The Chemical Tankers Market
## Different types of chemicals

<table>
<thead>
<tr>
<th>Raw materials</th>
<th>Oil and gas</th>
<th>Minerals</th>
<th>Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate products and fuel</td>
<td>Clean petroleum products (CPP)</td>
<td>Organic chemicals, e.g. methanol, xylene, styrene</td>
<td>Inorganic chemicals, e.g. acids and caustic soda</td>
</tr>
<tr>
<td></td>
<td>Gasoline, jetfuel, naphta, etc</td>
<td>Plastic converters, fibres</td>
<td>Coatings, adhesive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finished products</td>
<td>Textiles, packaging, electrical, automotive, building materials, etc, etc</td>
<td></td>
<td>Home use and personal care, green energy</td>
</tr>
</tbody>
</table>
Customers
Chemical Production Capacity
Current capacity of 50 chemicals

Mill. mts/year

US | Europe | Japan | Middle East | China | India | Other Asia | Latin America | Others

- Basic Org.
- Spec. org.
- Inorg.
- Ethanol

Source: ICIS, Odfjell
Production capacity growth 2012-2015

Mill. mts

<table>
<thead>
<tr>
<th>Year</th>
<th>Base organics</th>
<th>Spec. organics</th>
<th>Inorganics</th>
<th>Ethanol</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>1.6%</td>
<td>1.3%</td>
<td>2.1%</td>
<td>4.7%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

Source: ICIS, Odfjell
Crude Oil Tankers 62%
Product Tankers 21%
Gas Tankers 9%
Chemical Tankers 8%
Chemical Tankers vs. Oil/Product Tankers

**Chemical Tankers**
- Many tanks and segregations
- Different tank sizes
- Different tank coatings
- Can handle many different cargoes simultaneously
- Parcel trading

**Oil/Product Tankers**
- Few tanks/segregations
- Usually one type of coating
- Narrow range of products (mostly uniform) like CPP or vegoils.

---

[Image of ships with different tank arrangements and labels for Chemical and Oil/Product Tankers]
Definitions of chemical tankers

Deep-sea: 13,000 dwt and above
Regional: 3 – 12,999 dwt

Core fleet: Core vessel capacity
* IMO 2 capacity (fully or centre section)
* Average tank size 3,000 cbm (min. 6 tanks)
Commercially controlled by chemical tanker operator
Or ≥ 50% stainless steel tank capacity (= “Core stainless fleet”)

Swing fleet: Core vessel capacity but not controlled by core operator
or other chemical tanker type controlled by core operator

Dedic. fleet: Chemical tanker controlled by chemical/oil company
Fleet Distribution end 2012Q2
All deep-sea fleet (in DWT)

Total fleet: 1,184 units 30,322’ Dwt

Source: Odfjell
Chemical fleet - Owners
Core deep-sea fleet 2Q2012 (in DWT)

- **Odfjell**: 15.2%
- **Stolt-Nielsen**: 13.3%
- **Other majors**: 18.2%
- **Nordic Tankers**: 4.7%
- **Navig8 Chemicals**: 5.1%
- **TokMar**: 7.0%
- **MISC**: 5.7%
- **Fairfield/Iino**: 7.9%
- **Others**: 23.0%

**Total fleet**: 630 units 15,583’ Dwt

Core fleet deep sea:
- IMO 2 capacity (fully or centre section)
- Min. 6 tanks
- Above 13,000mt dwt
- Or >50% stainless steel

Source: Odfjell
Current deep-sea orderbook by delivery date

1,000 DWT

- Stainless
- Other core
- Swing/Dedic.
Core Chemical Deep-sea Fleet 2003-2015
Orderbook and estimated demolition per October 4th 2012

Source: Odfjell

* Outphasing 30 years (Europe built) and 25 years (Asian built)
Chemical Tanker Demand 2006 - 2015
Relative Development

Sources: Drewry Maritime Research, 2012
Chemical Tanker Supply Demand 2006 - 2015
Relative Development 2006 - 2015

Sources: Drewry Maritime Research, 2012 and Odfjell
Houston/Rotterdam 2007-2012

Source: Quincannon
Outlook

• Vessel supply situation:
  – Reduced newbuilding
  – Healthy demolition
  – No sophisticated stainless ships on order (with more than 30 tanks)

• World economic development
  – Strong momentum in the US due to shale gas development
  – European market remains slow due to economic downturn
  – Iran conflict keeps oil market in tension
  – Interesting development in China and other Asian markets

• Local/regional supply and demand
  – Short-term arbitrage opportunities
  – New plants
  – Closure of plants
Particular Concerns and Challenges

• Current earning levels are not sustainable.
• Unstable political conditions
  – Iran sanctions
  – Middle East instability
• New fuel requirements.
• Increased inefficiency, more than 40% of time in port.
• Vetting and inspections.
• Age restrictions.
• New environmental requirements.
• Piracy – Gulf of Aden/Indian Ocean, West Africa
Thank you for your attention