

Missouri Department of Transportation Job Description

Job Title: Senior Chemist

Title Code: R04087

Salary Grade: 9

Exemption Status: Exempt

Supervisory Responsibilities: Lead Worker

District/Division: Central Office - Construction and Materials

Effective Date: 09-01-2026

Replaces (Effective Date): 01-01-2025

General Summary

The senior chemist conducts varied and complex chemical and physical tests and analyses by gravimetric, volumetric, and potentiometric methods, using specialized instruments to determine properties and ensure compliance with specifications. Responsibilities are performed under general supervision.

Minimum/Required Qualifications

- Bachelor's Degree: Chemistry or related with a Chemistry minor.
- Four years of experience in chemical testing procedures.
- OSHA 10-Hour Certification required within 90 days.

Special Working Conditions/Job Characteristics

- Job requires occasional, statewide, overnight travel.
- Job requires exposure to physical hazards, health and safety risks, and/or adverse or otherwise undesirable characteristics in the environment.
- Job requires moderate physical activity.
- A postsecondary degree is the best measure to ensure candidates possess required knowledge of elemental properties (organic/inorganic), cement digestion and analysis, instrumental analysis of unknowns using inductively Coupled Plasma (ICP) Spectrophotometry or FTIR Spectroscopy, analysis of coatings using Toxic Characteristics Leaching Procedure (TCLP), use of acids and bases, dilution determinations, needed concentrations of chemicals, bench chemistry, and chemical analysis test reporting.

Examples of Work

1. Conducts quantitative and qualitative analyses of bituminous materials, cements, paints, petroleum products, metals, soils, reflective materials, wood, and other materials used in the construction and maintenance of the state highway system.
2. Contacts and maintains communications with cement, fly ash, slag, power generating stations, sign and related.
3. Conducts tests using specialized equipment such as atomic absorption spectrophotometer, infrared spectrophotometer, inductively coupled plasma spectrophotometer, solvent reclamation unit, automatic titrator, water still, colorimeter and equipment to measure reflective products.
4. Inspects established and new, in state and out-of-state, manufacturing facilities for cement, fly ash, and GGBFS for compliance with existing and new qualifications.
5. Performs analysis on signing materials, delineators, and pavement marking tape.
6. Meets with industry representatives to discuss and resolve problems pertaining to various materials.
7. Demonstrates test procedures during on-site American Association of State Highway and Transportation Officials (AASHTO) Materials Reference Laboratory and the Cement and Concrete Reference Laboratory inspections, maintains assigned Quality Systems Manual, and accurately analyzes proficiency samples as required to maintain national laboratory accreditation.
8. Performs calculations, maintains records, prepares reports of testing activities, and corresponds with various department personnel, producers/suppliers, and vendors to ensure efficient functioning of the work unit.
9. Calibrates, maintains, programs, trouble-shoots, and repairs specialized test equipment.
10. Develops test methods for research, new products, and Material Special Provisions; recommends modifications for AASTHO, American Society for Testing and Materials, and department specifications and testing methods.
11. Provides technical support and training to department personnel.
12. Performs lead worker responsibilities, which may include providing general instruction, assigning and reviewing work, coaching and training, providing guidance and instruction in the proper and most efficient methods of accomplishing tasks, and providing input to the direct supervisor on staffing decisions and performance management.
13. Performs other responsibilities as required or assigned.