

**STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION  
SUPPLEMENT 1029**

**METHOD OF TEST FOR  
DETERMINING THE PERCENTAGE OF DELETERIOUS  
MATERIALS IN COARSE AGGREGATE**

**April 19, 2002**

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**1029.01 Scope.** This method of test covers the procedure to be used for the determination of the proportion of deleterious materials (e.g., shale, shaly material, chert, limonitic concretions, soft pieces, clay lumps, or coal) in a sample of aggregate.

**1029.02 Apparatus.** Balance or scale accurate to within 0.1 percent of the weight of the sample to be tested.

**1029.03 Portion of Sample Required for Testing.** The material to be tested shall consist of that portion of the total sample retained on the No 4 (4.75 mm) sieve. The minimum mass of the test sample, after washing and oven-drying to a constant mass, shall be as indicated in the following table.

<b>SIZE OF AGGREGATE</b>	<b>PORTION REQUIRED FOR TEST (Grams)</b>
# 1 and # 2	Entire Sample
# 357	15,000
# 4	15,000
302	10,000
# 57	10,000
# 6	5,500
301	5,000
304	5,000
# 67	3,500
# 7	2,000
# 8	1,000
# 9*	500

\* Note: For the #9-size, the fraction of material retained on the No. 4 (4.75 mm) sieve must be at least 5%. If not, the material is considered to be fine aggregate and this test is not required.

The test sample shall be obtained by quartering or by means of a sample splitter.

**1029.04 Procedure - General.**

1. Determine and record the mass of the test sample to the nearest gram.
2. Visually examine and separate the various types of deleterious materials from the remainder of the test sample and place the particles in separate containers.
3. Weigh and record the mass of each of the deleterious materials to the nearest gram.

**1029.05 Deleterious Shale.** The following methods shall be used in Step 2 above to determine which particles of shale are to be considered deleterious shale.

**Method A (When aggregate must meet requirements of 703.02, 703.04, 703.11, 703.14).** A particle shall be counted as deleterious shale if it (1) consists of 100 % shale, or (2) has shale adhering to it, or contain stringers within it, which visually comprise 50 % or more of the particle.

**Method B (When aggregate must meet requirements of 703.05, 703.12).** A particle shall be counted as deleterious shale if it consists of 100 % shale, has shale adhering to it, or contains stringers within it.

Note: In either method, particles that are stained on the surface due to being in contact with a shale seam or stringer shall not be counted as deleterious shale if there is no actual shale present.

**1029.06 Calculations - General.** Calculate the percentage of each type of deleterious material to the nearest 0.1% as follows:

$$P = \frac{D}{W} \times 100$$

P = percentage of each type of deleterious material

D = mass of the particular type of deleterious material

W = mass of entire test sample portion

**1029.07 Deleterious Chert.** The percent of deleterious chert is determined by multiplying the percentage of total chert obtained by the above equation (P) by the deleterious chert factor which is on file in the Office of Materials Management.