PRODUCT FACT SHEET

DIMETHYL ETHER (DME)

PRODUCT ID

<table>
<thead>
<tr>
<th>Formula</th>
<th>CH₃OCH₃</th>
<th>CAS nr.</th>
<th>115-10-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight (g/mol)</td>
<td>46.07</td>
<td>EC nr.</td>
<td>204-065-8</td>
</tr>
</tbody>
</table>

VISUAL CLASSIFICATIONS

<table>
<thead>
<tr>
<th>Market</th>
<th>Energy Demand</th>
<th>Maturity</th>
<th>Price</th>
</tr>
</thead>
</table>

KEY MARKET DATA

- Market size (ton/year): 8 millions
- Product price (€/ton): 350
- CO₂ uptake potential (ton/ton product): 1.91 stoichiometric
- CO₂ uptake potential (ton/year): 15 millions 18 reference plants 1.5% capture target (1.05Gt/year)
- State-of-the-art production technology: From methanol dehydration (TRL 9)

TECHNOLOGY ROUTE: CATALYTIC HYDROGENATION

- TRL = 9
- Methanol production from CO₂ hydrogenation + Methanol dehydration (e.g., MegaDME® Lurgi)

Reactions

\[2 \text{CH}_3\text{OH} \rightarrow \text{CH}_3\text{OCH}_3 + \text{H}_2\text{O} \quad \Delta H^\circ = -23.50 \text{ kJ mol}^{-1}\]

Reaction conditions

- Temperature: 250 – 360°C
- Pressure: 30 to 50 bar
- Catalysts: γ-Al₂O₃ commercially available
- CO₂:H₂ molar ratio: 3 stoichiometric
- Per pass conversion: 70-85%
- By-products: water

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