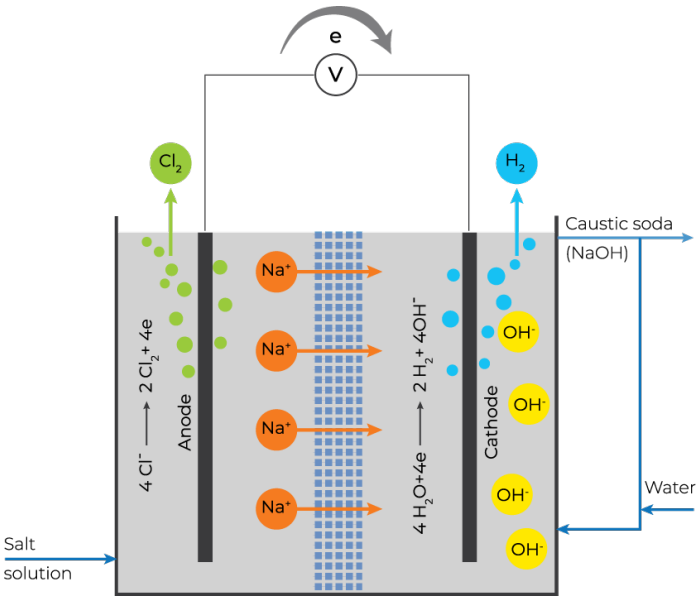
HYDROGEN FROM CHLOR-ALKALI PRODUCTION... HIGH PURITY, LOW CARBON AND AVAILABLE TODAY

eurochlor
A sector group of Cefic

Hydrogen is a by-product of the chlor-alkali process. It is co-produced with chlorine and caustic soda/ potash and can be used to make chemicals and steel and to store energy, as well as for transportation.

It is of high purity and, when you consider that three products are made at the same time, hydrogen from chlor-alkali also has a low carbon footprint, even when it comes from conventional (grid) electricity.

By only using renewable electricity, it is possible to reduce our carbon footprint even further and produce renewable hydrogen.



For caustic potash production, sodium (Na+) in the diagram above is replaced by potassium (K+).

Available today

European chlor-alkali has a hydrogen production capacity of 270,000 tonnes/year, meaning that around 3.5% of the total hydrogen made in Europe is available today from chlor-alkali production sites. This amount is equal to a 2GW water electroliser.

Very low carbon or even renewable

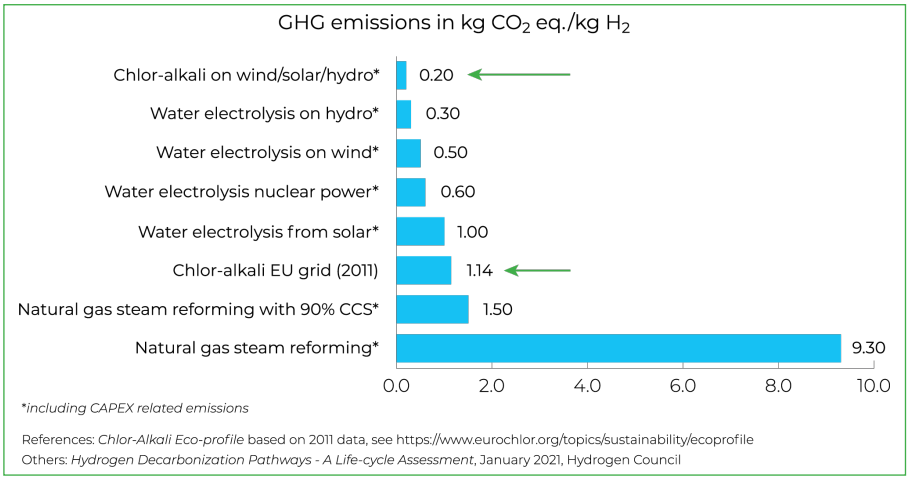
Hydrogen from the chlor-alkali process has a **low carbon footprint of 0.2 - 1.14 kg CO_2 eq/kg H_2**, depending on the electricity type (renewable or conventional electricity, see graph below). This footprint is over 70% lower than hydrogen from fossil fuel-based processes.

Ready to kick-start the European Hydrogen Economy

Currently, 77,000 tonnes/year of our hydrogen is used as a chemical building block, 145,000 tonnes/year as fuel and 48,000 tonnes/year remains unused. The last two are **available for new 'carbon neutral' applications**. They could help to kick-start Europe's low carbon and green Hydrogen Economy.

When using renewable energy, the products from chlor-alkali are renewable...

...but what is the actual carbon footprint for different types of hydrogen based on Life Cycle Analyses?



**including CAPEX related emissions*

References: *Chlor-Alkali Eco-profile* based on 2011 data, see https://www.eurochlor.org/topics/sustainability/ecoprofile
Others: *Hydrogen Decarbonization Pathways - A Life-cycle Assessment*, January 2021, Hydrogen Council

www.eurochlor.org/mcs
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