RESPONSE PLAN

Subject: "Packaging – It’s a wrap !"

AMERICAN CHEESE SOCIETY

Montreal - August 2011

Research & Development Department
The french cheese market

- French production: 1.8 million tons produced per year => corresponding to 70 million m² of packaging
- 1000 varieties of cheese available, including 90% made from cow’s milk
- 1/3 of production is exported
- A French person eats an average of 23 kg of cheese per year (2nd in the world)
- 90% of cheeses are sold on a self-service basis and only 4% in dairies

Brodart Company Overview

- French family company producing 60% of its turnover for the packaging of cheese with x% export (+ liste des pays)
- The majority of these packaging concerns:
  - Soft cheeses with bloomy rind, mixed or washed (= pâtes molles croutes fleuries – mixtes ou lavées)
  - Uncooked pressed cheese with smear crust (= pâtes pressées non cuites croute morgée)
Part 1: role of the packaging

- The materials and their processing
  - Raw materials used
  - Means of processing (printing / solvent laminating / adhesion with strips of adhesive / paraffin-coating and wax laminating)

- Influence of variable parameters
  - Thicknesses of the kraft papers, type of kraft and non-woven
  - Paraffin or hot-melt levels
  - Microperforation
Part 2: means of processing and means of controlling them

- Printing
  - Rotogravure
  - Flexography

- Laminating and microperforation
  - Laminating in solvent phase
  - Adhesion with strips of adhesive
  - Microperforation densities

- Paraffin-coating, hotmelt coating and wax laminating
**Part 3: different packaging solutions depending on cheese types**

- Soft cheeses
  - Bloomy rind
  - Washed rind

- Uncooked pressed cheese
  - Bloomy rind
  - Washed rind
  - Rubbed rind

- Cooked pressed cheese, natural rind

- Wax-coated pressed cheeses
Details of the Plan

Part 4: currently applicable regulations

- Suitability for direct contact with foodstuffs in France and in Canada (or the USA)
  - Media
  - Inks
  - Paraffin

- Directive 94-62
  - Packaging designer: technical file and critical points
  - Prevention by reduction at the source
  - Possible enhancements
  - Heavy metals and harmful substances
**Part 5: eco-design approach**

- Functional schedule of conditions
  - Dimensional aspect (packer) and weight (designer)
  - Cheese characteristics (specific case of the shelf life between France and Canada)
  - Marketing requirement
  - Customer's technological limits (method of delivery - need for sealing – type of final packaging…)
  - Envisaged potential

- Drafting of the packaging response
  - Consideration of the customer responses
  - Supplier's technological limits
  - Permanence of the proposed solution
DETAILS OF THE PLAN

Part 6: validation procedure

- Full-size trials
- Waste
- Tasting
- Optimisation of the solution
Bio packaging solutions

Possible alternatives at Brodart: complexes with strips of adhesive

- 20µ transparent OPP or microperforated CELLO 335 WS
- Rotogravure or flexographic solvent inks
- Hot-melt or water-based strips of adhesive
- Opaque or non-opaque bleached kraft paper
- Paraffin or hot-melt coating

- 23µ unperforated Natureflex or 20µ transparent PLA
- Rotogravure or flexographic BIO solvent inks
- Water-based strips of adhesive
- Opaque or non-opaque bleached kraft paper
- Vegetable or aqueous paraffin coating
Bio packaging solutions

=> Possible alternatives at Brodart: full sheet complexes

- 20µ transparent OPP or microperforated CELLO 335 WS
- Rotogravure or flexographic solvent inks
- Wax complex or hot-melt
- Opaque or non-opaque bleached kraft paper
- Paraffin or hot-melt coating

- 23µ unperforated Natureflex or 20µ transparent PLA
- Rotogravure or flexographic BIO solvent inks
- No solution, apart from solvent adhesive, solution pending
- Opaque or non-opaque bleached kraft paper
- Vegetable or aqueous paraffin coating
INNOVATIONS

"Special cheese = mixed rinds" project ⇒ Reblochon
Development of 2 structures: one single-film, the other complex, entirely innovative with regard to the packaging of this type of cheese

Standard packaging types offered:

- 35µ pearled OPP with or without microperforation
- 40g opaque paper paraffin-coated on 2 faces 12g

<table>
<thead>
<tr>
<th>Type of packaging</th>
<th>Description</th>
<th>Functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>40µ white PE</td>
<td>Variants available in matt or satin-finish</td>
<td>Good printability quality, Authentic appearance, Tear resistance</td>
</tr>
<tr>
<td>Wax complex</td>
<td>20µ OPP or 6µ PET versions / wax / 40g paraffin-coated kraft or kraft/PE - total or partial microperforation</td>
<td>Storage of ripened farm-produced or dairy reblochons - a large number of variants and marketing appearance possible</td>
</tr>
<tr>
<td>Adhesive complex</td>
<td>20µ matt OPP / adhesive / 14g non-woven, total microperforation</td>
<td>Soft touch - storage of farm and dairy reblochons - absorbent translucent complex</td>
</tr>
</tbody>
</table>
INNOVATIONS

"Special cheese = washed rinds" project ⇒ Munster & Maroilles
Development of 2 structures by the name of "Dagobert" and "Ecorce", entirely innovative with regard to the packaging of this type of cheese

COMMENT

"DAGOBERT" COMPLEX
⇒ Parchment 37 g / strips of adhesive / 12µ HdPE
⇒ 32g opaque kraft / strips of adhesive / 12µ HdPE
Face in contact: 12µ HdPE

"ECORCE" COMPLEX
⇒ Parchment 37 g / adhesive / 12µ HdPE
⇒ 12µ HdPE / adhesive / parchment 37g
Face in contact: 12µ HdPE or parchment

WHY?
⇒ Call for authenticity of the "natural paper" type
⇒ Use of materials compliant in all respects with currently applicable legislations
⇒ Further example of application of directive 94/62

CONFIDENTIAL REPORT
Precutting
- Structural optimisations
- Grooving of thick structures

Zig-zag cutting
- Applications in biology: opening of Petri dish grouping
- Applications in cheese making: easy opening of flow pack based on kraft/PE or PP
Innovative technical responses

- Result of kraft laid in film

- Adhesive wave laminating