

Case Study TopAI STAR Coating

-less dross adhesion & increased crucible performance

Info

Product name: TP 587 TopAI STAR Coating

Application: Aluminum sand casting

Casting parts: Casting parts for mechanical engineering, HVAC, medical engineering and robotics



Parameters

Furnace: Gas fired

Capacity: Ca. 500 kg (1102 lbs.)

Casting temperature: 720 - 730°C (1328 - 1346°F)

Alloy: Aluminium alloy

Benefits – Comparison of TopAI STAR Coating against existing crucible*



less dross adhesion



increased lifetime



less crucible change overs



lower labour charges for crucible handling

*For more details, please refer to page 2.

Existing Crucible

As a result of a product change, the crucible was difficult to clean. At the end of the crucible's lifetime, the dross on the crucible wall was more than 50mm. This led to a reduction of capacity and a decreased thermal conductivity. After 42 days, the crucible was changed due to expansion cracks caused by dross.



Picture 1 Existing Crucible after 42 days.

TP 587 TopAl STAR Coating

In the case of the TopAl STAR crucible, a maximum dross adhesion of around 5 mm was measured at the end of its lifetime. The TopAl STAR crucible was removed after 154 days due to preventive maintenance without any decrease of thermal conductivity, which is related to the oxidation level of the crucible material and the dross adhesion on the crucible inner wall.

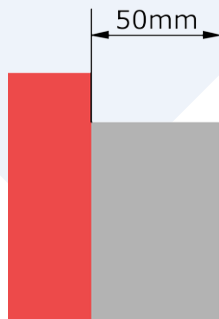


Picture 2 TPS 587 TopAl STAR Coating after 154 days.

Thickness of dross adhesion on the wall inside of the crucible

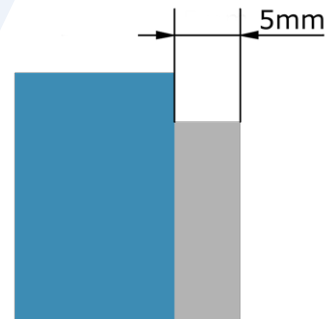
Existing Crucible

Dross adhesion: 50mm
Lifetime: 42 days



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Dross adhesion: 5mm
Lifetime: 154 days



Life Time

Product name	Lifetime	Lifetime improvement	Crucible per furnace / year
Existing Crucible	42 days	3-4 times longer lifetime	9 pcs / year
TopAl STAR Coating	154 days		3 pcs / year

Benefits

- Less erosion
- Improved lifetime
- Higher output
- Less crucible changes