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.

**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 electrolyser.

**Very low carbon or even renewable**
Hydrogen from the chlor-alkali process has a low carbon footprint of 0.2 - 1.14 kg CO₂ eq/kg H₂, 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?

[Graph showing GHG emissions in kg CO₂ eq/kg H₂ for different hydrogen production methods, including chlor-alkali on wind/solar/hydro, water electrolysis on hydro, water electrolysis on wind, water electrolysis nuclear power, water electrolysis from solar, chlor-alkali EU grid (2011), natural gas steam reforming with 90% CCS, and natural gas steam reforming.]

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

www.eurochlor.org/mcs
#eurochlorMCS