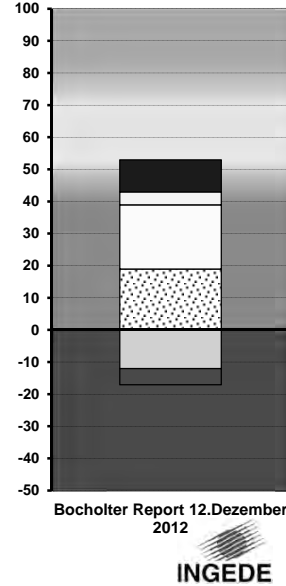


# Deinkability of Soy Inks



- “Mineral-oil free”



## INGEDE Activities in Digital Print Deinking

Axel Fischer  
International Association of the Deinking Industry  
(INGEDE)

INGEDE Symposium

February 12, 2014  
Munich



# Paper is Sustainable.



*(Source: Google)*



# Paper is Sustainable.



*(Source: felix festures)*

# Challenges for Deinkers

- **“Classic”**: Flexo, Adhesive Applications
- **Increasing**: Poor Quality ↔ **Sorting**
- **Increasing**: Poor Quality ↔ **Sourcing**
- **Increasing**: Poor Quality ↔ **Printing**

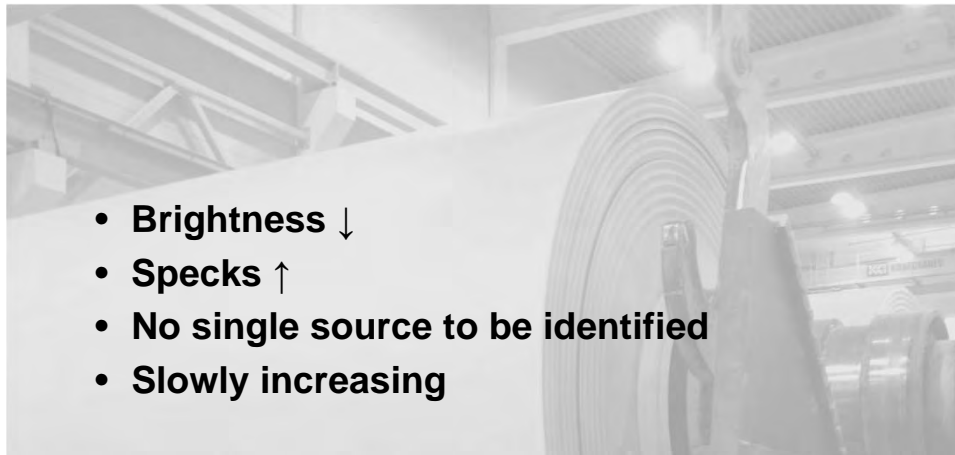


# Printing Challenges

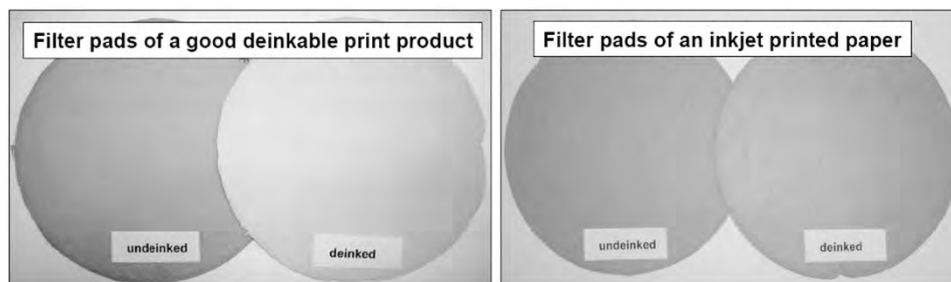
- **Increasing**: Issues with UV
- **Increasing**: Issues with Finishing
- **Increasing**: Issues with Plantseed Oils
- **Increasing**: Issues with Digital Printing



## „Consequence in the Mill?“



## Why today's inkjets create problems



Samples dissolved and turned into test sheets  
in the laboratory **before and after deinking**




# Deinking Politics

Project Proposals Data Sheet: 121 01

Title: DPDA & INGEDE Ink Study  
Short Title: DPDA & INGEDE Ink Study


- **No publishable results yet from cooperation with DPDA**
- **Problematic claims on DPDA website → discussion ...**



**DPDA**  
Digital Print De-inking Alliance

[Home](#) [Production Inkjet Printing](#) [Paper Recycling](#) [DPDA Research](#) [FAQ](#) [Resources](#) [Links](#) [Contact DPDA](#)

**1. Is paper printed by inkjet ink recyclable?**  
Yes. Papers printed with aqueous inkjet inks are recyclable in existing recycling systems. While many recycling systems are different, we have yet to find a commercial recycler unable to accept inkjet printed papers.




**2. Is paper printed using water-based inkjet ink deinkable?**  
Generally speaking, yes, however this depends very strongly on the ink-paper combination, the process used, and end use requirements. Some ink-paper combinations show good to excellent deinkability, while some combinations do not provide acceptable deinkability. Small quantities of problematic ink-paper combination inkjet prints mixed with conventional printed papers will likely not lead to a significant reduction of the quality of the recycled pulp under practical conditions in an industrial deinking plant.

**FAQ**

**1. Is paper printed by inkjet ink recyclable?**  
Yes. Papers printed with aqueous inkjet inks are recyclable in existing recycling systems. While many recycling systems are different, we have yet to find a commercial recycler unable to accept a small portion inkjet printed papers.

**2. What is De-inking and why is it a potential issue for inkjet printing?**  
De-inking is one step used in some recycling processes that incorporates a chemical flotation process to separate inks from paper fibers. The flotation step was designed primarily for offset inks which are removed in a surface froth and sent to landfill or



## WATER SOLUBLE INKJET INKS



**CAN STAIN  
RECYCLED PAPER FIBERS  
LIKE A RED SOCK  
TURNS YOUR UNDERWEAR PINK.**

**KEEP PAPER  
RECYCLABLE.**



YOUR SUPPLIERS FOR NEWSPRINT, OFFICE- AND HYGIENE PAPERS, RECYCLED.



## Deinking Politics

- Reality is not pigmented inks on specially coated paper, but high volume dyes on uncoated (price!)



# BILD, WELT printed digitally in Italy

- Reality is not pigmented inks on specially coated paper, but high volume dyes on uncoated (price!)

## Römische "Bild" ein Fall für den Digitaldruck

Axel Springer lässt erste Auflagen von "Bild" und "Die Welt" digital drucken. Die Blätter werden seit dem 1. Oktober von der digitalen Zeitungsdruckerei Newsprint Europe in Rom produziert.

**newsprint Europe** (dmnet) Zum 1. Oktober hat Newsprint Europe die Produktion von "Bild" in Rom aufgenommen. Vertrieben wird das Blatt über den italienischen Presse-Importeur Messinter, der wie Newsprint Europe zur IPS-Gruppe gehört. Die digital gedruckte Auflage komme in Süditalien in den Handel, teilt IPS mit. Die norditalienische "Bild" werde weiterhin im Offset in Bologna gedruckt.

Ebenfalls seit 1. Oktober druckt Newsprint Europe in Mailand die italienische Ausgabe der Tageszeitung "Die Welt". Die süditalienische Auflage wird bereits in Rom digital produziert. Die in Mailand gedruckten Exemplare kommen vorwiegend im Großraum Mailand in den Handel. Den Vertrieb steuert ebenfalls Messinter, auf dessen Gelände sich auch die Druckerei von Newsprint Europe befindet.

Newsprint Europe hat im März 2012 den Betrieb aufgenommen. Der



## Bleaching of Inkjet?

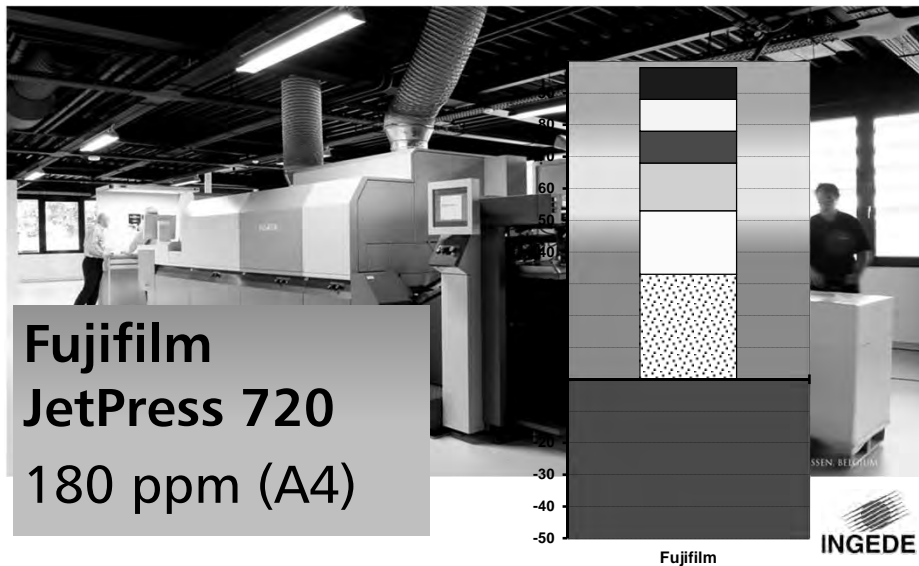
Bleichversuche an Farbstofftinten

	Wasserstoffperoxid (P)	Natriumdithionit (Y)	Formamidsulfinsäure (F)
Stoffkonzentration Faserstoff	10 %	5 %	10 %
Bleichmitteldosierung (100 % Wirksubstanz auf otro Faserstoff)	1,5 %	1 %	0,5 %
Anfangs pH Wert Faserstoffsuspension	10,5	Idealer pH-Wert liegt zwischen 5 und 6; auf ein Ansäuern des Faserstoffs wurde jedoch verzichtet, da Sekundärlaserstoffe durch hohen Calciumcarbonatgehalt eine große Pufferwirkung zeigen.	Formamidsulfinsäure wurde als aktivierte, alkalische Lösung verwendet (Verhältnis F zu NaOH = 2 : 1)
Reaktionstemperatur	80 °C	80 °C	80 °C
Reaktionszeit	60 min	30 min	30 min

Digitaldruck trifft Offset | Alexander Schürer

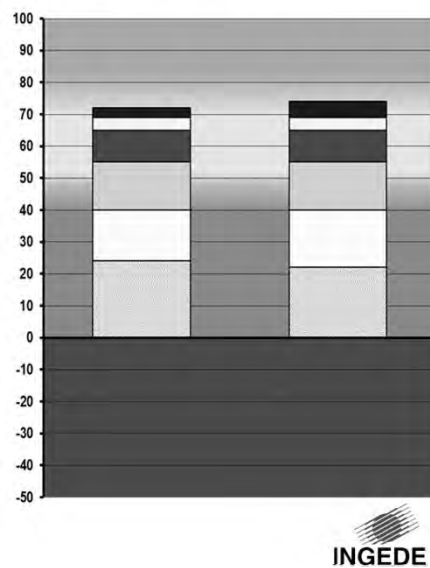


## Inkjet with Pre-treatment



## Water Based Resin Inks (SEPIAX)

- Experimental ink
- Printed on newsprint
- Promising experiments





# Water Based Resin Inks (SEPIAX)

- SEPIAX sold to Marabu
- Cooperation?



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## Green(washing) Labels

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Stock Market

Home / IT / TELECOM / Go green with HP Designjet L Series Latex Printers' water-based inkjet inks now available in Sri Lanka

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• Free delivery for your first order  
• Convenient delivery & repeat orders

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**Go green with HP Designjet L Series Latex Printers' water-based inkjet inks now available in Sri Lanka**

Published: 12:00 am March 7, 2013 | 1,098 views | No comments so far | E-mail to friend

HP recently announced that 'HP Latex Inks' are the first water-based inkjet inks to achieve the 'Sustainable Product Certification' from UL Environment, a business unit of Underwriters Laboratories (UL).

1  
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UL 2801

PRODUCT SPECIFIC REQUIREMENTS

- 6 Heavy Metals .....
- 7 Phthalates .....
- 8 Chemical Emissions – Volatile Org .....
- 9 Hazardous/Toxic Substances .....
- 10 Solvents .....
- 11 De-inking .....

JULY 18, 2012

STANDARD FOR SUSTAINABILITY FOR PRINTING INKS - UL 2801

11

11 De-inking

11.1 Printing inks shall not be formulated or manufactured such that they prevent recycling at end-of-life. For Graphic Arts grade papers, deinkable recyclability shall be demonstrated per the Assessment of Print Product Recyclability Deinkability Test, INGEDE Method 11p, and ERPC (European Recovered Paper Council) Scorecard, and/or demonstrated via large-scale deinking trials in Graphic Arts grade recycling mills.



# Green(washing) Labels

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**PCI**  
Paint & Coatings Industry

SEARCH TERM(S)

ADVANCED

Home » HP Achieves First UL Sustainability Certification for Water-based Inkjet Inks

BREAKING NEWS

## HP Achieves First UL Sustainability Certification for Water-based Inkjet Inks

October 1, 2012 No Comments

KEYWORDS certification / Inks / sustainability

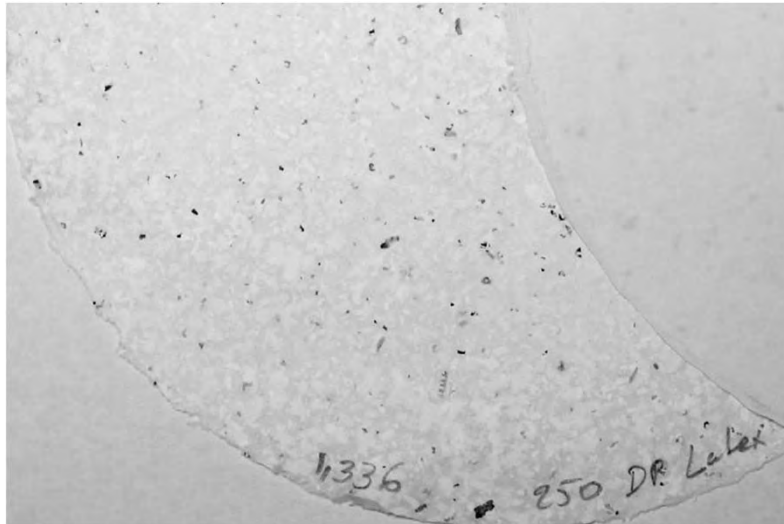
EMAIL / PRINT / REPRINTS / MORE

TEXT SIZE+

PALO ALTO, CA – HP Latex Inks and HP A50 Inkjet Web Press Inks are the first water-based inkjet inks to achieve the Sustainable Product Certification from UL Environment, a business unit of Underwriters Laboratories (UL).



# Green(washing) Labels



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## Green(washing) Labels II

Druckhaus Berlin-Mitte erhält Green-Brands-Zertifikat

Druckerei in Anwesenheit des Berliner Umweltsenators ausgezeichnet



21.10.2013



Die DBM Druckhaus Berlin-Mitte GmbH bestand als erste Druckerei in Deutschland das Prüfungsverfahren der internationalen "Green Brands"-Organisation als "nachhaltiges und ökologisches Unternehmen". Das Zertifikat erhielten auch bereits Unternehmen wie Werner & Mertz (für die Produkte der Marke "Frosch") oder Gerolsteiner Brunnen.

Die Übergabe des Zertifikats erfolgte am 15. Oktober 2013 im Rahmen der Eröffnungsfeier des neuen Standortes des Druckhauses in Anwesenheit des Berliner Umweltsenators Michael Müller. Die Urkunde wurde vom COO der Organisation, Norbert Lux, an den Umweltbeauftragten

in Geschäftsführer Martin Lind überreicht.

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# Deinking Politics: HP



Western Michigan University  
ScholarWorks at WMU

Master's Theses

Graduate College

8-1-2013

## Improved Deinkability of LEP (Liquid Electrophotography) Digital Prints

Zheng Wei

Western Michigan University, rachelweizheng@163.com



# Deinking Politics: HP

of inks have appeared every day. Thus, it is so difficult to find a uniform method of deinking those digital inks.

Under "green" manufacturing and environmental sustainability, deinking of digital print inks is an urgent problem that needs to be solved. INGEDE (International Association of the deinking Industry) has published 17 methods to establish a specification of deinking [1]. It works very well on traditional printing productions, but for digital printing it is barely satisfactory.



# Deinking Politics: HP

2

LEP (Liquid Electrophotography) is used by a typical series of HP (Hewlett-Packard) Indigo digital presses. The particle size of Indigo ink is very small, just 1-2 microns [2]. The small particle size provides high resolution, uniform gloss and very thin ink films. At the same time the particle size does not work in the flotation range, which is 10-100 micron [3].

Traditional deinking is under alkaline conditions. Following an alkaline deinking method, people found that, during the flotation process, no foam is generated in that step [4]. So trying some new chemicals is necessary for LEP deinking. Some of the chemicals are easy to choose, some of them are so complex to choose from. The details will be given later.



# Deinking Politics: HP

attracts ink in charged areas. The digital press is shown in Figure.11. The number of consumers of LEP is expected to increase from 1 Billion in 2000 to 100 Billion in 2016, according to HP [33]. Not just for LEP, the percentage of all digital printing has increased in areas, such as packaging, books and labels.



# Deinking Politics: HP

## WhatTheyThink?

Leading printing executives into the future

News Video

### HP Expands E Initiatives with

Friday, December 1

Print release from:

Deinkability and re commitment to en PALO ALTO, Calif. reduce the environ include:

- New trials th Indigo prints configurator
- Fully recycla
- Expansion of and
- Reduction of

With these develop leadership and con printing industry.

#### Deinkability of HP recent deinking trials

HP Indigo prints are fully recyclable and can be placed in normal recycling collection. Deinking, or removing ink from paper fibers, is one of the key steps in the paper recycling process for manufacturing recycled Graphic Arts papers.

Over the last few years, HP collaborated with a range of industry and academic deinking experts to gather lab-scale, pilot-scale and mill-scale deinking data that verify HP Indigo prints can be deinked in a typical graphic art paper deinking mill configuration.

In June 2013, Voith Paper, a leading supplier of deinking equipment,

## Deinkability of HP Indigo prints conclusively demonstrated by recent deinking trials

HP Indigo prints are fully recyclable and can be placed in normal recycling collection. Deinking, or removing ink from paper fibers, is one of the key steps in the paper recycling process for manufacturing recycled Graphic Arts papers.

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# Deinking Politics: HP



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### Latest News

HP hits eco targets in new de-inking trials



HP pumps up its eco cred, as recent trials conclusively demonstrate Indigo prints are fully recyclable and can be placed in normal recycling collection. HP backs up its environmental targets with fully recyclable packaging for ink cartridges and an expansion of its take-back program for consumables.

de-inking is a key stage of the paper recycling process and a critical step in reducing the HP Indigo carbon footprint



# Deinking Politics: HP

The screenshot shows a news article from the website 'Data Manager Online', which is described as 'il portale dell'ICT professionale'. The article is dated 05/12/2013 and is about HP's environmental sustainability initiatives. The main headline reads: '• I test più recenti dimostrano definitivamente la disinchiostrabilità delle stampe HP Indigo'. Below the headline is a sub-headline: 'HP ha annunciato l'introduzione di nuove misure che contribuiscono a ridurre l'impatto ambientale delle stampe digitali realizzate con HP Indigo. Tra le novità: • I test più recenti dimostrano definitivamente la disinchiostrabilità delle stampe HP Indigo nei normali impianti di riciclo delle carte per uso grafico'. There is also a small image of hands holding a globe.



# Deinking Politics: HP

As proof of HP's ongoing commitment to environmental sustainability and deinking research, in December 2013 HP announced that Voith--a leading supplier to the deinking industry--conducted two pilot-scale deinking trials with HP Indigo feed concentrations far exceeding what would be expected to occur in standard mill mixtures. Voith independently designed the trials

**The strength of these pilot trial results should enable typical GA deinking mills to accept incoming prints made on HP Indigo presses with confidence.**

typical GA deinking mills to accept incoming prints made on HP Indigo presses with confidence. Abstracts have been submitted to enable a thorough discussion of the trial results at the 2014 PTS-CTP Deinking Symposium in May, the industry's foremost event for publishing this type of research. (HP)



# Indigo: NIP29 Presentation

## Laboratory Scale Two-loop Deinking Trials

Wenjia Zhang<sup>1</sup>, Manoj Bhattacharyya<sup>1</sup>, Laurie S. Mittelstadt<sup>1</sup>, Hou T. Ng<sup>1</sup>, Nils P. Miller<sup>2</sup>, Marc Aronhime<sup>3</sup>  
<sup>1</sup>HP Labs, Hewlett-Packard Company, Palo Alto, California, USA  
<sup>2</sup>Hewlett-Packard Company, San Diego, California, USA  
<sup>3</sup>Hewlett-Packard Indigo Ltd., Rehovot, Israel



# Indigo: NIP29 Presentation

Table 1 shows the furnish configurations. The two-loop laboratory-scale deinking evaluations were performed using MOW furnish which was acquired from an industrial deinking mill. To this furnish, 5% and 20% L (average single-sided ink color test plot) was adopted.

Table 1. Sample configuration

Sample 1
100% MOW

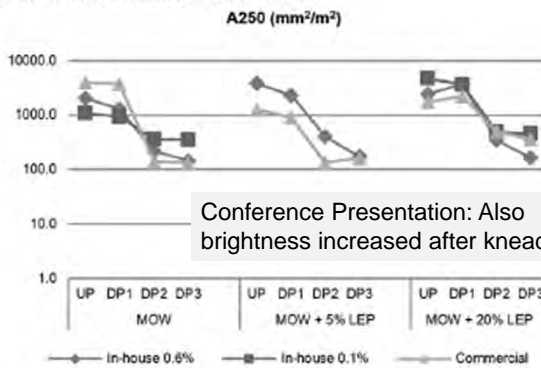


Figure 2. Evolution of dirt area  $A_{250}$  wrt deinking stages.





## Deinkable Liquid Toner

- Xeikon  
Trillium:  
Polyester  
(brittle)



## Dry Toner is good deinkable



  
INGEDE

# Deinking of Dry Toner



  
INGEDE

# Deinking Politics: Landa

## Digitaldruck

### Landa Falschmeldung: Bisher kein erfolgreiches Deinking mit Ingede

In der Ausgabe Oktober II/13 hatten wir in einem Nachtrag zur Weiterentwicklung von Benny Landas Nanografie geschrieben: „Landa sagte noch, daß man 75% der Pantone Töne erreichen könne und daß DeInking Tests ua. erfolgreich mit der Ingede durchgeführt worden seien.“

Tja, sagt uns der Sprecher der Ingede, Axel Fischer, umgehend, denkste!

Von gemeinsamen Tests sei ihm nichts bekannt, im Gegenteil:

„Wir haben wie viele andere Neugierige auch noch kein Exemplar eines mit Landas neuer Technik bedruckten Papiers in der Hand gehabt.“

  
INGEDE

# Deinking Politics: Ecofolio



Ecofolio est en charge de la collecte et du recyclage des papiers en France. Il met en oeuvre la Responsabilité Élargie du Producteur (REP) en incitant à recycler plus, en améliorant les dispositifs de tri et collecte et en encourageant à trier mieux tous les papiers.

Ecofolio is responsible for the collection and recycling of paper in France. It implements the Expanded Producer Responsibility (EPR) by encouraging more recycling, improving the collection and sorting devices and encouraging better to sort all the papers.



# Deinking Politics: Ecofolio



The news of your return in 2014

1. Entry into force of eco-scale  
From 1 January 2014, the scale differentiated into force. In practice, the scale eco-differentiated applies on the basis of contribution base, around the bonus and malus. Thus, the contribution is calculated based on the amount of paper that you make, adjusted according to the origin and its recyclability.

Application of eco-scale differential for reporting tonnage in 2014

For paper placed on the market in 2013, the eco-scale differential will be articulated around the following elements:

- Weight: a basic contribution of € 50 / t;
- Fiber: a bonus of 10% for paper mainly containing recycled fibers or a penalty of 5% for paper does not meet the criteria of the fiber of the European Eco-label;
- Recycling: a penalty of 5% per element disturbing recycling.



## Outlook: Deinkability of digital prints

- **Dry toners** continue to be good deinkable, even better than offset
- **Liquid toners** by HP proven to be a problem – better deinkable alternative from Xeikon
- **Solid ink** is good deinkable
- **Inkjet** is still a serious problem (water soluble) but more deinkable samples now.



Thank you!