



Technical Information

HEATING PROCEDURES FOR RESCO SPECIAL APPLICATION* MONOLITHIC LININGS

The following schedule is recommended for Resco Products' Conventional and Insulating* Gun Mixes. Controlled release of water in the castable is necessary to prevent possible build-up of steam pressure and potential steam spalling. Heating can be done before or during unit start-up.

The following schedule upon initial heating is recommended FOR SPECIAL APPLICATION* MONOLITHIC LININGS. Temperatures shown are measured at the hot face of the lining for in place heating.

1. At anytime following the initial 24 hour curing period, raise the temperature to 300 °F (149°C) at a rate of 50 °F (28 °C) per hour.
2. Hold at 300 °F (149 °C) for 1 1/2 hours per inch lining thickness (minimum of 9 hours).
3. Raise temperature at a rate of 50 °F (28 °C) per hour to 450 °F (232 °C).
4. Hold at 450 °F (232 °C) for 1 1/2 hours per inch lining thickness (minimum of 9 hours).
5. Raise temperature at a rate of 25 °F (14 °C) per hour to 600 °F (322 °C).
6. Hold at 600 °F (315 °C) for 1 1/2 hours per inch lining thickness (minimum of 9 hours).
7. Heat at a rate of 50 °F (28 °C) per hour to 750°F (399 °C).
8. Hold at 750°F (399 °C) for 1 hour per inch lining thickness (minimum of 9 hours).
9. Heat at a rate of 50 °F (28 °C) per hour to 900°F (482 °C).
10. Hold at 900 °F (482 °C) for 1/2 hour per inch lining thickness (minimum of 6 hours).
11. Heat at a rate of 50 °F (28 °C) per hour to 1000°F (540 °C).
12. Hold at 1000°F (540 °C) for 1/2 hour per inch of lining thickness (minimum of 6 hours).
13. Heat at a rate of 50 °F (28 °C) per hour to 1500°F (815 °C).
14. Hold at 1500°F (815 °C) for 1 hour per inch lining thickness (minimum of 9 hours).
15. If the unit is not going into operation, but will be cooled down, hold at the operating temperature for a minimum period of 1 1/2 hours per inch (25 mm) of lining thickness up to a maximum period of 8 hours.
6. Allow the lining to cool down naturally; do not exceed 100°F (56°C) per hour.

Notes:

1. Special applications include extra thick linings, new installations, furnaces that are not well ventilated, shells without weep holes in lower sidewalls or bottom, and in very critical applications.
2. The dry out of refractory entails more than just following a heating schedule. Issues such as burner sizing and location, exhaust location, air volume and velocity, etc need to be addressed. Resco recommends that an experienced dry out company be consulted.
3. Temperatures should be monitored at the refractory surface at several locations in the unit.
4. If steaming is observed at any time during the schedule, the temperature should be held constant until the steaming subsides. The schedule can resume when steaming ends.
5. If, for any reason, the heating schedule is interrupted by a loss of heat and/or power into the unit, Resco Products recommends that the heating schedule be initiated from the beginning once power and/or heat is restored. At the end user or contractor's discretion, they may elect to attempt to restart the cycle and "stabilize" the lining temperature at the point of interruption. After the lining has been stabilized, the heat up cycle may be resumed as scheduled from that point on. Resco assumes no liability for this procedure, as it is difficult to determine that point at which the entire lining is stable to prevent the possibility of a steam spall.
6. **This schedule is recommended for situations where proper heating equipment and air circulation are used, weep holes are present and unclogged, and the ambient temperature ranges from 60° to 90° F. If all of these**



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parameters are not met, a more conservative dry out schedule is needed. Consult your Resco Products, Inc salesman, the RESCO website (www.rescoproducts.com), or call 888.283.5505.