



RAILWAY
SYSTEMS
by voestalpine



WEBINAR

GreenCasting LIFE

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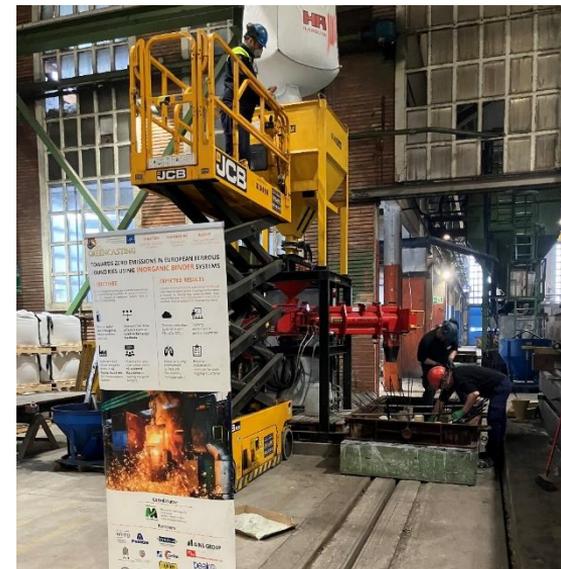
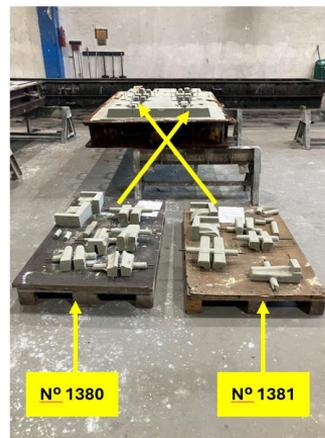
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1st Test – 2 Pieces Double Pattern MP-5207



1st Test – Double Pattern MP-5207 (N°1380&1381)

- » Cope and Drag (7th May 2025)
 - » 1,8% GEOPOL Resin (P1)
 - » 18% GEOFIX 00 Catalyst (Medium) (P1)
 - » **NO GEOTEK additive for 1st Cope & Drag**
 - » Bench Life 29min, Stripping after 59min
 - » 1st Cope breaks when turning over
- » Cores (7th May 2025 & 8th May 2025)
 - » 1st Set of cores (N°1380)
 - » 1,8% GEOPOL Resin (P1)
 - » 18% GEOFIX 00 Catalyst (Medium) (P1)
 - » 0,5% GEOTEK **additive added** (for better collapsibility)
 - » 2nd Set of Cores (N°1381)
 - » 2,2% GEOPOL Resin (P3)
 - » 6% GEOFIX 00 Catalyst (Medium) (P3)
 - » 12% GEOFIX 03 Catalyst (Fast) (P3)
 - » 0,5% GEOTEK **additive added**
- » Replacement of broken Cope (8th May 2025)
 - » 2,2% GEOPOL Resin (P3)
 - » 6% GEOFIX 00 Catalyst (Medium) (P3)
 - » 12% GEOFIX 03 Catalyst (Fast) (P3)
 - » 0,5% GEOTEK **additive added** only in the holes (for better collapsibility)



1st Test – Double Pattern MP-5207 (N°1380&1381)

- » Casting (8th May 2025)
- » Cooling (9th May 2025)
- » Demoulding (12th May 2025)
 - » 4min in Shakeout



1st Test – Double Pattern MP-5207 (N°1380&1381) RESULTS - COMPARISON

Cores N°1380

Resin: 1,8% GEOPOL
Catalyst: 18% GEOFIX 00
Additive: 0,5% GEOTEK



Cores N°1381

Resin: 2,2% GEOPOL
Catalyst: 6% GEOFIX 00
12% GEOFIX 03
Additive: 0,5% GEOTEK



2nd Test – 1 Piece Pattern MP-5153



2nd Test – Pattern MP-5153 (N°1676)

- » Cope and Drag (23rd May 2025)
 - » 2,0% GEOPOL Resin (P2)
 - » 12% GEOFIX 00 Catalyst (Medium) (P2)
 - » 6% GEOFIX 03 Catalyst (Fast) (P2)
 - » **NO GEOTEK additive for Drag**
 - » **0,5% additive for cope only in the holes**
 - » Stripping after ca. 60min
 - » For drag facing sand is Olivine with GEOPOL, but backing sand is Chromite with Furan (as we ran out of sand during moulding of big flask). Reinforcement steel bars used for stability between 2 systems
 - » Cope is fully moulded with GEOPOL

- » Cores (23rd May 2025)
 - » Very complicated cores
 - » 2,2% GEOPOL Resin (P3)
 - » 6% GEOFIX 00 Catalyst (Medium) (P3)
 - » 12% GEOFIX 03 Catalyst (Fast) (P3)
 - » 0,5% GEOTEK **additive added**
 - » Only 12min bench life (ambient temp. 21-24°C)



2nd Test Test –Pattern MP-5153 (N°1676)

- » Pouring (26th May 2025)
- » Observation
 - » Significantly less fumes/flames after pouring than in nearby furan moulds



2nd Test Test –Pattern MP-5153 (N°1676)

- » Shakeout (27th May 2025)
- » Observation
 - » Quite good collapsibility of the sand and even after only approx. 30s on the shakeout almost all sand was removed
 - » As we still use chromite sand during our production the challenge was not to mix both sand types in the shakeout, which was why we used a secondary containment for the test piece.
 - » Even if initial strength of olivine + sodium silicate is lower than existing chromite + furan resin, the process has clearly potential for other patterns as well



2nd Test Test –Pattern MP-5153 (N°1676)

- » Shakeout (27th May 2025)
- » Observation
 - » As the majority of the sand was already removed, we put the test piece again in the shakeout for a couple of minutes
 - » Also the remaining adhering sand was removed quite easily in the 2nd shakeout
 - » After heat treatment only in a few areas some sand was left, which can be easily removed manually



Direct Comparison MP-5153 Chromite+Furan Mould & Olivine+Sodiumsilicate Mould

RESULTS – COMPARISON (Olivine and Sodumsilicate vs Chromite & Furan)

Pattern MP-5153 (N°1676 GEOPOL & 1678 Furan)

Olivine & Sodumsilicate (Mould & Cores)

Casting N°1676

2,2% GEOPOL Resin
6% GEOFIX 00 (Medium)
12% GEOFIX 03 (Fast)
0,5% GEOTEK additive



Chromite & Furan (Mould & Cores)

Casting N°1678



2nd Test Test – Pattern MP-5153 (N°1676)

RESULTS - Observations

Olivine & Sodiumsilicate (Mould & Cores)

Casting N°1676

2,2% GEOPOL Resin
6% GEOFIX 00 (Medium)
12% GEOFIX 03 (Fast)
0,5% GEOTEK additive



- » Advantages Sodium Silicate
 - » **Significantly less gas voids** casting when compared directly to chromite+furan
 - » Overall, objectively **better surface finish** with olivine & sodium silicate

Chromite & Furan (Mould & Cores)

Casting N°1678



- » Comparable
 - » Collapsibility characteristics of both systems
 - » REMARK: Only when additive for better collapsibility is added in sodium silicate
- » Disadvantages Sodium Silicate
 - » However, drawback is the significantly less sand-strength of sodium silicate system

*Pinholes may not be taken into consideration as ingate was slightly changed as well. That may also be the reason for more/less pinholes



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GREENCASTING

Thank you!

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