Standard Method of Test for
BULK DENSITY OF MAGNESIUM OXYCHLORIDE CEMENTS

3, p. 318 (C 248 - 52).

Make the following editorial change in Standard Method C 248 - 52:
Section 3 (b).— Change the second equation to read as follows:
Bulk density, lb. per cu. ft. = B × 62.4.

ASTM Designation: C 248 - 52

ADOPTED, 1952.

This Standard of the American Society for Testing Materials is issued under the
fixed designation C 248; the final number indicates the year of original
adoption as standard or, in the case of revision, the year of last revision.

Scope
1. This method of test covers the procedure for determining the bulk density
of magnesium oxychloride cements.

Apparatus
2. The apparatus shall consist of the following:
(a) Balance.— A bow balance sensitive
to 0.01 g. under a load of 200 g. The pan
support bow shall be not less than 6 in.
wide. Some type of beaker support shall
be provided.
(b) Beaker of 1000-mL capacity.
(c) Copper Wire, No. 22 gage.

Preparation of Sample
3. (a) The sample shall consist of at
least five pieces or fragments of the ce-
ment being tested, each weighing not less
than 100 nor more than 200 g. The ce-
ment shall be mixed, molded, and cured
for seven days in accordance with the
procedure prescribed for the test spec-
imen in the Standard Method of Test
for Flexural Strength of Magnesium Ox-
ychloride Cements (Using Simple Bar with
Two-Point or Single-Point Loading)
(ASTM Designation: C 256). Where
broken test specimens from Method C 256
are available, suitable pieces or frag-
ments from these specimens may be used.
(b) Each specimen shall be free of all
loosely adhering particles. Visibly de-
fective specimens, such as those contain-
ing cracks or bubbles, shall not be used.
(c) Specimens shall be selected from
test specimens that have been cured in a
standard atmosphere and that have not
been in contact with water from the time
of removal from the forms.

Procedure
4. (a) Dry Weight, D.— The dry weight,
D, of each specimen cured as
described in Section 3(c) shall be deter-
mined by weighing in air to the nearest
0.05 g. at 7 days of age.
(b) Water Immersion.— After the dry
weight has been determined, the spec-
imens shall be placed in water at 70 ± 1 F.,
for 1 hr. During this 1-hr. soaking period
they shall be completely covered with
water and shall be so placed in the con-
tainer that the water has free access to all
surfaces.
(c) Suspended Weight, S.— The weight,
S, of each test specimen, after the soaking
period and while suspended in water at
70 ± 1 F., shall be determined to the
nearest 0.05 g. by suspending the speci-
men by means of a loop or halter of No.
22 gage copper wire hung from one arm of
the balance. The balance shall be previ-
ously counterbalanced with the wire in
place and immersed in water to the same
depth as is used when the test specimens
are in place.
(d) Saturated Weight, W.— After de-
termining the suspended weight, each
specimen shall be blotted lightly with a
moist cloth to remove all drops of water
from the surface and the saturated
weight, W, in grams determined imme-
diately by weighing in air to the nearest
0.05 g. The blotting operation shall be
performed by rolling the specimen lightly
on the wet cloth which has previously
been saturated with water and then
pressed only enough to remove such
water as will drop from the cloth. Ex-
cessive blotting will introduce error by
withdrawing water from the pores of the
specimen.

Calculations
5. (a) Exterior Volume, V.— The ex-
terior volume, V, in cubic centimeters of
the test specimens may be obtained by
subtracting the suspended weight from
the saturated weight, both in grams, as
follows:

\[ V = W - S \]

(b) Bulk Density, B.— The bulk den-
sity at 70 F., B, in grams per cubic
centimeters of a specimen is the quotien-
t of its dry weight, D, divided by the ex-
terior volume, V, including pores, and
shall be calculated as follows:

\[ B = \frac{D}{V} \]

The bulk density in pounds per cubic
foot at 70 F. shall be calculated as
follows:

\[ B = \frac{D}{V} \times 62.2 \]

(c) Rounding Off.— The value for bulk
density shall be rounded off to the near-
est pound per cubic foot in accordance
with the rounding-off method given in
Section 3 (d) to (k) of the Recommended
Practices for Designating Significant
Places in Specified Limiting Values
(ASTM Designation: E 29).

Report
6. The average of the values obtained
with at least five specimens, and prefera-
ably also the individual values, shall be
reported.