



Copper Containing Rail Steel

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Summary: Cooper alloy rail steel for improved hardness, toughness, wear resistance, fatigue, and tensile properties.

Description: Efficient railroad transportation systems require that railroad rails withstand the demands of high-axle loads, acceleration and deceleration friction and stress, and high usage. Wear of rail is a major economical and safety concern for railroads, particularly in curved sections. This work discloses compositions of steel railroad rails that contain carbon, manganese, silicone, and copper, that have improved hardness, toughness, wear resistance, fatigue, and tensile properties. In particular, copper and other tramp elements are contained in steel scrap with is used to make the rails. Because these elements are difficult to remove, their concentrations increase with each recycling process unless they are diluted with products from primary steelmaking operations. The accumulative nature of copper in recycled steels is further exacerbated by the increased use of copper containing electrical components in automobiles and appliances.

Main Advantages of this Invention

- Improved physical properties (e.g., hardness, toughness, wear resistance, fatigue, and tensile properties) of railroad rail.
- Lowers production cost by requiring less dilution of the lower grade steel scrap with higher grade scrap, pig iron, and direct reduced iron

Potential Areas of Application

- Heavy haul rail steel
- Building materials

ID number: 16007

Intellectual Property Status: US provisional application filed in June 2016.

Opportunity: We are seeking an exclusive or non-exclusive licensee for marketing, manufacturing, and sale of this technology.

For more information contact:

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