V_2O_5

A GREEN MATERIAL CRITICAL FOR THE EU

> The most important compound of vanadium, used in industrial settings, with exposure being controlled at very low levels. It is placed on the market as powder, fused flakes or catalysts. V_2O_5 is used in various applications, making it a critical element to building sustainable economies in Europe.

STEEL PRODUCTION AND USE

- Ferrovanadium is a strengthening agent for high-strength, low alloy steels used in the construction, tools and aerospace applications.
- **0.2% of vanadium increases the strength of steel by 100%.**
- Substituting V_2O_5 in this application would lead to increased energy consumption, which contradicts EU efforts to reduce energy consumption and carbon emissions.

CHEMICALS AND CATALYSTS

- Sulphur dioxide emissions in the gasification process of heavy oil in the non-ferrous metal industry are treated with a V_2O_5 solution.
- V_2O_5 **cannot be substituted as a catalytic substance.**

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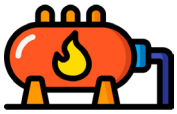
ENERGY STORAGE – VANADIUM REDOX FLOW BATTERY

- Vanadium electrolyte used in the VRFB is made out of V2O5.
- V_2O_5 used in the electrolyte undergoes infinite charges/discharges, without any loss of efficiency and is recyclable at the end of the battery's life.

GAS TREATMENT AGENT



- V_2O_5 plays a key role in the removal of exhaust gases found at industrial sites, power plants and heavy construction machinery.
- Due to **lack of economically viable alternatives,** V_2O_5 **cannot be substituted in this use.**

ANTI-CORROSION AGENT

- V_2O_5 is used a raw material to produce a vanadium solution that is used in a refining process to remove acidic gases from tanks and pipes.

PIGMENTS

- V_2O_5 is used in the manufacture of blue and yellow pigments that are used as ceramic colorants.

SMART WINDOWS

- V_2O_5 induces UV absorbent characteristics when added to glass.
- This leads to higher tempered strength of the produced glass, which in turn **consumes less energy**.

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