



Asphalt Rubber Technology Service

CLEMSON UNIVERSITY
Department of Civil Engineering

The Asphalt Rubber Technology Service (ARTS) has a state-of-the-art laboratory facility fully equipped to conduct research and testing in several areas of asphalt technology. The lab is divided into five main sections: aggregate characterization, asphalt mix design, asphalt mix performance testing, asphalt binder physical characterization, and asphalt binder chemical characterization.

Aggregate Characterization

- ↳ Consensus Aggregate Properties
- ↳ Source Aggregate Properties
- ↳ Aggregate Gradation Analysis

Key equipment: Automatic Gradation Unit



Asphalt Mix Design

- ↳ Superpave Mix Design Methods
- ↳ Marshall Mix Design Methods
- ↳ Asphalt Binder Content

Key equipment: Superpave gyratory compactors, CoreLok, asphalt ignition oven



Asphalt Mix Performance Testing

- ↳ Rutting Susceptibility
- ↳ Indirect Tensile Strength
- ↳ Resilient Modulus
- ↳ Flexural Beam Fatigue

Key equipment: Asphalt Pavement Analyzer (APA), axial testing system



Asphalt Binder Physical Characterization

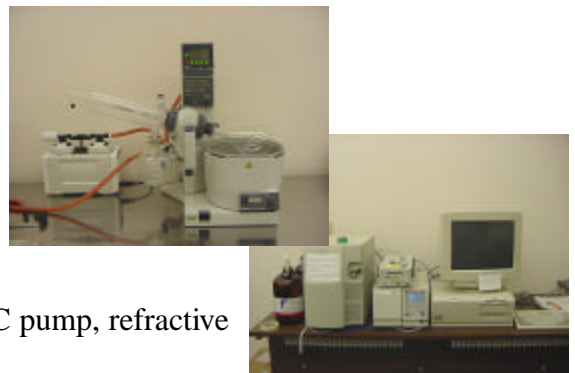
- ↳ Viscosity
- ↳ Dynamic Shear Properties
- ↳ Creep Stiffness
- ↳ Direct Tension
- ↳ Short Term Aging
- ↳ Long Term Aging



Key equipment: Rotational viscometer, dynamic shear rheometer, bending beam rheometer, direct tension tester, rolling thin film oven, pressure aging vessel

Asphalt Binder Chemical Characterization

- ↳ Asphalt Binder Extraction and Recovery
- ↳ High Pressure Gel Permeation Chromatography (HP-GPC)
- ↳ Asphalt Binder Fraction Analysis



Key equipment: Rotary evaporator, isocratic HPLC pump, refractive index detector

These resources have enabled ARTS to develop a well rounded research program capable of studying multiple areas of asphalt technology at both the applied and basic research levels.



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