

NDDOT 4 - PERCENTAGE OF FRACTURED PARTICLES IN COARSE AGGREGATE

Conduct this procedure according to NDDOT defined standards.

SCOPE

This procedure determines the percentage of particles, which by visual inspection have a fractured face.

A fractured face is an area that is at least 25% of the largest cross section of the particle.

REFERENCED PROCEDURES

ND T 2 and AASHTO T 2, Sampling Aggregates
ND T 248 and AASHTO T 248, Reduce Samples of Aggregate to Testing Size
ND T 255 and AASHTO T 255, Total Evaporable Moisture Content of Aggregate by Drying

APPARATUS

Balance
No. 4 sieve
Spatula
Pan
Oven

TEST SPECIMEN

Obtain a sample according to ND T 2. Reduce the sample according to ND T 248. Final sample size needed is approximately 500 g.

Wash and dry according to ND T 255 at a temperature of $230 \pm 9^{\circ}\text{F}$ ($110 \pm 5^{\circ}\text{C}$). Sieve the sample over a No. 4 sieve. Test only material retained on the No. 4 sieve. This is considered the weight of the total sample. Discard the material that passes the No. 4 sieve.

PROCEDURE

Record all information on SFN 9987. All weights are recorded to the nearest 0.1 g.

Spread the sample on a clean flat surface large enough to permit the material to be spread thinly for careful inspection. Use the spatula or similar tool to separate the material into three separate portions:

1. Fractured particles.
2. Questionable fractured particles.
3. Particles with no fractured faces.

The requirement of the fracture is dependent on the class of aggregate and the particles will have either one or two fractured faces.

Place each portion into individual pans. Weigh and record each portion.

CALCULATIONS

Percentage of particles with fractured faces is calculated according to the following formula:

$$\text{Fractured Faces} = [WF + (WQ/2)] / WA \times 100$$

WF = Weight of fractured particles

WQ = Weight of questionable fractured particles

WA = Weight of total sample

REPORT

Report the percentage of particles with fractured faces to the nearest 1%.

NOTES

A fractured face may be natural or caused by a mechanical process.

CALIBRATION

A calibration check of the equipment should be performed annually as a minimum, or whenever damage or repair occurs.