CALTRANS TEST METHOD - ASTM TEST METHOD CONVERSION CHART

Testing Procedures - for local agency use only

Use this CTM - ASTM conversion chart to assist you in determining acceptance test requirements and frequencies, as detailed in Caltrans Construction Manual Chapter 6, “Sampling and Testing.” Refer to the Agency, special provisions, contract plans, and applicable standard specifications, for correct sampling and test methods (ASTM-CTM).

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| CTM | ASTM | Book of Standards | TEST PROCEDURE | NOTE S |
| 105 |  |  | Calculations Pertaining to Gradings and Specific Gravities | *2* |
| 125 |  |  | Sampling Highway Materials (when approved) |  |
|  | D75 | 4.02 | Standard Practice for Sampling Aggregates | *3* |
|  | D979 | 4.03 | Practice for Sampling Bituminous Paving Mixtures | *3* |
| 201 |  |  | Soil & Aggregate Sample Preparation |  |
|  | C702 | 4.02 | Reducing Field Samples of Aggregate to Testing Size | *13* |
| 202 |  |  | Sieve Analysis of Fine and Coarse Aggregate |  |
|  | C136 | 4.02 | Sieve Analysis of Fine and Coarse Aggregate |  |
|  | C117 | 4.03 | Material Finer Than 75-um (#200) Sieve in Mineral Aggregates by Washing |  |
| 205 |  |  | Percentage of Crushed Particles | *1* |
| 206 |  |  | Specific Gravity and Absorption of Coarse Aggregate |  |
|  | C127 | 4.02 | Specific Gravity and Absorption of Coarse Aggregate |  |
| 207 |  |  | Specific Gravity and Absorption, Fine Aggregate |  |
|  | C128 | 4.02 | Specific Gravity and Absorption, Fine Aggregate |  |
| 208 |  |  | Apparent Specific Gravity of Fine Aggregate | *1* |
| 211 |  |  | Abrasion of Coarse Aggregate by Use of the Los Angeles Rattler Machine |  |
|  | C131 | 4.02 | Resistance to Degradation , Small-Size Coarse Agg. by Abrasion & Impact, L.A. Machine |  |
| 213 |  |  | Organic Impurities in Concrete Sand |  |
|  | C40 | 4.02 | Organic Impurities in Fine Aggregate for Concrete |  |
| 214 |  |  | Soundness of Aggregates by Use of Sodium Sulfate | *1* |
|  | C88 | 4.02 | Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate |  |
| 216 |  |  | Relative Compaction of Untreated and Treated, Soils & Aggregates |  |
|  | D1556 | 4.08 | Density of Soil In-place by the Sand Cone Method |  |
|  | D1557 | 4.08 | Moisture-Density Relations of Soils & Soil-Agg. Mixtures, 10-lb. Rammer, 18-in Drop | *11* |
| 217 |  |  | Sand Equivalent (only authorized method per Caltrans 07, District Materials Engineer) | *1,9* |
| 223 |  |  | Surface Moisture in Concrete Aggregate | *1* |
| 226 |  |  | Moisture Content in Soils by Oven Drying |  |
|  | C566 | 4.02 | Total Moisture Content of Aggregate by Drying |  |
| 227 |  |  | Evaluating Cleanness of Coarse Aggregate | *1* |
| 229 |  |  | Durability Index | *1* |
|  | D3744 | 4.03 | Aggregate Durability Index |  |
| 231 |  |  | Relative Compaction of Soils by the Area Concept Utilizing Nuclear Gages | *4* |
|  | D2922 | 4.08 | Density of Soil & Soil-Aggregate In-place by the Nuclear Method | *4* |

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| CTM | ASTM | Book of Standards | TEST PROCEDURE | NOTES |
| 301 |  |  | R-Value of Treated & Untreated, Bases, Subbases & Basement Soils | *1* |
|  | D2844 | 4.08 | R-Value and Expansion Pressure of Compacted Soils |  |
| 302 |  |  | Film Stripping |  |
|  | D1664 | 4.03 | Coating and Stripping of Bitumen-Aggregate Mixtures |  |
| 303 |  |  | Centrifuge Kerosene Equivalent | *1* |
| 304 |  |  | Preparation of Bituminous Mixtures for Testing | *1* |
|  | D1561 | 4.03 | Prep. of Bituminous Mixture Test Specimens by Means of Calif. Kneading Compactor |  |
| 305 |  |  | Swell of Bituminous Mixtures | *1* |
| 307 |  |  | Moisture Vapor Susceptibility of Bituminous Mixtures | *1* |
| 308 |  |  | Bulk Specific Gravity and Weight Per Cubic Foot of Bituminous Mixtures |  |
|  | D1188 | 4.03 | Bulk Sp.G. and Density of Compacted Bituminous Mixtures, Paraffin-Coated Specimens |  |
| 310 |  |  | Asphalt and Moisture Contents of Bituminous Mixtures by Hot Solvent Extraction | *5* |
|  | D2172 | 4.03 | Extraction of Bitumen from Bituminous Paving Mixtures (Method A, B, or C) | *6,10* |
| 312 |  |  | Design and Testing of Class “A” and “B” Cement Treated Base | *1* |
| 338 |  |  | Cement or Lime Content in Treated Aggregate by the Titration Method | *1* |
| 339 |  |  | Determination of Distributor Spread Rate |  |
|  | D2995 | 4.03 | Determining Application Rate of Bituminous Distributors |  |
| 362 |  |  | Asphalt Content of Bituminous Mixtures by Vacuum Extraction | *5* |
|  | D2172 | 4.03 | Quantitative Extraction of Bitumen from Bituminous Paving Mixtures (Method “E”) | *6* |
| 366 |  |  | Stabilometer Value | *1* |
| 367 |  |  | Recommending Optimum Bitumen Content (OBC.) | *1* |
| 370 |  |  | Determining Moisture Content of Asphalt Mixtures or Mineral Agg., Microwave Ovens |  |
|  | D4643 | 4.08 | Determination of Water (Moisture) Content of Soil by the Microwave Oven Method |  |
| 375 |  |  | In-place Density & Relative Compaction of AC Pavement (nuclear) | *5,7,12* |
|  | D2950 | 4.03 | Density of Bituminous Concrete In-place by the Nuclear Method | *6,7* |
| 379 |  |  | Asphalt Content of Bituminous Mixtures by use of the Troxler Nuclear Gage | *5,8* |
|  | D4125 | 4.03 | Asphalt Content of Bituminous Mixtures by the Nuclear Method | *6,8* |
| 405 |  |  | Chemical Analysis of Water | *1* |
| 415 |  |  | Chloride Content in Organic Additives for Portland Cement Concrete | *1* |

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| CTM | ASTM | Book of Standards | TEST PROCEDURE | NOTES |
| 504 |  |  | Air Content of Freshly Mixed Concrete by the Pressure Method |  |
|  | C231 | 4.02 | Air Content of Freshly Mixed Concrete by the Pressure Method |  |
| 515 |  |  | Relative Mortar Strength of Portland Cement Concrete Sand | *1* |
| 518 |  |  | Unit Weight of Fresh Concrete |  |
|  | C138 | 4.02 | Unit Weight, Yield, and Air Content (Gravimetric) of Concrete |  |
| 521 |  |  | Compressive Strength of Molded Concrete Cylinders |  |
|  | C39 | 4.02 | Compressive Strength of Cylindrical Concrete Specimens |  |
| 523 |  |  | Flexural Strength of Concrete (using simple beam with center-point loading) | *1* |
|  | C293 | 4.02 | Flexural Strength of Concrete (using simple beam with center-point loading) |  |
|  | C78 | 4.02 | Flexural Strength of Concrete (using simple beam with third-point loading) |  |
| 528 |  |  | Freeze Thaw Resistance of Aggregates in Air-Entrained Concrete | *1* |
| 529 |  |  | Proportions of Coarse Aggregate in Fresh Concrete | *1* |
| 530 |  |  | Determining the Effect of H2O-Reducing and Set-Retard. Admix. Drying Shrinkage PCC | *1* |
| 533 |  |  | Ball Penetration in Fresh Portland Cement Concrete |  |
|  | C360 | 4.03 | Ball Penetration in Fresh Portland Cement Concrete |  |
|  | C143 | 4.02 | Slump of Freshly Mixed PCC |  |
| 539 |  |  | Sampling Fresh Concrete |  |
|  | C172 | 4.02 | Sampling Freshly Mixed Concrete |  |
| 540 |  |  | Making, Handling, & Storing Concrete Compressive. Test Specimens in the Field |  |
|  | C31 | 4.02 | Making & Curing Concrete Test Specimens in the Field |  |
| 541 |  |  | Flow of Grout Mixtures (flow cone method) | *1* |
| 543 |  |  | Air Content of Freshly Mixed Concrete by the Volumetric Method |  |
|  | C173 | 4.02 | Air Content of Freshly Mixed Concrete by the Volumetric Method |  |
| 548 |  |  | Evaluation of Aggregate for Lean Concrete Base (LCB.) | *1* |

Notes

1. Use the CALTRANS Method.
2. Use the methods of calculation within the applicable test method first. Refer to CTM 105 as necessary.
3. Use the Caltrans Construction Manual procedures as necessary when ASTM D75 or D979 do not adequately cover the item to be sampled.
4. Use the direct transmission method only, the air gap method shall not be used. All nuclear gages must have local Caltrans District calibration within the last year. The data sheets provided by the local Caltrans District shall be used when determining the in-place density.
5. Sample from the job site, across the mat, immediately behind the paving machine (Caltrans Construction Manual).
6. Sample per ASTM D 979 paragraph 4.2.3., sample from the job site, across the mat, immediately behind the paving machine.
7. All nuclear gages used for this test must be calibrated on the six (6) DNTM&R AC Standard Blocks. The Data sheets provided by the local Caltrans District shall be used when determining the in-place density.
8. Recommended Percent (%) AC method for Rubberized Bituminous Paving mixtures.
9. The hand method of shaking is not authorized and shall not be used. An electro-mechanical or hand- operated mechanical. Sand Equivalent shaker must be utilized for this test.
10. This Method covers hot solvent, centrifuge, and vacuum extraction.
11. Compaction Apparatus shall be calibrated in accordance with ASTM D 2168, Method B (ASTM Book 4.08).
12. Test Maximum Density (TMD) shall be performed by Caltrans Test Method 375, Section F. Test Max. Density.
13. Splitters must be of the fixed riffle type (no adjustable splitters).