

LABELING INFORMATION

The orientation of the tube (hot [furnace or upstream] side, cold [refractory or downstream] side) and the direction of flow should be indicated. If fireside attack is suspected, avoid writing on areas of attack. Information to be included with the tube specimen is as follows.

1. Company name, mill/plant name, contact person name and e-mail address, full facility address, telephone number(s), facsimile telephone number, and preferred mode of communication.
2. Billing company name and address – if different from the facility information provided for the tube sample location.
3. Boiler designation (e.g., Boiler 1).
4. General type of tube (e.g., waterwall, nose, screen, generation bank, floor, roof, division wall, etc.).
5. General location from which tube was collected (north furnace, first pass tube, etc.).
6. Wall designation for waterwall tubes (front, rear, left, right, north, south, east, west).
7. Elevation of the specimen in the boiler.
8. Location along the wall (e.g., tube number, distance [feet] from and identify of closest wall).
9. Position relative to pertinent equipment (e.g., distance [feet] from the bark burning grate, distance [feet] from top row of burners, adjacent to specific sootblower, above the primary air ports, etc.).
10. Direction of fluid flow (do not mark on failure surface).
11. Top and bottom of sample (do not mark on failure surface).
12. Hot/cold sides of tube sample (do not mark on failure surface).
13. Operating pressure.
14. Date tube was removed (date of start of outage will suffice).
15. Date of last cleaning (for evaporator/boiler tube cleanliness assessment only).
16. Scope of work and level of service (routine, expedited, rush).



**Sheppard T. Powell
Associates, LLC**

Baltimore Maryland www.stpa.com

BOILER TUBE REMOVAL & SHIPPING RECOMMENDATIONS

SHIPPING

The inside of the tube should be dry; if it is not, there is an issue with the outage practices. The open ends of the tubes should be covered with plastic or plastic wrap and sealed shut with duct tape or equivalent.

If there is concern regarding fireside deposits or corrosion, the tubes should be wrapped in clean plastic. Tubes should be shipped in sturdy containers with packing material to minimize (or preferably eliminate) movement during transport. The main objective is to stabilize the tube so that the deposit is not dislodged from tube surfaces during shipment. One method which has proven effective is to ship in polyvinyl chloride (PVC) pipe with threaded (preferably) or plug caps. The diameter of the PVC pipe should be such that the tube easily slides in and out. These containers are waterproof, very durable, and easy to cut. Tubes also may be packed in homemade wooden boxes with packing material to minimize movement during shipment. These boxes often are big and, therefore, significantly increase the shipping weight. Cardboard containers are not recommended as samples have been lost during shipment.

For failure samples – particularly for superheater and reheater tubes – photographs of the sample before removal often are helpful in understanding the sample orientation (as tubes can become severely twisted as a result of failure). These photographs are best e-mailed (preferably in pdf format to minimize file size). Drawings of the affected component with necessary operating information (e.g., temperature, pressure, date installed, hours of operation) and tube design data (diameter, wall thickness, material) can be very useful.