



*Short description of the  
aluminothermic rail welding process*

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*Short description of the aluminothermic rail welding process*

In the aluminothermic welding process, molten steel is poured into a mould surrounding the gap between the rail ends to be joined. The rail ends are connected by the liquid metal.

The principle of aluminothermic welding is based on an exothermic chemical reaction of aluminium powder and iron oxide, producing sufficient heat to cause melting.



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Before melting can start, the ends of the rails are cut to create a specified gap and the rails are aligned.



Cutting



Aligning



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Then a refractory mould is fastened around the gap by means of steel mould shoes.

Leaks in the moulds are prevented by special luting material.



Positioning of the mould



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After pre-heating both rail ends the exothermic reaction of the aluminium powder and iron oxide is started in a reusable or a 'one-shot' crucible and the liquid metal flows into the mould. The metal fills the mould and the slag is discharged into slag bowls.

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Pre-heating



Discharge of molten steel



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After a cooling period the excess metal at the head of the rail is removed and grinding of the rail can commence.



Grinding



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As the welding quite often takes place in tracks which are in use, the speed of the welding operation and the safety of the welders are important aspects of welding on railway tracks.



Finished weld



More informations...

- RAILS SAFE website  
[www.ewf.be/railsafe](http://www.ewf.be/railsafe)