

January 24, 2019

**Re: Fully Killed Steel**

The Nucor-Yamato Steel Mill Test Reports (MTR) states, “All Shapes Produced by Nucor-Yamato Steel are Cast and Rolled to a Fully Killed and Fine Grain Practice”. This statement is on the MTR partly because of the requirements of ASTM, which necessitates a statement of “Killed Steel” for A992 grades, which form the bulk of our steel production. The term “*killed steel*” refers to a practice of the addition of certain elements, such as Aluminum (Al) or Silicon (Si), to a heat of molten steel, with the aim of combining with the dissolved oxygen in order to reduce the oxygen content to a minimum so that no reaction occurs between carbon and oxygen during solidification. This is termed as “killing” or de-oxidation. This is an essential part of the melting and casting process, which also results in a semi-finished product relatively free of porosity and/or blowholes. Nucor-Yamato uses Si as the primary de-oxidizer to kill the steel during the ladle refining process.

We trust that this information will answer your questions regarding the practice used at Nucor-Yamato Steel to achieve a fully killed steel. If we can be of any further assistance, please feel free to contact us.