

PRODUCT ID

Formula	CH <sub>3</sub> CH <sub>2</sub> OH	CAS nr.	64-17-5
Molecular weight (g/mol)	46.07	EC nr.	200-578-6

VISUAL CLASSIFICATIONS

Market	Energy demand	Maturity.	Price
			

KEY MARKET DATA

Market size (ton/year)	87 millions	
Product price (€/ton)	630	
CO <sub>2</sub> uptake potential (ton/ton product)	1.91	stoichiometric
CO <sub>2</sub> uptake potential (ton/year)	166 millions	195 reference plants 15.8% capture target (1.05Gt/year)
State-of-the-art production technology	From corn or sugar-cane fermentation (TRL 9)	

TECHNOLOGY ROUTE #1: CATALYTIC HYDROGENATION

TRL = 5	Pilot plant in Güssing, Austria	
Reactions		
$n\text{CO} + 2n\text{H}_2 = \text{C}_n\text{H}_{2n+1}\text{OH} + (n-1)\text{H}_2\text{O}$	Formation of alcohols	
$n\text{CO} + (2n+1)\text{H}_2 = \text{C}_n\text{H}_{2n+2} + n\text{H}_2\text{O}$	Formation of HCs	
$\text{CO}_2 + \text{H}_2 = \text{CO} + \text{H}_2\text{O} \quad \Delta H_{298}^0 = +41.2 \text{ kJ/mol}_{\text{CO}_2}$	reverse water-gas-shift (rWGS)	
Reaction conditions		
Temperature	250-320°C	
Pressure	30-60-110 bar	?
Catalysts	ADMS	Under development by Albemarle
CO <sub>2</sub> :H <sub>2</sub> molar ratio	3	stoichiometric
Productivity	0.028 kg.Nm <sup>-3</sup>	
Selectivity	13.4% ethanol	
By-products	42.5% methanol	
	37.3% water	

For sources and definitions, please consult the original report at the [CEMCAP WEBSITE](#)

