TRACEABILITY APPLIED TO
THE PAPER AND BOARD FOOD PACKAGING CHAIN
(Practical Guidelines)
INTRODUCTION

This document gives guidelines for product traceability within the paper and board food packaging chain\(^1\).

I. SCOPE

These guidelines cover paper and board and their converted products from the paper mill downstream to the packer-filler stage. In accordance with EU Regulation 1935/2004, manufacturers of materials, articles, substances and products covered by this Regulation are required to implement traceability and product recall measures.

Thus, these guidelines are principally to demonstrate traceability and recall down the paper and board supply chain. Papermaking raw materials and certain additives used in subsequent processes are not materials and articles within the meaning of this Regulation. However, it may be necessary for the authorities or the manufacturer concerned to establish links to such materials to determine commercial or legal liability and details are included to facilitate how this might work in practice.

These guidelines do not cover tissue products (see part 7).

II. GENERAL INFORMATION

II.1. Food Uses of Paper and Board and its Converted Products

Although sold as “intended to come into contact with food” the physical properties of paper and board, as it leaves the paper mill, prevent any application as a food packaging material until it has been converted in some way. Examples of the food applications for converted products include bags for confectionery, pizza boxes, bread wrap, chocolate interleaving, frozen food containers, vegetable boxes, sugar bags, beverage cartons and food service boards.

II.2 Overview of the Flow Line

The processing chain for paper and board food packaging is extremely complex. There are literally thousands of different ways in which paper may be processed before use. Examples of these processes include: slitting reels to smaller reels, cutting to sheets, calendaring, laminating to metal and plastic, corrugating operations, die cutting, printing, varnishing, gluing, box and carton making, packaging and labelling. As well as the processes themselves, there is a considerable overlap of the operations performed in different types of converting plants. For instance, both paper mills and separate companies will perform coating operations and some corrugating plants will produce only unprinted flat blanks whilst others will produce complete boxes and trays.

It is, thus, impossible to produce guidelines covering all aspects of the production and converting process. These guidelines explain best practice and the main principles are shown in Diagram 1. These principles will apply to any specific process, irrespective of the particular material flow and the type of plant in which it is performed.

\(^1\) Information provided, on behalf of their respective members, by the Confederation of European Paper Industries (CEPI) and The International Confederation of Paper and Board Converters in Europe (CITPA).
II.3. **Examples of Packaging Processes and Products**

To illustrate the details of traceability, four typical packaging products have been selected (cartons for liquid food, corrugated boxes, paper for hot filtration and folding box board cartons) and the operation of traceability during their manufacture is shown in Diagrams 3 to 6. In addition, equivalent information for the papermaking process (which precedes all of the above operations) is shown in Diagram 2. A Glossary of Terms is given in Table 1.

II.4. **Special Consideration of Bulk Raw Materials**

A feature of many operations, in the paper and board packaging chain, is the use of bulk additives such as sizing agents during paper and board manufacture, starch during corrugated board production and clay for coating operations. The principles of traceability for these materials will differ from those applicable during batch operations. In both cases, the manufacturer and batch number will be known from identifications and accompanying documentation. Batches of bulk materials will be used, on a continuous basis, from silos or other storage devices and the link from these to the treated or finished product may be less precise. However, because all batch process additions are recoded in a timed log, it is possible to relate the times at which the batch of additive concerned was introduced to the process and was thus at a significant concentration. From the timed log of the process concerned, these data can be related to the identification of the paper and board products. The achievement of higher precision is not technologically feasible in a continuous, industrial process.

III. **Recall**

One of the main purposes of the traceability requirements within Regulation 1935/2004 is to enable recall of defective product. Throughout all the stages of all the processes described in these guidelines, it can be seen that extensive documentation is in place both within operations and between organisations in the packaging chain. In particular, there is a clause in the Regulation which states:

Business operators shall have in place systems and procedures to allow identification of the businesses from which and to which materials or articles and, where appropriate, substances or products covered by this Regulation and its implementing measures used in their manufacture are supplied.

This requirement is fulfilled from the paper mill downstream to the final packaging product either in the form of identification on the product itself or contained in the accompanying documentation.

It can be seen, in the diagrams, that large reels produced in a paper mill are subdivided many times to produce the final paper and board packaging products. Because of extensive record keeping within all the processes of the paper packaging chain, both upstream and downstream product traceability and the identification of the source of any problem will be assured. The batch numbers and suppliers of all starting materials are recorded and internal records relate these to the packaging product itself. Thus, using downstream traceability, the identification of an affected product or starting material sent to other locations and customers is possible. This will define rapidly the full extent of any affected material in the market place or still in production thus enabling full recall of any defective product.
<table>
<thead>
<tr>
<th>Glossary of Terms</th>
<th>Definition</th>
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<tbody>
<tr>
<td><strong>blank</strong></td>
<td>a shaped, flat piece of paper or board for use in a subsequent process e.g. folding/gluing into a frozen food box or milk carton</td>
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<tr>
<td><strong>calendaring</strong></td>
<td>passing a web of paper between metal or fibre rollers in order to produce a more smooth or glossy appearance</td>
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<tr>
<td><strong>coating</strong></td>
<td>a process of applying to the surface of paper or board one or more layers of a liquid suspension of pigment or other material in a fluid form. The purpose is to improve printability or other properties such as grease or water resistance</td>
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<td><strong>converting</strong></td>
<td>any operation, applied after the normal paper or board manufacturing process, which changes the physical shape or appearance of paper and board e.g. slitting, cutting into sheets, bag and box manufacture, printing, etc.</td>
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<tr>
<td><strong>creasing</strong></td>
<td>the process of making an indentation in board materials in order to produce a line along which it may be folded. This enables the folding of a blank to produce a shaped package</td>
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<tr>
<td><strong>die cutting</strong></td>
<td>cutting or stamping a sheet or web of paper or board with a shaped knife to produce a special shape or blank</td>
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<td><strong>extruder</strong></td>
<td>equipment used to produce a layer of plastic prior to laminating</td>
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<tr>
<td><strong>laminating</strong></td>
<td>the fixing of a ready-formed layer of plastic, paper, metal, etc. to paper or board normally using an adhesive</td>
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<tr>
<td><strong>palletising</strong></td>
<td>placing paper and board packaging products on to a pallet and then wrapping and labelling the whole unit</td>
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<tr>
<td><strong>sizing agent</strong></td>
<td>a liquid material applied to paper or board and used to improve its resistance to the penetration and spread of aqueous liquids, for example printing inks</td>
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<tr>
<td><strong>slitting</strong></td>
<td>the passing of a moving web of paper or board from a reel though knives resulting in the production of a number of reels of smaller width and/or diameter</td>
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<tr>
<td><strong>web</strong></td>
<td>a continuous length of paper or board travelling along a paper machine or through converting equipment</td>
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Diagram 1

Packaging using Paper & Board - Generic Process Flow

<table>
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<th>Details of Traceability Tools</th>
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<td>1</td>
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<td>2</td>
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<td>7</td>
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Diagram 2

Paper & Board Manufacture - Flow Diagram

- mineral fillers
- Fibrous Raw Materials
- chemicals
- documentation
- product recall enabled from this point forward. Before here, no substances are "materials & articles".
- written recording of process
- quality control tests
- retained samples
- individual reels labelled
- written recording of process
- individual reels or packs of sheets labelled

Details of Traceability Tools

1. Woodpulp comes either from adjacent pulp mill or from pulp agent/importer. Recovered paper is purchased according to industry guidelines for "Responsible Sourcing" which uses the "approved supplier" principle and covers, amongst other items, sorting, hygiene, transport, inspections and control of prohibited grades.

2. All batches of auxiliary raw materials are labelled with supplier name and batch number and accompanied by documentation stating, additionally, paper manufacturer's order number and date of supply.

3. A detailed, timed log is kept which records all relevant production activities and relates time of production to batch numbers of raw materials and final product reel numbers.

4. Quality control tests are performed. Records will show time of production as well as testing results.

5. Samples are taken from each paper machine reel and retained for a period appropriate to the packaging lifecycle. Examination of samples will enable identification and isolation of defective material and that produced immediately before and after it.

6. All paper machine reels are sequentially numbered, thus linking raw materials to customer orders.

7. Paper machine reels are slit into smaller reels. A timed log is kept which records machine reel number and defines from where, inside it, the slit reel originates and allocates a unique number to the latter.

8. All reels are marked and/or labelled with a unique number and supplier name. They may also carry order numbers and batch numbers. Bar code systems are normally used also. Documents accompany the order giving numbers and weights and/or lengths of reels, supplier and customer name.
Diagram 3
Production of Carton Packages for Liquid Food

1. Paper & board manufacture → Printing inks
   - Documentation with delivery

2. Extrusion process → Plastic pellets
   - Individual reels labelled
   - Written recording of process

3. Plastic film → Extradur
   - Individual reels labelled
   - Written recording of laminator process

4. Aluminium foil
   - Customer reels slit from large reel
   - Documentation with delivery

5. Coating or laminating
   - Quality control tests
   - Retained samples
   - Written recording of process

6. Printing (optional)
   - Individual reels labelled
   - Written recording of process

7. Packing/palletising
   - Individual pallets labelled
   - All packages on a pallet are destined for one customer only - no mixing

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### Details of Traceability Tools

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>All raw materials are identified with manufacturer's name and, respectively, paper and aluminium reel numbers, ink and plastic pellet batch numbers.</td>
</tr>
<tr>
<td>2</td>
<td>A detailed, timed, running log is kept which records all relevant production activities and relates identification of incoming reels and printing ink batches to printed reels.</td>
</tr>
<tr>
<td>3</td>
<td>A timed, written log is kept to relate coated/laminated reels to incoming board reel numbers, plastic laminate and aluminium batches. The type and supplier of raw materials, within one order, are the same.</td>
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<tr>
<td>4</td>
<td>Supplier &amp; batch number of plastic pellets for each layer recorded in timed log to relate to laminator activity.</td>
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<tr>
<td>5</td>
<td>Quality control tests are performed and the samples and results are retained for a period appropriate to the packaging life-cycle. Records will show the time of production as well as testing results.</td>
</tr>
<tr>
<td>6</td>
<td>A timed, written log of slitting operations is kept which connects incoming (large) and outgoing (small) reels. Advanced labelling system covers unique output reel number, order no., date, supplier and customer.</td>
</tr>
<tr>
<td>7</td>
<td>All pallets carry a label with a unique number, customer order no., supplier, reel numbers, date, etc.</td>
</tr>
</tbody>
</table>
Details of Traceability Tools

1. All paper reels are marked with manufacturer's name and reel number.
2. Starch is delivered by tanker. Supplier, batch number and delivery date are recorded. See text for explanation of traceability where bulk raw materials are used. More details are given also in the reference below *.
3. Inks are delivered in approx. 200 litre drums marked with supplier and batch number. Batch numbers stay with drums and are recorded every time the drums are used for a particular order.
4. Glues are normally delivered by intermediate bulk container. Supplier, batch number and delivery date are recorded.
5. Tiered log is kept which relates outgoing customer orders (job numbers) to all production variables and incoming raw material batches. Records are kept according to the lifetime of the product.
6. Pallet is labelled with details of product, job number, customer and date of manufacturer. Information is duplicated on an accompanying customer delivery note.

* The information provided on this page is also available as descriptive text on the website www.tetco.org which additionally provides links to supporting documents.
Diagram 5

**Production of Paper for Hot Filtration (e.g. tea bags)**

1. Individual mill reels labelled
2. Retained samples
3. Process record retained
4. Process record retained
5. Individual pallets labelled
6. Customer (tea bag filler)

**Details of Traceability Tools**

1. All reels individually identified according to normal papermaking traceability standards.
2. Samples from all incoming reels taken and retained for a period appropriate to the packaging lifetime.
3. Incoming reels are slit into coils. A slit log is kept, often computer-generated, which records incoming reel number and defines from where, inside it, the final coil originates and allocates a unique number to the latter. All operations in accordance with pre-defined customer configuration and packaging specification.
4. Record made which establishes link between factory order, customer order, incoming reel number and the outgoing cartons or drums containing the coils.
5. Customer documents generated at this stage showing customer order, factory order, coil information and transportation details. Checks performed to correlate documentation to goods on vehicle.
6. Pallet is labelled with details of product, factory order, customer and date of manufacturer. Information is duplicated on the accompanying customer delivery note.
Industrial Guidelines on Traceability of Materials and Articles for Food Contact –

Details of Traceability Tools

1. All paper reels are marked with manufacturer's name and reel number. Sheets are marked on the labels.

2. Ink batch numbers stay with drums and are recorded every time the drums are used for a particular order. Supplier, batch number and delivery date of glues are recorded.

3. Job numbers are the central reference for the converting process and are linked, at all operations, to incoming and outgoing boards, date of processing, batch of ink and glue, operator shifts, etc. Records and samples are retained for a period appropriate to the packaging life cycle.

4. Transporter and customer are provided with documentation which gives details of manufacturer, job numbers, customer order number and pallet numbers thus completing the traceability link into and out of the converting operation. Checks performed to correlate documentation to goods on transport vehicle.

Conversion of folding box board (e.g. cartons for French Fries or frozen food)