Guidelines for paper mills for the control of the content of unusable materials in recovered paper

N.B. The procedure as described below is the same for bales or bulk volumes.

1) Definition of Unusable Materials

- The definition for unusable materials is the one stated in EN 643, the European List of Standard Grades of Recovered Paper and Board;
- Non-paper components and paper and board detrimental to production are the elements to be controlled.

2) Grades Covered

The procedure referred to below in 3.CONTROL PROCEDURE is recommended for the following EN 643 grades:
- Deinking recovered paper grades: 1.06, 1.09, 1.11, 2.01;
- Ordinary and Kraft recovered paper grades: 1.01, 1.02, 1.03, 1.04, 1.05 and the entire group 4 of the EN 643 Standard. See last page for further details.

3) Control Procedure (see scheme)

The aim of this procedure is to evaluate the proportion of unusable materials in recovered paper delivered at the paper mills.

- Testing should be done systematically (or for all loads). As an example:
  - Every day a number of loads should be examined
  - Each month all the suppliers should have several loads examined
- Testing should be done at random (in case it is not done to all lorries). Loads to be controlled can be chosen at random every day or can be predefined but without previous information. For example: "loads number 5, 10 and 15 of each working day are to be tested";
- The same number of bales, chosen at random, should be taken from each load.

First step: visual inspection (obligatory minimum)

This procedure defines the minimum control to be done by the mills.

- It consists of an evaluation of the unusable material content by visual inspection. The result of the visual inspection might lead without further inspection to acceptance or refusal. Some further inspection might be needed (see second step) and lead to conditional acceptance;
- If a significant presence of unusable materials is visually detected in a load, and if this load has not been refused, the inspection by measurement of the unusable materials should be done, even if it was not planned;
- The visual measurement should be supported with statistical methods. This method should be previously agreed upon between suppliers and mills in order to be effective.

Second step: advanced visual inspection and/or gravimetric method

This procedure defines an additional examination (advanced visual inspection and/or gravimetric method) to be done by the mills further to the visual inspection, which could lead to conditional acceptance.

The advanced visual inspection

- Regarding Deinking recovered paper grades, the advanced visual inspection has been detailed by INGEDE1 (methods 7 & 8):
  - For 1.11 (INGEDE method 7 for loose material):
    - This method describes the recommendations for an advanced entry inspection and the whole procedure of entry inspection with several quality parameters to be checked: general condition at the time of delivery, odour, mould and rotting, moisture, delivery, age as well as recovered paper composition. It describes also how to check the visual assessment results and to make a good calibration;

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1 INGEDE = the International Research Association for Deinking Technology (www.ingede.com)
For 1.06, 1.09, 1.11 and 2.01 (INGEDE method 8 for bales):
This method describes how to prepare the load for the entry inspection and gives recommendations on the sampling from the bale. The following quality parameters are to be analysed: general condition at the time of delivery, odour, mould and rotting, moisture, age and composition of delivery (proportion of various wanted and unusable materials).

• Regarding **Ordinary and Kraft recovered paper grades**: Some advanced visual inspection methods have been developed for ordinary and kraft recovered paper grades in bales in order to measure unusable materials without opening the bales.

  **The gravimetric method/sample weighing**

  • It consists in weighing the quantity of unusable materials present in a sample;
  • There is no standardised method for the time being. It should be recommended to always take the same representative sample from the load. A core-drilling device can be used to get a good sample;
  • A quantitative measurement of the unusable material content is made from the sample taken. The unusable materials obtained have then to be weighed and its proportion calculated air-dry to air-dry basis.

4) Effects of the Inspections Results

• The EN 643 Standard established that "recovered paper and board should in principle be supplied free of unusable materials". It also established that a certain proportion of unusable materials could be agreed on between purchaser and supplier, but only for "paper and board detrimental to production";

• Each mill must establish standard and maximum levels of unusable material content. Exceeding the maximum level would result in refusal of the load:
  - Regarding **Deinking recovered paper grades**, for instance 1.5% is considered as the maximum level of unusable materials to be reached over time for 1.11;
  - Regarding **Ordinary and Kraft recovered paper grades**, unusable materials should not exceed the standard and generally accepted level of 1% of the load, but a higher and maximum level can be established by the mills.

• If the evaluation detects that the content of unusable materials of a load is over the maximum level, then the load is refused;

• If the evaluation detects that the content of unusable materials of a load is under the maximum level, then the load is accepted;

• If the advanced visual inspection or the gravimetric/sample weighing method detects that the unusable material content is under the maximum level but over the standard, then the load can be accepted depending on the commercial agreements between the 2 parties. In this case, the measurement result should be in principle, completely applied as a reduction of the weight of the load and the transport cost for ex-work prices;

• Cost inherent to the taking back of the products, or if necessary their elimination, as well as the transport cost, should be the supplier’s responsibility.

5) Information to Suppliers

• If a load is refused because of the too high unusable material content, the decision should be communicated directly to the supplier;

• If the content of unusable materials is under the maximum level but over the standard level, the result of the control should be communicated directly to the supplier to discuss a conditional acceptance.

• Results should be communicated to suppliers on a regular basis.

6) Database

• Unusable materials content of the loads is one of the main criteria when mills evaluate their suppliers;

• Inspection results must be documented with the information about the load, the grade and the supplier. The result must be filed in order to help the evaluation of the supplier.
Recovered Paper - Unusable material content control procedure scheme

- Entry of the load
- Visual inspection
- Measurement
- No more inspection

- Advanced visual inspection*
- Gravimetric method/sample weighing

- Unusable material content is under maximum tolerance and under standard: Acceptance
- Unusable material content is under maximum tolerance but over standard: Refusal
- Unusable material content is over maximum tolerance: Acceptance

- Communication to supplier on a regular basis
- Immediate communication to supplier

*Methods 7 and 8 of INGEDE for Deinking recovered paper grades.
Description of the grades covered as outlined in the EN 643 Standard:

Deinking recovered paper grades:

1.06 **Unsold magazines**
Unsold magazines, with or without glue.
1.06.01 **Unsold magazines without glue**
Unsold magazines without glue.

1.09 **Mixed newspapers and magazines 2**
A mixture of newspapers and magazines, containing a minimum of 60% of newspapers, with or without glue.

1.11 **Sorted graphic paper for deinking**
Sorted graphic paper from households, newspapers and magazines, each at a minimum of 40%.
The percentage of non-deinkable paper and board should be reduced over time to a maximum level of 1.5%. The actual percentage is to be negotiated between buyer and seller.

2.01 **Newspapers**
Newspapers, containing a maximum of 5% of newspapers or advertisements coloured in the mass.

Ordinary and Kraft recovered paper grades:

1.01 **Mixed paper and board, unsorted, but unusable materials removed**
A mixture of various grades of paper and board, without restriction on short fibre content.

1.02 **Mixed papers and boards (sorted)**
A mixture of various qualities of paper and board, containing a maximum of 40% of newspapers and magazines.

1.03 **Grey board**
Printed and unprinted white lined and unlined grey board or mixed board, free from corrugated material.

1.04 **Supermarket corrugated paper and board**
Used paper and board packaging, containing a minimum of 70% of corrugated board, the rest being solid board and wrapping papers.

1.05 **Old corrugated containers**
Used boxes and sheets of corrugated board of various qualities.

4.01 **New shavings of corrugated board**
Shavings of corrugated boards, with liners of kraft or testliner.

4.01.01 **Unused corrugated kraft**
Unused boxes, sheets and shavings of corrugated board, with kraft liners only, the fluting made from chemical or thermo-chemical pulp.

4.01.02 **Unused corrugated material**
Unused boxes, sheets and shavings of corrugated board, with liners of kraft or testliner.

**Used corrugated kraft 1**
Used boxes of corrugated board, with kraft liners only, the fluting made from chemical or thermo-chemical pulp.

**Used corrugated kraft 2**
Used boxes of corrugated board, with liners of kraft or testliners but having at least one liner made of kraft.

**Used kraft sacks**
Clean used kraft sacks. Wet-strength and non wet-strength.

4.04.01 **Used kraft sacks with polycoated papers**
Clean used kraft sacks. Wet-strength and non wet-strength. May include polycoated papers.

**Unused kraft sacks**
Unused kraft sacks. Wet-strength and non wet-strength.

4.05.01 **Unused kraft sacks with polycoated papers**
Unused kraft sacks. Wet-strength and non wet-strength, may include polycoated papers.

**Used kraft**
Used kraft paper and board of a natural or white shade.

**New kraft**
Shavings and other new kraft paper and board of a natural shade.

**New carrier kraft**
New carrier kraft, may include wet-strength paper.