



ByMMT.com

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| REV | DATE | CHANGE | PREPARED | CHECKED | REVIEWED |
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| 00 | 170305 | Initial release | BMW | KT | SCB |

MMT001 – General Field Procedure for Hardness, Strength and Ductility Testing (HSD)

1. MMT's Job Site Requirements

Time to complete testing of 1 joint (including Spark-OES): 3 hours

Pipeline Preparation: Sandblasted pipe outer diameter to SSPC-SP5 (NACE #1) for 2 ft. length and all-around circumference. Site excavation should allow at least 18 inches of clearance below pipeline.

Testing Completed: Hardness, Strength, and Ductility (HSD) Testing, Acetate Replicas (microstructure) and, when requested, Spark OES (chemistry).

2. Requested Information

We ask that the customer provide us with the following information prior to field work:

- **Safety:** PPE and safety training requirements
- **Site:** Address, accessibility, and availability of 110V power (Yes/No from other contractors)
- **Asset info:** Pipeline diameter, location, naming convention, and seam location (if available)

3. MMT Staff Training

All MMT staff have completed the following training:

- **Safety:** OSHA 10 Hour Construction Safety, Drug and Alcohol Testing
- **Testing:** MMT Procedures for HSD Operation (MMT002), Spark OES Operation (MMT003), Acetate Replica (MMT004), Surface Preparation (MMT005), Field Testing (MMT006), and Field Safety (MMT007).

4. MMT Testing Procedures

1. Calibrate testing equipment (HSD and, if requested, Spark-OES).
2. Locate two 6 in. by 6 in. test areas with least external corrosion and no pipe wall anomalies.
3. For each test area, buff away at least 0.004 in. of the surface, and polish the surface to 2000 grit. A minimum of two test areas are required, with one area centered on the long seam, and another at least 2 in. away from the long seam. For pipes with a nominal wall thickness of at least 0.25 in., the initial buffing to remove surface anomalies can be up to 0.015 in. If more than 0.015 in. of buffing is required, permission is required from the operator or appropriate representative.
4. Conduct tests as required per operator agreement. By default, one HSD test is performed over the long seam (test time ~ 20 min), and two tests are used for the base metal away from the seam (test time ~ 10 min each). If requested, conduct Spark OES and acetate replicas as required.
5. Remove HSD grooves that remain on surface by buffing approximately 0.002 in.