



A functional environmentally safe plastic, designed for the circular economy

Aquapak's Hydropol™ is a specially engineered material that can create a range of packaging products that are designed to eliminate plastic pollution at source

Repulping

Aquapak has successfully developed intermediate hydrolysis grades which demonstrate excellent adhesion to paper and paperboard with enhanced barrier properties. The Hydropol 33 series grades have been independently tested for repulpability (mimicking a standard paper recycling mill typically at a repulping temperature of 40°C) and have all passed the testing protocols.

Summary of findings:

- Hydropol 33100 (33100 represents the same chemistry as the 33 series) coated paper disintegrates with complete dispersion of fibres when repulped at 40°C and above (coating is almost non-detectable when repulped at 20°C) -meets criteria outlined in ISO 5263-1 *Laboratory Disintegration of chemical pulps*
- No evidence of Hydropol coating on mesh 8 with Bauer McNett fractionation-indicates complete polymer dissolution and fibre dispersion
- Solubilised Hydropol at high loading rates appears to have no effect on paper sheet properties in the case of recycled grey board furnish. For virgin copier paper furnish, no effects were noted for bulk, roughness (bottom), tear index, drainage and Schopper. Slight changes were noted for porosity, roughness (top), burst index, tensile index and freeness.
- Hydropol coated paper would repulp and release valuable fibre for paper and board manufacturing
- Hydropol coating would dissolve and would NOT form part of 'mill rejects stream' (Note: valuable fibre is entrained and lost with mill rejects (yield loss); rejects are costly to dispose for mills without waste to energy systems).
- Hydropol coating appears not to be substantive to fibre and unlikely to contribute either positively or negatively to paper sheet properties



- Hydropol coated paper could be recycled with Mixed Paper or OCC at packaging mills
- Segregated Hydropol coated paper e.g. coated white food board could be recycled at virgin-fibre based mills
- Effluent from Grey board+ Hydropol coated paper (20%) did not inhibit activated sludge bacterial respiration rates (i.e. no acute toxicity)
- Treatability of Hydropol by mill effluent treatment systems (DAF, AD and activated sludge).

Please see our white paper for the full test report (found at <https://www.aquapakpolymers.com/technology/>).

Aquapak is working in several projects with global brands, major converters and waste and recyclers to demonstrate the above recycling and recovery solutions at scale. Whilst many of these projects are commercially sensitive Aquapak will provide information and results where possible.

A handwritten signature in black ink, appearing to read "E. Smith".

Dr Elizabeth Smith
Technical Manager