



Press release

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Stainless steel industry/TU Berlin study on raw material security

Future availability of chrome and stainless steel scrap more critical than crude oil

- **TU Berlin study on the "real" availability of chrome, nickel, iron, and scrap, taking economic factors into consideration**
- **The sole focus on geological reserves is insufficient for the assessment of the supply reliability**
- **Increasing demand and access to recycling material most important variables for the availability of chrome, nickel, and iron for the stainless steel industry**

Chrome is the raw material for the stainless steel production, the future economic availability of which is most critical for the stainless steel industry, by far. The availability of chrome, one of the main components of stainless steel, is even less than the one of crude oil which is generally considered a scarce commodity. This is the result determined by the team of Prof. Dr. Matthias Finkbeiner of the TU Berlin which scientifically researched the factors other than the geological reserves influencing the availability of the main stainless steel elements nickel, chrome, and iron on behalf of the German-Dutch raw material trading group Oryx Stainless. Being an important secondary raw material source, stainless steel scrap which is used with an average share of 50 percent for the production of new stainless steel today was also incorporated in the study. More complex supply chains, globalized markets, and also trade barriers resulting from national raw material protectionism have an increasing effect on the actual availability of raw materials and are not taken into consideration in a conventional assessment with an exclusive focus on the geological reserves.

The results of the study clearly show that solely focusing on the geological raw material reserves is insufficient for the assessment of the actual future availability of raw materials. "Chrome would be unremarkable for the stainless steel industry when only taking the geological reserves into consideration. In contrast, nickel appears to be critical. Chrome becomes a rather scarce commodity when incorporating economic aspects. However, access to nickel is uncritical in the extended scenario", Prof. Finkbeiner states. According to the TU Berlin, the main cause for the higher criticality of chrome is the predicted growth in demand for this raw material. In addition, important limiting factors are the relative geographic concentration of the natural reserves, the supply of chrome via the secondary raw material scrap, and the theoretical reach of the raw material which is among the most important components of stainless steel with a share of almost 19 percent. Trade restrictions and the company concentration play a rather minor role for chrome, contrary to the raw material iron ore, though its availability is considered rather uncritical in this context.

The stainless steel component scrap assumes a special role. While its availability is also rather uncritical, it is still more limited than the one of nickel, the raw material component of stainless steel which determines the price by far. According to the TU Berlin, the relative criticality of stainless steel scrap is primarily due to the predicted growth in demand, the theoretical reach of the reserves, and their geographic concentration.

"The result of the TU Berlin study underlines the necessity for maintaining the stainless steel recycling rates at a high level in the future as well", Roland Mauss, board member of the globally leading stainless steel scrap company Oryx Stainless, explains. The global stainless steel scrap reserves have grown from approximately 45 million tons to approximately 168 million tons (2010) due to consistent recycling in the last 30 years. According to relevant estimates, they are to increase by more than 45 percent until 2020. On the other hand, there is a stainless steel industry with a production which has increased by almost 70 percent in the last ten years alone and will continue to grow in a dynamic manner, not just due to the continued economic growth in China.

"Looking at the growth rates in the stainless steel industry, it is important to handle the raw material class scrap as efficient as possible. This particularly includes open global markets for unrestricted global trade as well, ensuring that the correct stainless steel scrap is able to reach the right location. Sealing off national markets or other protectionist measures have a negative effect and will continue to restrict the availability of raw materials like chrome", Roland Mauss states.



According to Prof. Matthias Finkbeiner, the present results also show that the entire raw material supply chain with all its links must be considered and evaluated when it comes to professional risk management. "The focus on the geological reserves is not sustainable. The fact that no comprehensive assessment of the availability has existed for the raw materials nickel, chrome, and iron so far shows that a substantial backlog still exists with regard to gaining knowledge in this field." In light of the increasing complexity of the procurement routes, the study also underlines that ensuring the supply reliability via suitable measures, e.g. the development of long-term supplier relationships, will also be of growing importance.

Invited by Oryx Stainless, more than 20 international raw material analysts and purchasers, fund managers, association representatives, traders, and additional experts from the stainless steel industry will discuss the results of the study and additional conclusions in Düsseldorf on September 19, 2012.



Notes to the editor

Founded in 1990, **Oryx Stainless Group** is among the world's leading trading companies for raw materials used in the production of stainless steel. The business focus of the company with locations in Mülheim an der Ruhr in Germany and Dordrecht in the Netherlands is on the handling and processing of stainless steel scrap into Oryx Stainless Blends. These secondary raw material blends individually customized for respective stainless steel producers above all replace primary raw materials such as ferronickel, ferrochromium, and ferromolybdenum.

Oryx Stainless has supported the comprehensive scientific research of issues that are relevant to the stainless steel industry since 2009.

Studies which have been published so far:

- 2010: Stainless steel industry: Intelligent recycling of stainless steel scrap to reduce CO₂
 A study by the Fraunhofer Institute UMSICHT on behalf of Oryx Stainless Group
- 2011: Nickel market – Playing field of speculators or driven by fundamentals?
 A study by JProf. Dr. Peter N. Posch, Ulm University/Institute of Finance on behalf of Oryx Stainless Group

For the study results and additional information, please visit:

<http://www.oryxstainless.com/>

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