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MMTF005 – Metal Burr Collection for Chemical Analysis of Pipes Procedure

1. Overview

This document provides the procedure for collecting metal burr samples for chemical analysis. This procedure includes surface preparation instructions, proper sample collection instructions, and instructions on sending samples to a lab for analysis. The total material removal shall never exceed 10% of the pipe nominal wall thickness. The minimum material removal prior to sample collection is 0.005 inches to ensure that material in the decarburized layer is not collected.

2. Safety and Personnel Training Requirements

- **Safety:** OSHA 10 Hour Construction Safety, Drug and Alcohol Testing, JSA Covering Tasks to be Performed
- **PPE:** Safety Glasses, Face Shield, Hearing Protection, Hand Protection, Steel Toed Boots, FR Clothing
- **Training:** All personnel shall be familiar with all MMT Procedures
- **Staff Level:** Personnel performing this procedure must be qualified in accordance with proper MMT staff level training
- **Wall Thickness:** Ultrasonic inspection before sampling will confirm an area \geq the nominal wall thickness. Additional mag particle analysis will confirm the absence of laminations and internal corrosion.

3. Equipment Needed

- PTX sander
- 40, 80, and 120 grit sanding rings
- Die grinder
- Diamond shaped carbide deburring tool
- Methyl alcohol (methanol)
- Turn magnet
- Sample bag
- Scale
- UT gauge

4. Procedure

1. Select a 4 inch by 6 inch area near the Hardness, Strength, and Ductility (HSD) testing area for sample collection. Only one sample area is needed per pipe joint. The area furthest from the weld should be chosen.
2. Using a UT gauge in accordance with MMTF007 – Ultrasonic Thickness Measurements Procedure, inspect the selected area for adequate wall thickness, internal corrosion, and laminations. If the selected area is suitable, proceed to step 3. If wall thickness does not meet the specified requirements in MMTF002 – Surface Preparation Procedure, or if other defects are detected, select a new area.
3. Completely clean the couplant used for UT measurements from the surface using a paper towel and acetone if required.
4. Using the PTX tool, prepare a 4 inch by 6 inch sample area in accordance with MMTF002 – Surface Preparation Procedure using only the 40 and 80 grit sand paper. Use the UT gauge to record the reduced wall thickness and ensure that at least 0.005 inches of pipe wall thickness have been removed so that no decarburized layer remains.
5. Using the PTX tool, sand the area in one direction for 15 seconds using the 120 grit sanding paper. This step is to ensure that all contaminants are completely removed from the surface. **DO NOT apply any foreign substance on the surface after this step, and DO NOT touch the surface with gloves or bare hands.**
6. Clean the carbide deburring tool by rinsing it with methanol. **DO NOT USE water, oil, or other lubricants to clean the deburring tool, as these will contaminate the sample.**
7. Turn the sample bag inside out and insert the magnet.
8. Activate the magnet and place it on the pipe so that it is just below where the deburring will occur.
9. Using the die grinder with the deburring tool attached, gently pass the tool circumferentially across the prepped area carefully trying to direct the removed burr samples towards the magnet (Figure 1). Use gentle pressure to avoid gouging the surface. Use the entire 4 inch by 6 inch area to ensure you collect enough sample material. Use the field scale to ensure a minimum of 3 grams of sample has been collected. This procedure should remove approximately 0.005 inches of additional material from the pipe wall thickness.
10. Gently remove the sample bag and unroll it so it is back to normal. Deactivate the magnet.
11. Seal and label the sample bag. The label should include the date, sample ID, and MMT project ID. Sample ID and MMT project ID should be consistent with what is used for HSD testing.
12. When sampling is complete, use the PTX tool with 120 grit sandpaper to create a uniform surface finish.
13. Measure the wall thickness of the sample area to ensure that no more than 10% of the pipe nominal wall thickness has been removed.
14. Package and send samples to a commercial laboratory that does chemical analysis. The laboratory will report the sample ID, MMT project ID, and results of the chemical analysis. Refer to the “MMT Burr Sample Test Request Form” for proper element demands.

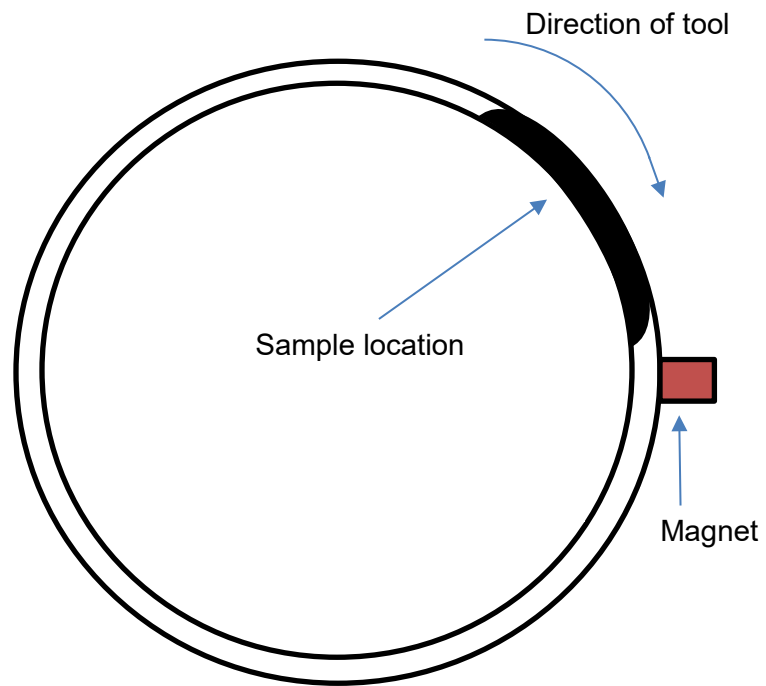


Figure 1 – Burr test procedure diagram