PRODUCT FACT SHEET FORMIC ACID

TNO innovation for life

PRODUCT ID

Formula	HCOOH	CAS nr.	64-18-6
Molecular weight (g/mol)	46.03	EC nr.	200-579-1

VISUAL CLASSIFICATIONS

Market	Energy demand	Maturity	Price
			

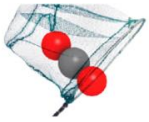
KEY MARKET DATA

Market size (ton/year)	0,7 millions	
Product price (€/ton)	600	
CO_2 uptake potential (ton/ton product)	0.96	stoichiometric
CO_2 uptake potential (ton/year)	0,67 millions	0,8 reference CEMCAP plants 0,1% capture target (1.05Gt/year)
State-of-the-art production technology	Carbonylation of methanol and subsequent hydrolysis of the methyl formate produced (TRL 9)	

TECHNOLOGY ROUTE: CATALYTIC HYDROGENATION

TRL = 5	Pilot plant in Güssing, Austria
Reactions	
$nCO + 2nH_2 = C_nH_{2n+1}OH + (n-1)H_2O$	Formation of alcohols
$nCO + (2n+1)H_2 = C_nH_{2n+2} + nH_2O$	Formation of HCs
$CO_2 + H_2 = CO + H_2O \quad \Delta H^{U}_{298} = +41.2\ kJ/mol_{CO_2}$	reverse water-gas-shift (rWGS)
Reaction conditions	
Temperature	90°C
Pressure	100 bar
Catalysts	ruthenium- and phosphino-based catalysts
CO_2:H_2 molar ratio	1 stoichiometric
Solvent	Aqueous methanol

For sources and definitions, please consult the original report at the CEMCAP WEBSITE



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