Sizing 2005
Pira International conference proceedings

Tuesday 13 and Wednesday 14 December 2005
Holiday Inn Madrid, Madrid, Spain
Tuesday 13th December 2005

08:00  Registration and refreshments

09:00  Opening remarks from the chair
Dr Thomas Ott, Manager Technology and Development, M-REAL, Germany

A strategic review of sizing

09:10  Basics of acid / alkaline internal sizing systems
- Consecutive events in sizing: retention-spreading reaction mechanisms in sizing
- Role of fibre surface charge / area characteristics and process water characteristics in internal sizing
- Similarities and differences between different sizing systems
- What to look for when trouble shooting sizing problems
Prof Tom Lindström, STFI-PACKFORSK and ROYAL INSTITUTE OF TECHNOLOGY KTH, Sweden

09:50  ASA: a maturing technology?
- Potential benefits of ASA in different paper grades
- Impact of various ASA parameters on efficiency and runnability
- Practical application optimisation: raw materials and equipment
- ASA analysis and elimination of deposits: a representative case study
- Challenges for the future
Fredrik Odhe, Partner, SELLUKEM, Sweden

10:30  The global alpha olefin market: a five year outlook
- An overview of the global alpha olefin market including supply balances
- Availability versus demand over the next five years
- The challenge faced by alpha olefin producers to balance traditional broad range units: increased investment in on-purpose technology
- Alpha olefins as a feedstock for ASA and non-ASA applications targeting the same alpha olefin fractions
- The disparity in demand for C16 versus C18 alpha olefins and the potential implications for AO producers and ASA consumers / producers
Edward van den Heuvel, Product Manager Higher Olefins Europe / Africa, SHELL CHEMICALS EUROPE, Netherlands

11:10  Morning refreshments

11:30  MILL PERSPECTIVE: The difference in sizing of eucalyptus BCTMP and aspen BCTMP
Karin Kruger, Paper Science Manager, SAPPI, South Africa
MILL PERSPECTIVE: Effect of advanced wet end systems with carboxymethyl-cellulose (CMC) on internal sizing
- Introduction of anionic sites on pulp surface with CMC in the wet end
- Effect of pulp surface modification on internal sizing: the single pulp system
- Optimisation of the mixed pulp system using surface modified pulp
Tomohisa Gondo, Chemist, OJI PAPER COMPANY, Japan

Lunch will be served for speakers and delegates

Ionic solutions for high efficiency ASA sizing
- Influence of viscosity on sizing efficiency and deposits
- Influence of molecular weight on sizing efficiency and deposits
- Influence of ionic charge on sizing efficiency and deposits
- Influence of temperature on sizing efficiency and deposits
- Influence of pH on sizing efficiency and deposits
- Influence of mechanical energy on sizing efficiency and deposits
- Optimisation of starch to ASA ratio: laboratory investigations and industrial results
Regis Houze, and Frédéric Bouvier, Head of Paper and Board Applications Department, ROQUETTE, France

Optimising first pass retention for furnish and additives for improving the effectiveness of hydrophobing agents
- Introduction to the project: optimising first-pass retention, focusing on improved retention of sizing agents while maintaining good formation
- Interactions between sizing agents AKD / ASA and retention additives
- Influence of paper-machine settings on formation (measured with PTS-DOMAS) with optimised additive dosage
- Results of laboratory and pilot plant paper machine trials
Jürgen Belle, Team Manager – Chemical Technology, PTS-MÜNCHEN, Germany

The role of new aluminium polymers in the enhancement of AKD and ASA sizing systems
- Influence on AKD and ASA sizing of different polyaluminium derivatives
- Role of basicity, silicon, and phosphate content
- The representation of sulphate ions
- New polyaluminium salts: polyaluminium formiate (PAF)
- Role of pH and pulp types
Dr Josep Lluis Bisbal, KEMIRA, Spain
16:20 The effects of minor components present in AKD wax on emulsion stability and paper sizing performance

- Formation of AKD oligomers during AKD synthesis
- Chemical structures and molecular mass values of AKD oligomers
- Effects of fatty acids, fatty acid anhydrides or AKD oligomers present in AKD wax on emulsion stability, retention of AKS and paper sizing performance
- SEM observation of AKD emulsion particles containing the minor component with various ratios
- Interactions between the minor components and PCC fillers in paper

Prof Akira Isogai, UNIVERSITY OF TOKYO, Japan

17:00 AKD sizing of office papers

- Effects of AKD structure on sizing efficiency and curing
- Effects of thermal properties of AKD on PM runnability
- Effects of AKD structure on surface properties of paper

Olof Malmstrom, Product Solutions Sizing and Kenneth Sundberg, R&D Wet End Solutions, CIBA SPECIALTY CHEMICALS, Finland

17:40 Summary from the chair and close of day one

17:45 Drinks reception
Wednesday 14th December 2005

08:30  Registration and refreshments

09:00  Opening remarks from the chair
       Prof John Roberts, UNIVERSITY OF MANCHESTER, UK

       **Sizing paper for printing**

09:05  Paper demands concerning sizing in relation to the Océ CopyPress digital toner printing system
       - Sizing review and keytone formation
       - Explanation of Océ CopyPress system in Océ colour printing systems
       - Mechanism of migration / crystallisation
       - Migration test and specification
       - Influence and developments in surface sizing
       - Keytone migration with coated paper
       - Océ preferences and strategy concerning sizing
       Dr Nico de Rooij, *Media Specialist R&D, OCE TECHNOLOGIES*, Netherlands

09:45  **PRINTER PERSPECTIVE: Examination of ink consumption in the offset print process depending on the degree of paper sizing**
       - Paper repellence degree expressed by Cobb coefficient and wetting time (PDA)
       - Ink consumption in the print process
       - Ink adsorption measured on SPECOL apparatus
       - Analysis of ink consumption depending on the degree of paper sizing
       Katarzyna Paszkowska, *Development Engineer, WINKOWSKI* and Prof Halina Podsiadlo, WARSAW UNIVERSITY OF TECHNOLOGY, Poland

10:25  **The impact of 2D-3D paper structure on liquid ASA, AKD and ink spreading and penetration: a conceptual investigation**
       - Chemical framework for spreading and penetration
       - Influence of 2D structure on spreading
       - Influence of 3D structure on penetration
       - ASA and AKD surface sizing (2D spreading)
       - ASA and AKD internal sizing (3D spreading)
       - Relevance to printing
       Prof Jarl B. Rosenholm, Dr Jouko Peltonen and Carl-Mikael Tag, ÅBO AKADEMI UNIVERSITY, Finland

11:05  Morning refreshments
Sizing of packaging grade paperboard

11:25 MILL PERSPECTIVE: Case study: the use of the A Sizer on board and corrugating machines

- Starch deposition by sizers on a corrugating medium
- Machinability improvements on the board machine by the replacement of the standard size press with the sizer
- Energy savings through a starch consistency increase in the sizing process for corrugating medium

Dr Simon Cena, Technical Manager, ALLIMAND, France

12:05 Combination sizing and microparticle drainage aid for packaging and bleached board at acid-neutral pH

- A new easily applied technology to achieve microparticle drainage performance while sizing at low pH
- Data for dynamic drainage apparatus for results for various furnishes in low pH range
- Data for sizing using high temperature hand sheet and turbulent pulsed sheet former
- Mill applications

Michael Plouff, Technical Manager, MEADWESTVACO SPECIALTY CHEMICALS, US

12:45 Lunch will be served for all speakers and delegates

Advances in surface sizing technology

13:55 Managing the balance between internal sizing and surface sizing

- Traditional sizing contributions in woodfree sheet applications
- Challenges faced when moving from internal size to surface sizing
- Steps to improve surface sizing performance
- Comparison of existing and developing technologies

Brine W. Ranson, Global Segment Manager – Printing and Writing, HERCULES, US

14:35 Surface sizing with starch solutions with high surface solids

- Necessary adjustments to base paper manufacture to enable a high solids content as Pilot coater experience in increasing the starch solids content
- Obtaining sufficient stability and maintaining the high binding power of starch with a high solids content
- The role of surface sizing starch in relation to the elastic modulus and bending stiffness properties of the sheet
- Observations of the impact of increasing solids content on runnability
- Production machine experience of increased starch solids content

Dr Juha Lipponen, Paper Technology Manager, METSO PAPER, Finland
15:10 Surface sizing with anionic and amphoteric starches
   • Distribution of hydrophobic sizing agents
   • Hydrophobically modified starches
   • Effects of print quality (in flexographic printing) by hydrophobically modified starches
   • Effects of colloidal stability on size distribution
   • Cobb and contact angle improvement / optimisation in starch based surface sizing
   Prof Lars Järnström, KARLSTAD UNIVERSITY, Sweden

15:45 New starches for high speed film press sizing
   • Developments in starch modification for film press surface sizing
   • Influence of surface sizing starch type and starch source on final paper properties
   • Opportunities for pigments; improving quality and reducing costs
   • Retainability of surface sizing starches
   Didier Delnoye, Research Chemist, AVEBE PAPER, Netherlands

16:25 Summary from the chair and close of conference