

# **Addition of SrO to the HotVeGas and GTOX Oxide database**

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Strontium oxide is important for ferrous process metallurgy, sintered strontium ferrites are of great importance as permanent magnets due to their low processing costs and the wide availability of the raw materials. It is commonly used for motor segments, loud-speaker rings, etc.

Particular attention was given to the phase Perovskite  $\text{SrFeO}_{3-\delta}$  based on Brownmillerite  $\text{SrFeO}_{2.5}$  and extending significantly to the higher amount of oxygen toward the  $\text{SrFeO}_3$  composition according to the formula  $\text{SrFeO}_{3-\delta}$ . In addition to the component oxides five quasi-binary compounds located in the  $\text{Fe}_2\text{O}_3$ -SrO binary subsystem have also been included in the database as stoichiometric phases. The phase Perovskite is described using a sublattice model taking into account the available experimental information. The general agreement between the calculated phase equilibria as well as the thermodynamic properties and the respective experimental data is good.

The new database is currently being used in the framework of an ongoing research project DÜSOL to simulate the oxidation and reduction cycles in a rotary kiln that uses Perovskite  $\text{SrFeO}_{3-\delta}$  as the redox material and concentrated solar power as energy source to develop a sustainable air separation process.

The thermodynamic descriptions of 2 binary, 9 quasi-binary and 3 ternary systems containing strontium oxide are presented compared with experimental data.