


MOISTURE CONTENT OF SAND

Sand may be found in any one of the four states, as illustrated below.


RANGE OF MOISTURE CONTENT IN SAND
SAND MAY BE IN ANY OF 4 STATES AS SHOWN

OVEN DRY




1

AIR DRY



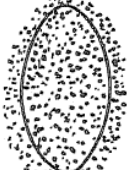
2

SATURATED &
SURFACE DRY



3

MOIST



4

1 OVEN DRY: NO MOISTURE ON SURFACE OR IN INTERIOR OF PARTICLES.

2 AIR DRY: DRY AT SURFACE BUT CONTAINING SOME INTERIOR MOISTURE LESS THAN AMOUNT REQUIRED TO SATURATE THE PARTICLES.

3 SATURATED AND SURFACE DRY: DRY AT SURFACE BUT WET INSIDE.

4 DAMP OR WET: WET ON SURFACE AS WELL AS INSIDE.

DETERMINE MOISTURE CONTENT

$$\frac{A - B}{B} \times 100 = \% \text{ OF MOISTURE}$$

A = WEIGHT OF AGGREGATE

B = DRY WEIGHT OF AGGREGATE

METHOD OF CALCULATION FOR DETERMINING MOISTURE CONTENT

The simple formula shown above illustrates the method of checking moisture content of sand, gravel, crushed rock, and /or fresh concrete. We list these few materials because it is the usual situation that may occur in a block plant. In all computations used in batch proportioning, determining moisture content, cement factor, etc., the percentages are calculated using dry weight as the basis.

To illustrate the equations shown we have set up the following hypothetical problems.

Example No. 1: (A) equals weight of damp sand as received or as weighed into weigh batcher. (B) equals saturated surface dry condition of the same sand. (A) equals 520 grams. (B) equals 500 grams.

$$\frac{520 - 500}{500} \times 100 = 4.00\% \text{ of Moisture in Sand by Weight}$$

Example No. 2: (A) equals weight of sample of concrete from machine hopper.
(B) equals weight of sample of concrete in a saturated surface dry condition. (A) equals 530 grams. (B) equals 500 grams.

$$\frac{530 - 500}{500} \times \frac{30}{500} \times 100 = 6.00\% \text{ of Moisture in concrete by Weight}$$

In simple language, the condition referred to as saturated surface dry using (Riffle sampling) is a condition where the sand or other materials will flow freely from a stirring rod or a spoon without leaving particles clinging to it, or that condition where the particles are free of surface moisture, but still may contain absorbed or internal moisture. This can be done by subjecting the sample to an oven or hot plate heat, which does not exceed 239 degrees F (115 degrees C). While drying material in this manner, it should be frequently stirred. A more accurate method of removing surface moisture is detailed in A.S.T.M. C-128, covering specific gravity and absorption tests of fine aggregate.