

 <p><b>Manitoba</b> Infrastructure</p> <p><b>MATERIALS ENGINEERING BRANCH</b></p>	Standard No.: <b>MEB-C221</b>
	<p style="text-align: center;"><u>Effective Date</u></p> <p>Current: <b>March 2020</b> Previous: <b>February 2000</b></p>
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Standard Test Method: <b>Ironstone Content</b>	

## 1.0 SCOPE

This Test Method covers the determination of ironstone particles in aggregate.

## 2.0 REFERENCE STANDARDS

### *ASTM Standards*

- C702 Standard Practice for Reducing Samples of Aggregate to Testing Size
- E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

### *MEB Standards*

- P047 Sampling Aggregate Materials for Laboratory Testing

## 3.0 APPARATUS

*Balance:* of sufficient capacity and accurate to within 0.1 g of the test load at any point within the range of use.

*Sieves:* conforming to requirements of *ASTM E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves*.

*Splitter:* splitter conforming to requirements of *ASTM C702 Standard Practice for Reducing Samples of Aggregate to Testing Size*.

*Oven:* sufficient size capable of maintaining a uniform temperature of  $110^{\circ}\text{C} \pm 5^{\circ}\text{C}$ .

*Containers:* suitable for reducing the size of the sample and for holding the portion being tested.

*Spatula:* or similar tool to aid in sorting aggregate particles.

## 4.0 PROCEDURE

### 4.1 Sample Preparation

The mass of the test sample shall be at least large enough so that the largest particle is not more than 1.0% of the sample mass; or the test sample shall be at least as large as indicated below, whichever is smaller:



Standard Test Method: **Ironstone Content**

Nominal Maximum Size		Minimum Test Sample Mass, g
mm	inch	
9.5	3/8"	200
12.5	1/2"	500
19.0	3/4"	1500
25.0	1"	3000

#### 4.2 Test Method

The sample is shaken over a 4.75 mm sieve to retain the 4.75 mm material.

The retained material is wet-sieved over a 4.75 mm sieve to eliminate clay balls and material passing the 4.75 mm sieve. This process is repeated until the water appears clear.

The sample is then oven dried at  $110^{\circ}\text{C} \pm 5^{\circ}\text{C}$  and allowed to cool to room temperature. The dry mass of the sample is recorded to the nearest 0.1 g.

Place the sample on a flat surface where the ironstone particles are hand-picked and removed by visual inspection. Figure 1 can be used as a reference to identify ironstone.

Weigh the ironstone particles from the sample to the nearest 0.1 g.



*Figure 1- Reference photo to help identify ironstone*

## 5.0 CALCULATIONS

Calculate the percentage of ironstone particles (to one decimal place) as follows:

$$\% \text{ Ironstone} = \left( \frac{\text{Mass of Ironstone Particles (g)}}{\text{Total Mass of Test Sample (g)}} \right) * 100$$

## 6.0 REPORT

Report the percentage of ironstone particles to nearest 0.1 percent.