



# INDIANA DEPARTMENT OF TRANSPORTATION

Office of Materials Management  
120 S. Shortridge Road  
Indianapolis, IN 46219

PHONE: (317) 610-7251  
FAX: (317) 356-9351

**Eric Holcomb, Governor**  
**Joe McGuinness, Commissioner**

7/17/19

## TESTING MEMORANDUM 19-04

**SUBJECT:** Internal Update on Elongation Test Procedure for Base Metal

**TO:** Seth Estep, State Lab Manager

**FROM:** Matthew P. Beeson, State Materials Engineer  
Office of Materials Management

The Office of Materials Management has updated the base-metal elongation test procedure. The original test procedure was performed in accordance with ASTM A370, however, the Department was seeing too much variance in test results. In order to ensure consistent results, a more exact method is required.

The revised procedure to determine elongation of a base-metal material will be as follows:

- Cut three test strips from three different sides of the original base-metal sample approximately 12.6 mm x 152.4 mm. Measure and record each test strip's dimensions
- Place the first test strip in the jaws of the test machine and tighten the grips to secure the test strip
- Using a long-jawed set of calipers, measure the distance from jaw-to-jaw of the test machine
  - The value obtained here is the initial length. This is the effective length of the test strips that will be stretched during the test.
- Input all required dimensions into the testing software
- Ensure that the extensometer is in the zeroed position (Position A). Place the extensometer on the test strip and rotate the knob 180° from zero (Position B)
  - This step is required for the computer to obtain readings as accurately as possible. Starting the extensometer in the zero position confirms the elongation in the test specimen is zero. Rotating the knob while the extensometer is clamped on the test strip allows the lever to move freely during the test.



Position A



Position B

- Zero all values in the testing software. Do not run the test unless all possible values in the upper right-hand chart are zeroed
- Run the machine. Remove the extensometer when prompted, and remove the test strip after failure
- Record the position of the machine as displayed in the upper right-hand chart
  - This will be used in the final calculation of elongation. **Do not** reset the positioning of the jaws as offered upon completion. If the jaw positioning is reset, all data is lost and the test will need to be performed again
- Add the position of the machine as displayed in the upper right right-hand chart to the initial length, and input the sum into the testing software as the final length. The testing software will display the resulting percent elongation
- Once the percent elongation and all other data for the test strip has been recorded, reset the jaws to the zero position
- Repeat this procedure two more times and average the three results

---

If you have any additional questions, please contact Mike Pelham at 317-522-9687 or [mpelham@indot.in.gov](mailto:mpelham@indot.in.gov)