

# Ground Tire Rubber: ETG - DSR Concentric Cylinder Task Force



Images: FHWA

## Mobile Asphalt Testing Trailer Program (MATT) Long-Life Asphalt Pavements for the 21<sup>st</sup> Century



U.S. Department of Transportation  
**Federal Highway Administration**  
Office of Infrastructure

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Office of Preconstruction,  
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# Outline

2

- **Task Group Objective**
- **Work Items**
- **Summary of Activities & Findings**
- **Future Step**



# Task Force Members

3

- Matthew Corrigan: Task Force Lead
- Industry & Academia
  - Dave Jones
  - John D'Angelo
  - Norbert Ponweiser
  - Andreas Lutz
  - Farhad Rad
  - Bharath Rajaram
  - John Casola
  - Codrin Daranga
  - Bill Buttlar
- State DOTs & FHWA
  - David Mensching
  - Amir Golalipour
  - Joe Devol
  - Steve Landers
  - Steve Davis
  - Al Vasquez
  - Tim Ramirez
  - Troy Lehigh
  - Jay Sengoz

***Their efforts for this task force are greatly appreciated.***



# Task Group Objective

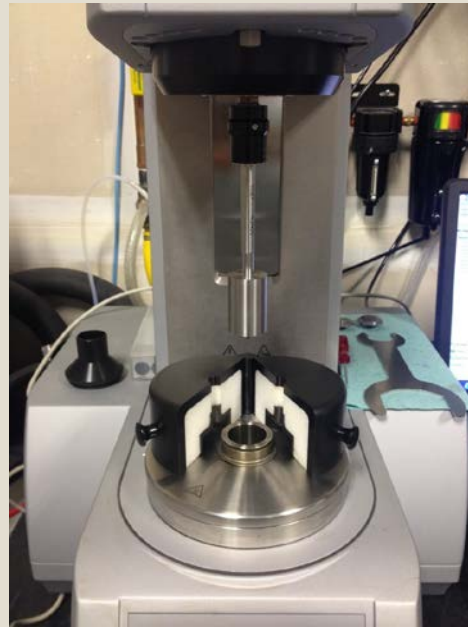
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“This Task Force was created on ground tire rubber (GTR) modified asphalt testing standard development with a goal to develop a **draft provisional AASHTO standard** using the **Concentric Cylinder** (cup & bob).”

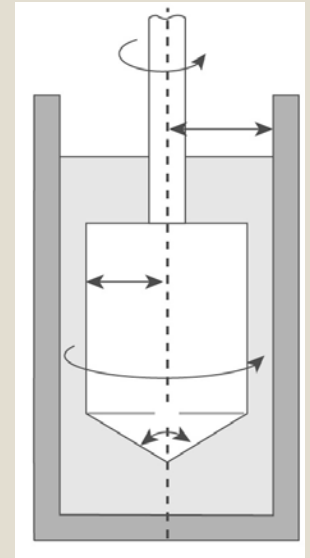


# Concentric Cylinder Geometry

5



Images: FHWA



- **Advantages**

- GTR modified asphalt can be measured with particle sizes up to 2 mm.
- No trimming problems and filling problems.
- No edge effects.

# Work Items – recap from last meeting

6

- **Geometry fixture & details**
  - Cup & Bob size
  - Temperature Control
- **Equilibrium time needed for Concentric Cylinder geometry**
- **Calibration of Concentric Cylinder for CSS and CSR factors**
- **Draft of Standard**

# Changes to Standard Draft

7

- **Raise the high temperature limit from 88 to 120 C**
  - Asphalt rubber binders used specially in California and Arizona
- **Including AASHTO M 332 standard**
  - This standard needs to include different aspects of high temperature characterization
- **Standard oil to be used for calibration or verification purposes**
  - Cannon N2,700,000 and S600 oils
  - Torque verification is independent from temperature calibration
- **Temperature calibration kit**
  - A passive cap to cover the cup to ensure temperature equilibrium

# Work Items for Standard Draft

8

- Add details about MSCR test
  - Creep & recovery procedure
- Add details on temperature calibration procedure
  - Using oil to ensure the contact between dummy and geometry
- Add information on zero gap procedure for concentric cylinder geometry
- Revised draft submitted to ETG



# Future Step

9

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**Standard Method of Test for**

**Determining the Rheological  
Properties of Asphalt Binder  
Containing Ground Tire Rubber  
Particulates Using Concentric  
Cylinder Geometry in the Dynamic  
Shear Rheometer (DSR)**

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AASHTO Designation: TP XX-XX

**AASHTO**

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# Thank You!

Discussion / Comments / Questions



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U.S. Department of Transportation  
**Federal Highway Administration**  
Office of Infrastructure

[www.fhwa.dot.gov/pavement/asphalt](http://www.fhwa.dot.gov/pavement/asphalt)