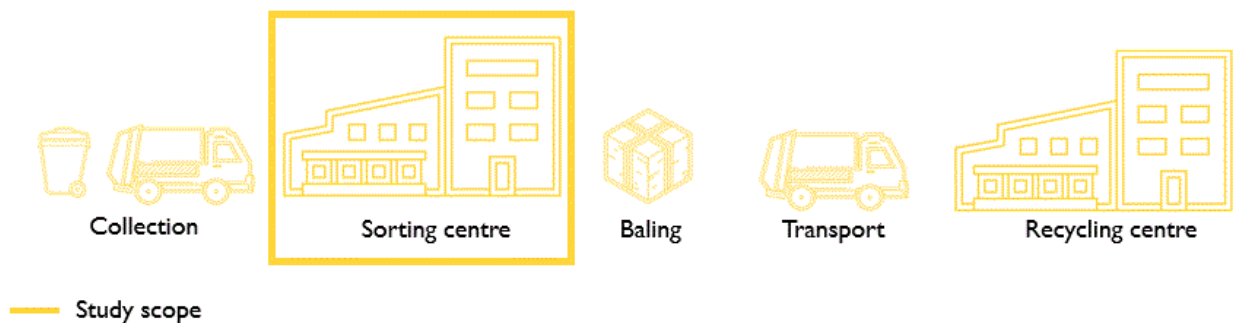


GENERAL NOTICE I

Impact of barriers or metallised decorations obtained by metallised lamination or by adding an aluminium layer on the sorting of paper/cardboard packaging

SUMMARY

This general notice aims to assess the behaviour in sorting centres of paper/cardboard packaging featuring a barrier or metallised surface decoration obtained either by lamination of metallised plastic or by adding an aluminium layer.



In sorting centres, paper/cardboard packaging (consisting of more than 50% paper/cardboard) is intended to be directed to the recycling stream for non-laminated paper/cardboard or for laminated paper/cardboard. The presence of a barrier or metallised surface decoration obtained by lamination of metallised plastic or by adding an aluminium layer to this packaging may disrupt its discharging to these recycling streams. COCET checked the impact of these metallised decorations on the metal sorting stages and during the reading by optical sorting machine.

Paper/cardboard packaging with a barrier or metallised decoration obtained by lamination of metallised plastic or by adding an aluminium layer is not captured by the Eddy current machine during the separation of non-magnetic metals.

Furthermore, the optical reading is disrupted, and the packaging is not properly detected. The discharge of this packaging by optical sorting is unacceptable.

To ensure that paper/cardboard packaging is directed to the target stream, COCET recommends avoiding barriers or decorations obtained by lamination of metallised plastic or by adding an aluminium layer.

This notice pertains solely to the behaviour of the packaging in sorting centres and provides no indication of the impact of the issue studied during the recycling of this packaging in its target stream.

I Context

This notice seeks to assess the impact on sorting of a barrier or metallised decoration on the surface of household paper/cardboard packaging. It concerns the following techniques:

- Lamination or bonding of an aluminium film on paper/cardboard
- Lamination or bonding of a metallised plastic film by vacuum sputtering
- Vacuum sputtering of aluminium directly onto paper/cardboard

These features meet the need to functionalise paper/cardboard by providing barrier properties and/or a decorative "metallic effect" on the surface. When used as a barrier, the metallised lamination may either be visible on the surface or not visible if the layer is covered by printing.

Sectors concerned with this type of metallised packaging include, for example, cosmetics, smoked salmon, chocolate, deli products, etc.

CO CET carried out tests to assess the impact of the presence of this metallised lamination on the surface of paper/cardboard on the ability of optical sorting machines to properly detect the packaging.

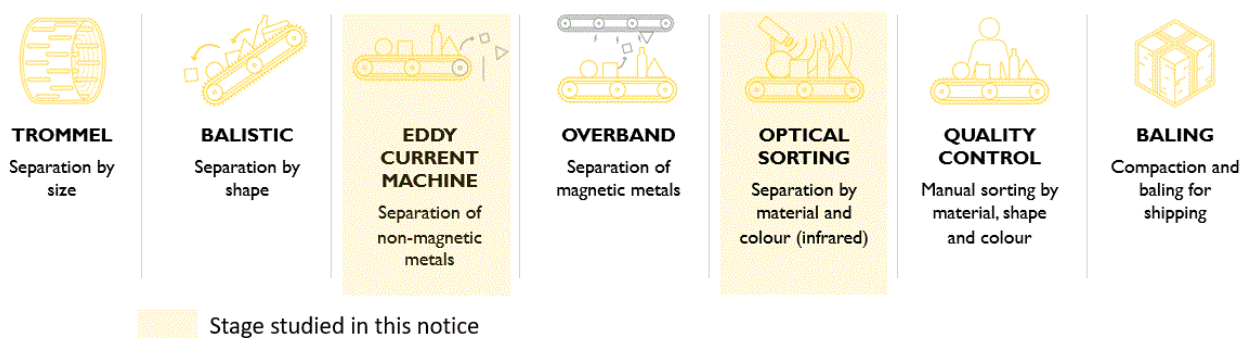
This notice does not concern:

- Paper/cardboard packaging with a metallised decoration obtained using other technologies (hot or cold stamping, transfer, metallic inks, etc.)
- Paper/cardboard packaging featuring a metallised barrier obtained by vacuum sputtering or lamination sandwiched between a layer of paper/cardboard and another layer (paper/cardboard or plastic), such as cartons or multilayer flexible packaging, for example.

2 Scope of the notice

This notice concerns the discharge of paper/cardboard packaging with a barrier or metallised surface decoration in sorting centres. It does not assess its suitability for recycling in the non-laminated or laminated paper/cardboard streams.

The identified risks of disruption for packaging with this type of barrier or metallised decoration are the separation of non-magnetic metals (by Eddy current machine) and material separation (by optical sorting machine). The study of how this packaging behaves in sorting centres therefore focused on these two stages.



3 Tests performed

Sorting tests were performed to understand how the presence of a barrier or metallised decoration obtained by lamination of metallised plastic or by adding an aluminium layer to plastic/cardboard packaging would affect its discharge during the sorting process.

A barrier or metallised decoration obtained by lamination of metallised plastic or by adding an aluminium layer covers the entire surface of the side in question. The metallic effect may be visible across the entire surface, or not, if the side is overprinted.

3.1 Separation of non-magnetic metals

Tests performed in the sorting centre helped to assess the capture of this packaging by Eddy current machine (ECM). ECMs are present in two locations in the sorting centre: one at the level of small components ("small items") and one at the level of medium-sized packaging items. These ECMs are adjusted to suit the specific fractions they sort. Both types of machines were tested.

- If the packaging is directed towards the "small items", the amount of aluminium only allows limited capture into the small aluminium items stream.
- If the packaging follows the sorting process towards the medium-sized fraction, the amount of aluminium is insufficient to direct it towards the large aluminium items stream.

A barrier or metallised decoration obtained by lamination of metallised plastic or by adding an aluminium layer does not result in the packaging being discharged to the aluminium recycling stream.

3.2 Optical sorting

Static optical sorting tests were conducted at optical sorting machine manufacturers to assess the impact of these barriers and decorations on the detection and discharge of the packaging at this stage.

The surface covered by aluminised lamination or by the aluminium layer interferes with optical reading:








- On the one hand, the reflection generated by the metallisation, when visible, deflects the infrared beam emitted by the optical sorting machine.
- On the other hand, the metallised layer acts as a physical barrier, preventing the infrared beam from reaching the underlying paper/cardboard layer.

A barrier or metallised decoration obtained by lamination of metallised plastic or by adding an aluminium layer prevents the reading of the side(s) covered by these barriers or decorations. The discharge of this packaging towards its target recycling stream is unacceptable.

Assessing the behaviour of the packaging tested during optical sorting (OS)

Parameter studied	Discharge rate during OS	COCET's assessment
A barrier or metallised decoration obtained by lamination of metallised plastic or by adding an aluminium layer on paper/cardboard packaging	Lower than 80%	Unacceptable

Impact during sorting stages

Sorting stage	Impact	Description
 TROMMEL	∅	
 BASLISTIC	∅	
 EDDY CURRENT	✓	Limited capture of small items by the ECM ¹ . No capture of large aluminium items by the ECM.
 OVERBAND	∅	
 OPTICAL SORTING	⚠	The metallisation disrupts optical reading: the packaging is not properly detected. The discharge of the packaging towards its respective recycling stream is unacceptable.
 QUALITY CONTROL	∅	
 BALING	∅	

 No impact
  Caution
  Not tested or not concerned

CONCLUSION

Given the current state of equipment and sorting techniques available in France, a barrier or metallised decoration obtained by lamination of metallised plastic or by adding an aluminium layer **prevents** the reading of the side(s) covered by these barriers or decorations. The discharge of this paper/cardboard packaging towards its respective recycling stream **is unacceptable**.

CO CET may review this notice considering developments in sorting technologies, markets or quality requirements for recycled material.

¹ Eddy current machine