

FURNACE LINING PROTOCOL

Standard Operating Procedure For High Lining Life

Best practices followed across the industry to optimise the lining life



Furnace cross-section

Full procedure reproduced from Rishi Minerals' published guidance. Original wording and operating figures retained.

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- 1 Use of a Pneumatic vibration patching machine from bottom to top slowly in a single go which requires 1 20min to 1 20min to obtain optimal compaction. (Avoid moving the machine up-down multiple 5 times, this loosens and separates the grain distribution)

- 2 (Maintain the required air pressure and regular maintenance i.e replace air seals and stroke springs periodically, for optimal performance)

- 3 3mm - 4mm holes every 1 50mm Center to Center at all around the former (this is required to release the chemically bonded moisture from boric acid to prevent crack formation)

- 4 The sinter heat & heats following sinter heat should have higher opening carbon of around 1 20-1 40 then to be reduced accordingly.

- 5 During first/sinter heat, temperature should be increased uniformly @ 1 00°C Per hour.

- 6 Changing low grade sponge iron /sponge iron fines /high silica sponge should be avoided.

- 7 Coil Coat and Pads should be monitored from time to time and should be replaced periodically preferably every 3 months.

Procedure / 08-14

- 08 Use clean and high density scrap, Only Make the former red hot (350-400°C) for the first 60 minutes to sinter the premix Ramming mass (avoid scrap melting in first 60 minutes), increase of temperature gradually per time period during the sintering heat of at least 4 hours.
- 09 Maintain tapping temperature in the furnace @ 1610/1630 °C as the Continuous Casting Machine requires 1590°C to cast billets. Higher temperatures will erode lining faster, although ramming mass can sustain upto 1670°C (max operating temperature is not optimal operating temperature)
- 10 The temperature should not reach beyond 1670°C in any case, to prevent any possibility of fusion of silica.
- 11 Maintain each heat wise temperature and lining frequency data to know your lining erosion behavior.
- 12 Use Rishi Minerals Boron Oxide Premix ramming mass to achieve upto longer lining life.
- 13 Switch off the cooling tower fan motor during Sintering heats first 30mins (during former red-hot phase) to avoid the condense water vapour from coil towards coil coat as well towards ramming mass lining, it will protect the coil coat and also protect from GLD tripping during Sintering heats.
- 14 Ideal time for unloading the furnace / for one heat should be 1 hour 50 mins

Rishi Minerals and Ores India

Refractory products keeping up with the latest in Induction Furnace lining technology.

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