the sized ore particle size distribution, it is important to obtain as representative sample as possible from which an average particle size distribution of the ore shipment may be determined.

APPARATUS

(a) Thief Tube.
(b) Scoop.
(c) Sample splitter.

PROCEDURE FOR BIGBAGS/BAGS

(a) For every 150mt bagged material, at least five (5) bags shall be taken at randomly and combined to produce a composite sample.
(b) Representative portions from each bag selected shall be secured by means of a suitable sampling thief tube. The sampling tube shall be inserted the full distance between diagonally opposite corners of the bag with the bag lying in a horizontal position. The portions so obtained shall be combined to produce a composite sample having a weight of at least 1,5 kg.
(c) Split the composite to the desired amount for analysis. (Usually 100-200 gr).
(d) Representative sample should be kept for 6 months.

PROCEDURE FOR PRODUCTION LINE/BULK

(a) For every 150mt produced material, randomly 1 samples are taken from production belt conveyor either from automatic sampling machine or with a scoop from outlet of belt conveyor.
(b) Sample for 150mt material should be sampled having a weight of at least 1,5 kg.
(c) Split the composite to the desired amount for analysis. (Usually 100-200 gr).
(d) Representative sample should be kept for 6 months.

THEIF TUBE DRAWING	3

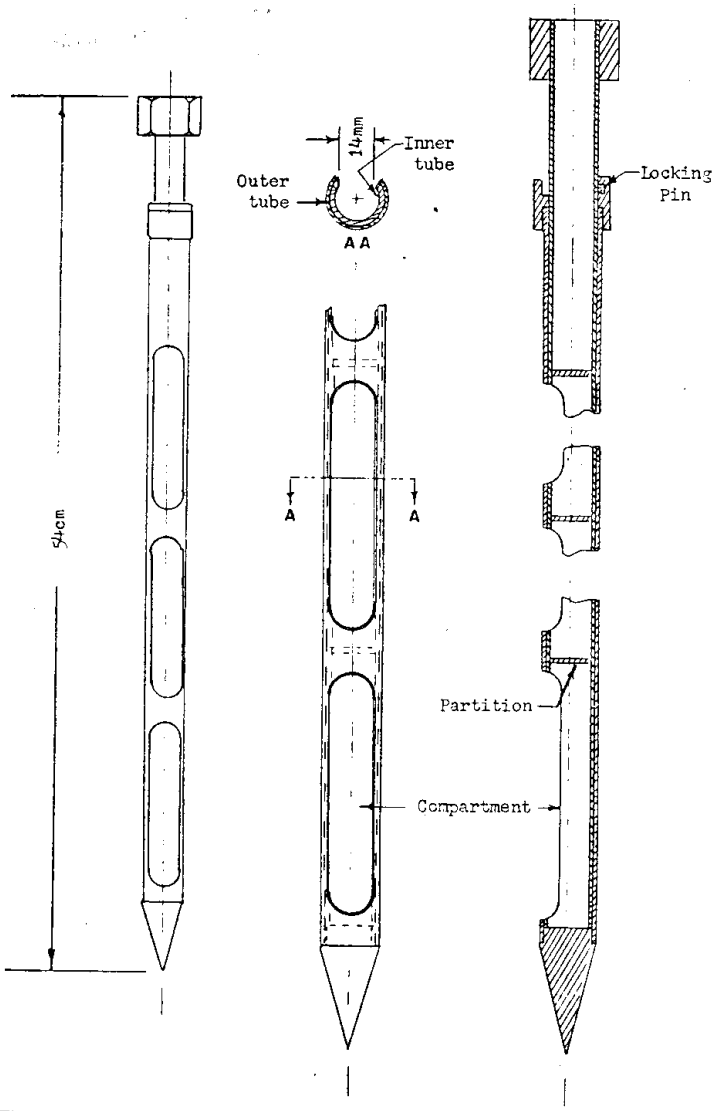

Fig. 15. Compartmented bag probe. (From U.S. Department of Agriculture GR Instruction 916-6, Exhibit F.)

PREPARATION OF PERLITE SAMPLE FOR TESTING BY SPLITTER	**4**

SCOPE

This procedure is applicable to a sample of unexpanded perlite, which has been obtained, from bulk, bags or production stream, etc. The object is to reduce the sample to a size convenient for testing and yet representative of the original quantity.

APPARATUS

Sample reducer or splitter

PROCEDURE

Pass the sample through the device and reject one of the two resulting quantities. Repeat this operation until a sample of the approximate required size is obtained.

SIEVE ANALYSIS OF UNEXPANDED PERLITE, WEIGHT BASIS	**5**

SCOPE

This method covers the determination of the particle size distribution of unexpanded perlite on a weight basis.

APPARATUS

(a) Balance. The balance or scale shall be sensitive to within 0.1 g.
(b) Sieves shall be standard 8 in. (203.2 mm) diameter by 2 in. (50.8 mm) high or standard metric equivalent conforming to ASTM E-11.
(c) Retsch vibratory sieve shaker AS 200 or equivalent.

PROCEDURE

(a) Prepare a 100 -200 gr sample of dry perlite. Weight the sample.
(b) The sample shall be separated into a series of sizes, using such sieves as are necessary. The sieving operation shall be conducted by means of a Retsch AS 200 vibratory sieve shaker or equivalent.
(c) Sieving time shall be 5 min.
(d) The weight of each sieve fraction shall be determined on the balance or scale.
(e) The results of the sieve analysis shall be calculated as follows:

Percentages retained between consecutive sieves, depending upon the form of the specifications for the use of the material under test. Percentages shall be reported to the nearest whole number and shall be calculated on the basis of the weight of the test sample.

Microns	Weight gr.	Percentage %
+300	7,7	7,5
300-200	34,1	33,2
200-150	22	21,42
150-74	29,3	28,53
-74	9,6	9,35
TOTAL	102,7	100

DETERMINATION OF FREE AND COMBINED MOISTURE IN PERLITE	6

SCOPE

This method is for the determination of both the free and combined moisture in unexpanded perlite.

APPARATUS

(a) Electric drying oven.
(b) Aluminium moisture pans.
(c) Analytical balance.
(d) Electric muffle furnace, range ambient-1000°C.
(e) Combustion crucible.
(f) Dessicator

PROCEDURE

A. % Free Moisture

(a) Carefully weigh a predried aluminum moisture pan to +/-0.001 g. Add approximately 25 g of perlite to the moisture pan. Record weights.
(b) Place in an electric oven at 105-110° C and dry to constant weight. Overnight is normally sufficient.
(c) Cool in a dessicator and weigh.
% Free Moisture =
(Original sample weight – Oven dried sample weight)/Original sample weight*100

B. % Total Moisture

(a) Weigh a pre-ignited combustion crucible to +/-0.001 g. Add perlite to crucible; 1/3 full for ore, 2/3 full for expanded products. Record weights.
(b) Place crucible in a cold muffle furnace*. Turn furnace on and set temperature control for 950°C. Sample should remain in the furnace for 4 hours at 950°C, or until constant weight is reached.
(c) Remove from muffle. Cool in a dessicator and weigh.
% Total Moisture =
(Original sample weight – Ignited Sample weight)/ Original sample weight*100

C. % Combined Moisture

(a) Subtract the free moisture from the total moisture to obtain the combined moisture, as follows: % Combined moisture = % Total moisture -% Free moisture.

*For most ores and all expanded products, the crucible (with cover) may be placed directly in the furnace at 950°C. For ease of operation it is suggested that the crucible cover be used only in the furnace-to prevent too-rapid heat up of ore particles.

CHEMICAL COMPOSITION ANALYSIS	**7**

SCOPE
This procedure is to test and confirm the quality of material from production zone of quarry being applicable for production.

SAMPLING

At least every 6 months samples taken representing production batches from quarry production zones as per the yearly production plan with geological surveying practices or via production drilling samples.

PROCEDURE
Reduced samples transferred to external labs for analysis. Test results of Atomic Absorption Spectrometer method are being archived and reported.

METHOD FOR EXPANDABILITY	**8**

SCOPE

Since it is generally agreed that laboratory perlite expansion tests are not suitable for scale-up, tests should be conducted on production scale equipment in order to determine suitability of a perlite ore for commercial applications.

PROCEDURE

(a) Expandability analysis done by lab type expander and results are recorded.
(b) Expansion results compared with internal standarts.
(c) Based on comparisons, expandability of material reported.

METHOD FOR REPORTING	**9**

SCOPE

Analysis are being reported to approve that production is within the specs and quality norms.

PROCEDURE

(a) Report (FR.01-008) is prepared following to request of customer as per Customer contract. If Customer has no request of report, data are being recorded at electronic media.

(b) Report ID and the scope of report are shown on summary page as shown below.

Order Date / No	: Order date and number
Material Description	: Product Name / Code
Sieve Analysis	: One test per 150mt
Moisture Analysis	: One test per Lot
Combined Moisture Analysis	: One test per Lot
Expandibility Analysis	: One test per Lot
Chemical Composition Analysis	: One test per Batch

(c) Detailed test results are shown at second part of report, average of test results are compared with product specs for confirmation.

(d) Report is completed with the signature of authorities.