Test method T130

Dry density/moisture relationship of road construction materials (Blended in the laboratory with cementitious binders)

OCTOBER 2012
Revision Summary

<table>
<thead>
<tr>
<th>Ed/Rev Number</th>
<th>Clause Number</th>
<th>Description of Revision</th>
<th>Authorisation</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Reformatted and Revision Summary Added</td>
<td>D. Dash</td>
<td>May 1999</td>
</tr>
<tr>
<td></td>
<td>Scope, 5.1.1</td>
<td>Revised.</td>
<td>D. Dash</td>
<td>Sept 1999</td>
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<tr>
<td>Ed 1/Rev 0</td>
<td>(a) (c)</td>
<td>New issue. Preparation of bound sub-sample moved to T105. Testing made consistent with</td>
<td>G Donald</td>
<td>Nov 2007</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>T111.</td>
<td></td>
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<tr>
<td>Ed 1/Rev 1</td>
<td>3(i)</td>
<td>Clarify preparation.</td>
<td>D Hazell</td>
<td>Jan 2010</td>
</tr>
<tr>
<td>Ed 2/ Rev 0</td>
<td>All</td>
<td>Reformatted RMS template</td>
<td>J Friedrich</td>
<td>October 2012</td>
</tr>
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</table>

Note that Roads and Maritime Services is hereafter referred to as ‘RMS’.

The most recent revision to Test method T130 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.
Test method T130

Dry density/moisture relationship of road construction materials (Blended in the laboratory with cementitious binders)

1. Scope
This test method sets out the procedure to determine the relationship between moisture content and dry density of road construction materials (including earthworks) blended with cementitious binders such as cement or lime or blends of these with flyash and/or 'slag'.

The method uses Standard or Modified compaction on independent sub-samples having different moisture contents.

NOTE: The method has been adapted from BS 1924, ASTM D558, AS 1289.5.1.1 and AS 1289.5.2.1.

2. General
(a) The test is performed on material:
   (i) Passing the 19.0 mm AS sieve
   (ii) Blended in the laboratory with cementitious binders
(b) Standard compaction shall be used unless otherwise specified

3. Apparatus, Preparation, Procedure, Calculations and Reporting
This test method is identical to T111 except for the time constraints in Table 1 and the following amendments:
   (i) Preparation requirements are those for T130 listed in Table 2 of T105 (i.e. the portion passing the 19.0 mm AS sieve)
   (ii) Step 5 Procedure is to include the following amendments:
      5.2 (b) Add the required mass of binder \(M_b\) calculated in T105 to sub-sample 1
      Mix and record the time at the commencement of mixing
      Immediately adjust the moisture content of the sub-sample to approximate OMC and thoroughly mix
      NOTE: The calculation for the quantity of water is according to T105 Process (A.9)
      Store the sub-sample in a loose state in a sealed container at 23° ± 2°C and cure for the period specified in Table 1.
      NOTE: If stored at a temperature outside the specified range, record and report the temperature.
      5.2 (f) Level the specimen to the top of the mould by means of the straightedge. Patch any holes developed in the surface by replacing coarse material with smaller sized material. Record the time
      5.3 (a) Remove sub-sample 2 from the sealed container and add the required mass of binder \(M_b\) calculated in T105
      Mix the sub-sample and record the time at the commencement of mixing
      Immediately adjust the moisture content of the sub-sample and thoroughly mix
      NOTE: If the first sub-sample was obviously above OMC, compact the remaining sub-samples at lower moisture contents. Suitable increments of moisture content range from 1% for gravels up to 3% for clays.
      The calculation for the quantity of water is according to T105 Process (A.9)
      Store the sample in a loose state in a sealed container at 23° ± 2°C and cure for the period specified in Table 1.
      NOTE: If stored at a temperature outside the specified range, record and report the temperature.
5.4 (a) Remove the next sub-sample from the sealed container and add the required mass of binder \((M_b)\) calculated in T105

Mix the sub-sample and record the time at the commencement of mixing

Immediately adjust the moisture content of the sub-sample and thoroughly mix

**NOTE:** If the second sub-sample was obviously above OMC, compact the remaining sub-sample(s) at lower moisture contents.

The calculation for the quantity of water is according to T105 Process (A.9).

Store the sample in a loose state in a sealed container at 23° ± 2°C and cure for the period specified in Table 1

**NOTE:** If stored at a temperature outside the specified range, record and report the temperature.

(iii) Include in the report the type, sources and percentage of binder used, and reference to this test method

### Table 1  Time Constraints

<table>
<thead>
<tr>
<th>Test Method/Steps</th>
<th>Description</th>
<th>Time constraint (I)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Fast Setting Binder (Working time &lt; 4 hrs)</strong></td>
<td><strong>Slow Setting Binder (Working time &gt; 6 hrs)</strong></td>
<td></td>
</tr>
<tr>
<td>T130 5.2(b) or 5.3(a) or 5.4(a)</td>
<td>Incorporate binder into each sample</td>
<td>Start of timing</td>
<td>Start of timing</td>
<td></td>
</tr>
<tr>
<td>T130 5.2(b) or 5.3(a) or 5.4(a)</td>
<td>Curing period.</td>
<td>Approximately 15 mins after incorporating binder</td>
<td>Approximately 1 hr after incorporating binder</td>
<td></td>
</tr>
<tr>
<td>T111 5.2(f)</td>
<td>Completion of moulding each sub-sample.</td>
<td>Within approximately 30 mins after incorporating binder</td>
<td>Within approximately 1¼ hrs after incorporating binder</td>
<td></td>
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</tbody>
</table>

**NOTE:** *Working time as defined in T147.*