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Process variants

Process variants

Aluminothermic welding technology

Variants
Characteristics
Metallurgy
Sealing
A variety of applications

Welding with short preheating

Welding with **short** preheating

Variant SkV
Variant SP

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Aluminothermic welding technology

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Welding with short preheating

Welding with short preheating is the reliable standard on the part of a few European railways for aluminothermic welded connections in the track for decades. It was made possible to reduce the time necessary to apply the aluminothermic welds to a minimum through the use of larger portions and more effective pre-heating. This procedure fulfils the increased quality, safety and economic efficiency demands in the rail construction sector.

We offer the **SP** variant as alternative in addition to the tried and tested **SkV** moulds: Due to the external geometry these moulds are slimmer, lighter and can be sealed with sand and also with paste.

Metallurgical properties

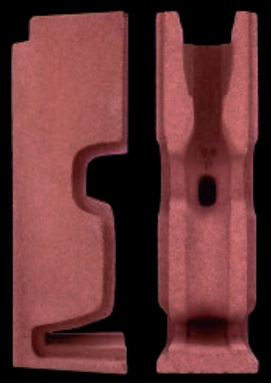
- Identical metallurgical microstructure
- Small heat affected zone (HAZ)
- Even melting of the rail ends
- Low residual stresses due to the homogenous breaking up of heat centres
- Can be used for all steel grades, only the portion must be selected.

Aluminothermic welding technology

Variant SkV

- Conical external form
- 2 different external contours
- Only sand sealing is possible
- Partly compatible with products of competition

Variant SP



- Rectangular exterior form
- Only one external size, therefore only one mould shoe for all moulds
- Suitable for sand and paste sealing

Direct comparison on the procedures variants

	SkV	SP	LP
Preheating time [min]	1,5 - 2		4 - 6
Propane gas [kg]	0,18		0,36
Oxygen [kg]	0,47		0,81
Weight of the single mould [kg]	3,5	2,5	
Weight of the one-shot crucible	~ 19		~ 14
Number of moulds per pallet	96	144	

Additional advantages of SP

- No turning of the head is necessary before shearing
- Integrated sealing strip for paste sealing
- Smaller moulds > less packaging
- Lower mould weight > reduction in costs

Paste or sand?

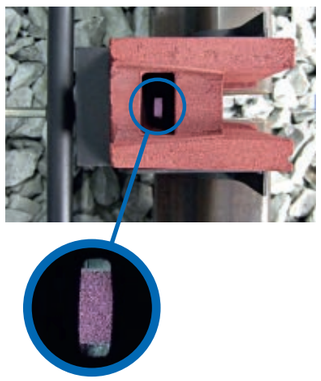
Fundamentally it is the case that the same quality of the aluminothermic welds can be achieved if they are applied correctly. In a standard case the sealant is not in contact with the liquid steel and would thus not influence the weld deposit. However, the use of paste offers much greater process reliability due to the fact that sealing sand can always fall into the mould in practice.

The following welding faults are avoided with paste:

- gas bubbles due to moist sand,
- sand inclusions,
- bubbles from enclosed sand,
- pores on the welding beads,
- discharges due to sand that is too dry.

Common characteristics

- The preheating time only amounts to 1.5 to 2 minutes.
- In the case of the same rail profiles all the welding parameters of the **SkV** and **SP** variants such as the orientation, preheating or the shearing time are identical.
- Due to the rectangular geometry of the feeder with a sufficient width the centric alignment of the moulds is made easier, on the other hand the correct fitting of the moulds can be controlled at all times.
- The same portion sizes are used for both variants.
- The high quality moulding sand makes it easy to work the contours and guarantees high levels of stability for robust use on the building site due to the use of special binders and additives.
- Appropriate moulds are available in our product range for virtually every rail profile and their combinations.



A variety of applications

Large gap L 50 | Large gap L 70 | SkV, Transition | SP, Transition | SP, 3-part | SP, Transition, 3-part