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1.0 Scope

This specification describes the content and requirements for heat treatment report, when specified as requirement in Sulzer purchase order.

Heat treatment report presents details of all heat treatments of the casting including any post weld heat treatment.

2.0 References

- Material specific standards
- ASTM A991 Standard Test Method for Conducting Temperature Uniformity Surveys of Furnaces Used to Heat Treat Steel Products

3.0 Qualification of testing personnel

The person reviewing and approving the heat treatment report shall have sufficient training and experience in heat treatment metallurgy.

4.0 General guidelines for heat treatment

- Castings with similar heat treatment requirement can be loaded to same heat treatment lot
- Thick section castings must not be loaded on top of thin wall castings (bending risk)
- Load heavy parts underneath
- Ensure that the heat treatment rack is not bended (planarity)
- Ensure the long enough holding time for temperature uniformity also in the middle of load
- There shall be no direct contact of the flame on the component
- Sufficient air circulation must be assured in charge
- The casting sections with bending risk must be supported
- Ensure that the test specimens (for mechanical testing, corrosion testing) receive the similar heat treatment as the castings
- Clean the casting surfaces prior the heat treatment (especially chromium iron)
- Cooling according material specification. Ensure fast transport from furnace to quenching tank if rapid cooling is required. Use agitator in cooling tank. The cooling water temperature must be under 30 °C before quenching

5.0 Thermoelements and measuring equipment

Place the thermoelements in representing areas in furnace. Use only calibrated thermoelements and measuring equipment.

6.0 Uniformity of the furnace and calibration

The control and recording systems of heat treatment furnace must be calibrated at least annually. The temperature uniformity of the furnace shall be investigated according to ASTM A991.

7.0 Acceptance of heat treatment

The heat treatment shall be carried out according to material standard referenced in purchase order or by Sulzer specification, if given.

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8.0 Reporting

All documentation shall be in the English language, legible and suitable for reproduction. The heat treatment report shall include the following information:

- Manufacturer information
- Furnace identification
- Identification of the casting (material number, charge number or similar) to ensure traceability
- Sulzer Purchase order number and item number
- Details of heat treatment with chart (time – temperature)
- Cooling water tank water temperature before and after quenching
- Statement of heat treatment result (Fulfillment of requirements)
- Date and name of creator with signature

The general description of heat treatment shall be presented also in EN 3.1 material certificate (if required for order).

9.0 General notes

- All certification and delivery advice documentation shall include the Sulzer Purchase Order number, line item number and material number.
- All documentation shall be provided on or prior to delivery of the material. The document delivery protocol and address is defined in Purchase Order
- One set of documentation (paper copy) shall be included in delivery package
- Acceptance of the material shall be on satisfactory compliance to the Purchase Order requirements.
- All standards referenced shall be current issues unless stated otherwise.
- Failure to comply with the above requirements could result in rejection or delayed payment of invoices

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