A New kind of Chlorine Technology: Storage, Handling, Reactivity

Sebastian Hasenstab-Riedel, Professor

Freie Universität Berlin, Berlin, Germany, s.riedel@fu-berlin.de
https://www.bcp.fu-berlin.de

ABSTRACT

In recent years, a new chlorine technology has been developed. Based on reactive ionic liquids, a safe and sustainable chlorine and hydrogen chloride storage medium can be prepared. The most promising candidate stores up to 0.79 kg of chlorine/kg of storage material, it is easy to prepare and is stable against chlorination for long period of time. Gaseous chlorine can be captured, safely transported, and stored as ionic liquids. It is also shown that chlorination reactions can be carried out at lower temperatures and without a catalyst. The combination of these properties highlights the new material as a suitable storage medium to facilitate the flexibilization of industrial chlorine production.

Therefore, the technology makes a decisive contribution to the transformation of the chemical industry by developing a promising new chlorine technology that makes chemical processes more flexible, increases their energy efficiency, and closes material cycles. Once chlorine can be more safely stored, it can be produced using temporary excess capacity from renewable energy. And once the material can be more safely transported, it can be imported from regions such as the global south where renewable energy can be generated cost-effectively from wind and sun. This opens up the possibilities of reducing the chemical industry's energy requirements and lessening its reliance on conventional power plants in favor of a transition to renewable energy sources.

References:

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