



Method for the Production of Mineral Wool and Iron from Serpentine Ore

Opportunity

Although research is currently inactive on the patented technology “Method for the Production of Mineral Wool and Iron from Serpentine Ore,” the technology is available for licensing and/or further collaborative research from the U.S. Department of Energy’s National Energy Technology Laboratory.

Overview

This invention discloses a method to fabricate a product that has the potential to replace asbestos, which harbors health and environmental risks, with magnesium silicate-based mineral wools. The mineral wool product yields advantages similar to asbestos while eliminating its inherent detriments.

Since the late 19th century and into the late 20th century, asbestos has been a commonly used building material for home and industrial use. The popularity of its use can be traced to advantages of high resistance to heat, aversion to electrical and chemical damage, high mechanical strength, and excellent acoustical properties. Despite those advantages, asbestos has been directly linked to numerous health and environmental hazards, resulting in the ban of many of its uses worldwide. As such, an important need exists to create an alternative to asbestos that still retains the key advantages of liquidus temperature (melting point) and heat resistance.

Although alternative mineral wool fibers have been developed from basalt, diabase, and similar materials, these alternatives have a liquidus temperature ranging from about 1,100 to about 1,200 degrees Centigrade, which is significantly lower than asbestos-based insulation. This magnesium silicate-based mineral wool invention addresses the shortcomings of basalt-like material by having a liquidus temperature of at least 1,400 degrees Centigrade, thereby providing an excellent heat insulating material.

This patented mineral wool fiber technology consists of melting a magnesium silicate feedstock containing iron oxide and having a liquidus temperature of at least 1,400 degrees Centigrade to form a molten magnesium silicate. This process subsequently fiberizes the molten magnesium silicate to produce a magnesium silicate mineral wool, with coincident production of cast iron through reduction of the iron oxide component.

Patent Details

U.S. Patent No. 8,033,140; issued: October 2011; titled “Method for the Production of Mineral Wool and Iron from Serpentine Ore.”

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Significance

- Provides a potential alternative to asbestos
- Retains the advantages of asbestos while eliminating health, environmental hazards
- Yields a liquidus temperature of at least 1,400 degrees Centigrade
- Produces a cast iron co-product for additional economic benefit

Applications

- Building materials for home and industrial uses
- Any use that requires substitution or replacement of asbestos

Contact

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