Special Focus on Dissolving Pulp Market

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Overview

- World demand will continue upward through 2013
  - Viscose products will lead the upswing
  - China and Other Far East will generate the majority of the growth

- Investors have been enamored by this market
  - Drawn by the strong demand and high prices
  - New capacity announced on a regular basis

- Prices falling from recent, historically high levels
  - Supply overtaking demand due to small size of market
  - Cotton prices crashing as new supply hits the market
World Dissolving Pulp Demand
(Million Tonnes)
Viscose Products Leading the Development of End Uses for Dissolving Pulp

- Viscose fibers are taking share from cotton
  - Adding to overall growth in total fiber usage
  - Limited availability and relatively high prices for cotton
  - Shift in consumer taste toward rayon
  - Chinese government policies favoring viscose staple

- Other major end uses are growing, too, but not as fast
  - Acetate benefiting from more cigarette filters in developing world
  - Ethers boosted by wide range of end uses
  - Nitrocellulose remains small and slow growing
World Dissolving Pulp Usage by Major End Use
(Million Tonnes)
Asia Will Account for the Majority of the Growth in Dissolving Pulp Demand

- China will continue to be at the forefront
  - Strong growth in garment production
  - Limited domestic supplies of cotton
  - Increasing production of acetates and ethers
  - Chinese policies favoring viscose staple

- Other Asian countries will contribute more to demand
  - Several viscose projects already announced in India and Indonesia
  - Rising domestic demand for rayon
Dissolving Pulp Demand by Major World Region
(Million Tonnes)
Imports Will Account for the Majority of World Demand

- Demand growth occurring in regions with limited fiber
  - Dissolving pulp is fiber intensive, especially for scale facilities
  - Lack of cotton will limit cotton linter pulp also

- Mills based on imported fiber could be alternative
  - High cost of virgin fiber
  - Large amount required due to low pulping yields

- Should be adequate availability of product to import
  - As new mills enter the market around the world
Dissolving Pulp Imports by Major Region/Country
(Million Tonnes)
North America Will Remain the Largest Exporting Region for Dissolving Pulp

- New suppliers are entering the market
  - Through conversions of paper grade capacity and restarts

- More export capacity will be available from Europe, too
  - Mainly due to conversions of paper grade lines

- Low-cost suppliers will also be expanding exports
  - Brazilian mill has announced investment program
  - South African operation reaching full capacity
Dissolving Pulp Exports by Major Region/Country
(Million Tonnes)
Investors Have Lined Up to Install More Capacity Around the World

- Strong demand and high prices made an impression
  - More than 1.0 million tonnes of capacity set to start this year
  - Adding 20% to world capacity in one year
  - Almost all in high-cost northern hemisphere locations

- Many more projects are under construction
  - Traditional suppliers protecting their market positions
  - New entrants looking to capitalize on high prices
  - High-cost paper grade mills shifting to dissolving
Announced Dissolving Pulp Capacity Expansions

<table>
<thead>
<tr>
<th>Mill</th>
<th>Country</th>
<th>Type</th>
<th>Tonnes/Yr</th>
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<td>Vida Paper</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>3,378,000</strong></td>
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World Dissolving Wood Pulp Capacity Expansion
(Thousand Tonnes)
Capacity Expansion Overtaking Demand Growth

- Large amount of paper grade capacity available for conversion
  - Paper grade pulp market 10 times bigger than dissolving
  - Many mills looking for exit to higher-valued business

- Timing of shift in market balance dependent on:
  - Degree of demand growth
  - Aggressiveness of suppliers
  - Availability of cotton supplies

- Our forecast shows the current round of expansion
  - Outstripping demand by year-end 2011
World Dissolving Wood Pulp Operating Rates
Production Costs Are Headed Higher for Dissolving Pulp

- Fiber is the largest part of the industry cost structure
  - Increasing competition with energy uses
  - Limitations on availability in northern hemisphere

- Other cost components rising also
  - Chemicals boosted by raw material increases
  - Energy pulled up by rising usage in developing world
  - Transportation forced upward by energy

- Relatively weak dollar doesn’t help
  - Nor do capacity additions at upper end of cost curve
World Average Variable Production Costs
(US$/Tonne, Delivered to Shanghai)
Record Cotton Prices Drive Dissolving Pulp Prices
(US$/Tonne, Delivered to Shanghai)

Source: RISI, NCC
Profitability Will Return to Sustainable Levels, Sooner Rather Than Later

- Price/variable costs for an average viscose producer
  - Hit nearly double the normal cyclical high

- Extraordinary conditions not long lasting
  - More acres of cotton being planted around the world
  - More dissolving pulp capacity becoming available
  - Rayon will lose share to synthetics

- Price/variable costs expected to plummet by mid-2012
  - Confirming the volatility of this market
World Average Profit Margins for Viscose Pulp Delivered to China
(Price/Variable Costs)
Summary

- World demand will continue upward in 2011-2013
  - Growth in total fiber usage will be one factor
  - But biggest wild card is rayon share of world fiber market

- Supply side gearing up to meet virtually any amount of growth
  - High prices and margins encouraging investment
  - Large amount of paper grade capacity available for conversion

- High prices and margins won’t last long
  - Supply-side response in both cotton and dissolving pulp
Thank you for your attention and feel free to contact me if you have any questions.

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