NEW VS. OLD MILLS – ASSESSMENTS OF RECYCLED PAPER PRODUCTS BETWEEN US AND CHINA

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Highlights
• China applied 63% recycled fiber in all paper products. Recycled fiber can produce quality products.
• China mills kept positive on market demands and facility investments.
• Newsprint and paperboard containing recycled fiber from U.S. & China mills are investigated, strength and weakness seen on both sides.
• Recycled fiber applied in U.S. mills has better quality than those in China peers.
• U.S. is good on paper recycling, but weak on recycled fiber utilization.

Introduction
The Facts of Pulp and Paper between U.S. and China
• China becomes the largest paper/board manufacturer, both capacity and productivity are still increasing.
• U.S. paper/board capacity and productivity were keeping shrinking since late 1990s.
• Chinese has extremely low natural resources in terms of per capita.
• Paper recycling is the most successful sustainable program in U.S.
• U.S. has advantages in manufacturing experiences and techniques, and China has advantages in new facilities and processes.

Methodology
Samples Sources
• Newsprint paper (NP) and one-side-coated paperboard (PB) samples were coming from four mills in U.S. and China.

Results and Discussions
Fiber Analysis
• Recycled fibers (tinted) were found under 50X microscope

Highlights
• CPB has same tensile as UPB has. But it has high TEA and stretch regarding of the short fiber and high mineral pigment contents. Extra binders are integrated.
• UPB has very good performance in stiffness, which is very important to packaging.

Optical Properties and Lightfastness
• All newspapers have closed optical properties, e.g. brightness, gloss and CIE L*, a*
• CPB has lower opacity than UNP.
• No Fluorescence is found in all of samples.
• UNP has poor lightfastness, which indicates high lignin content.

Conclusion
• Recycled fiber is the main fiber source of China pulp and paper industry.
• China mills apply 100%, relative low grade recycled fiber produce quality products.
• U.S. has very good paper recycling program, but need to invest on recycled paper utilization.

Table 1: Paper Machine Average Ages, Years

Table 2: Domestically Consumed Paper/Board Recycled

Table 3: Domestic Recycled Paper for Export

Table 4: New PM Installations, 2000-2010

Table 5: Paper Machine Average Ages, Years

Table 6: Paperboard Average Ages, Years

Table 7: Paper Hot Extract pH

Table 8: Paper Hot Extract Conductivity (mho)

Table 9: Paper Hot Extract pH

Table 10: Paper Hot Extract Conductivity (mho)

Table 11: Ash Contents (wt %)

Table 12: Mechanical and Surface Properties

Table 13: Mechanical and Surface Properties