



Nuevos retos de distribución, nuevas
soluciones para el consumidor:
la bolsa de doblecompartimento
Packaging solutions for challenging
supply chains: the Dual Compartment
Pouch approach

Maurice Azagury (DUPONT IBERICA)



Packaging solutions for challenging supply chains

the Dual Compartment Pouch approach

Maurice Azagury
Sarah Perreard
EMEA

Business Development Manager EMEA
Brand Owner Leader & Sustainability Value Chain Leader



Defining “challenging supply chain”




**Unreliable
cold chain /
no
refrigeration**



**Challenging
access to
clean water**




**Bumpy
roads**



**Unpredictable demand /
long lead
times**

**How can we
grow the
consumption of
dairy like real
yogurts in
developed
countries where
cold chain is
unreliable?**





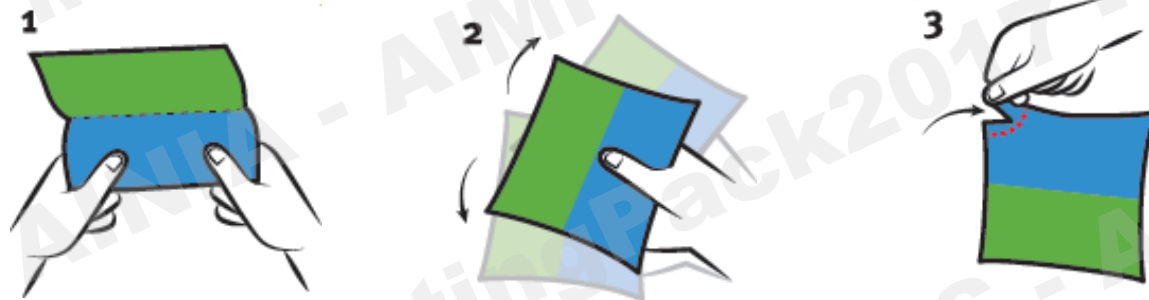
How can we propose solutions for school feeding programs in areas where schools do not have kitchen, clean water or hand washing facilities?

How can we efficiently feed malnourished people or exiled populations ?

**Transporting and preserving highly nutritive food & ingredients
in regions where access to clean water is a challenge and
where refrigeration is not a given
require either
sophisticated / expensive packaging
or robust supply chain.**

The Dual Compartment Pouch :

- 2 compartments separated by a frangible seal
- Squeezing the pouch bursts the internal seal allowing the content of the compartments to merge, mixing the active food ingredients with purified water
- Safe, hygienic, easy, quick, convenient, cheap
- Allowing long shelf life thanks to the use of dehydrated nutrients





Why does it work?



- Maintaining the sensitive ingredients in dry form dramatically **increase shelf life** / reduce waste.
- Keeping the water separate until time of consumption / activation allows to ship without refrigeration, **simplifying the supply chain**.
- Some ingredients like **probiotics** have a very short life if premixed, even if kept cold. Inoculating the active ingredients at a later stage would allow to keep the health related claims for long life milk or yogurt in regions where cold chain is not guaranteed.
- Keeping ingredients in dry form also reduce the need to use **preservatives**.
- The pre-integration of **purified water** in the pouch eliminates the need to boil it.

The Science Behind It



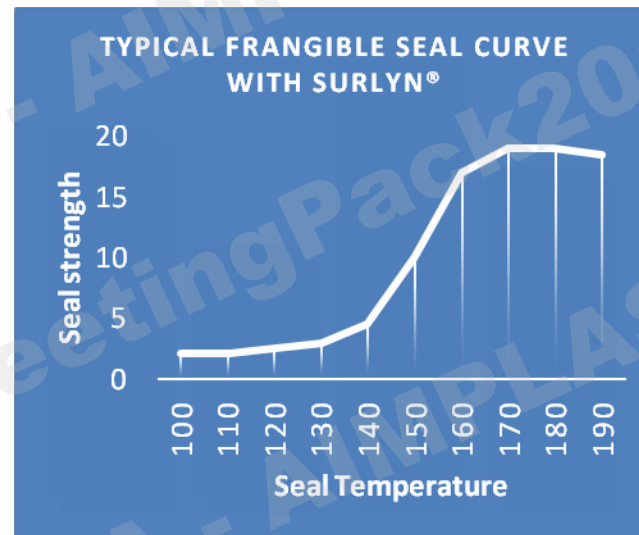
Frangible pouches
require two types of
seals:

**1- permanent or lock-up
seals**

2- frangible or burstable seals



DuPont™ Surlyn® special grade, a high performance frangible sealant resin, is the sealant of choice for frangible pouches because a single sealant layer can provide both lock-up and frangible seals. It does this by controlling the seal bar temperatures.



The Science Behind It

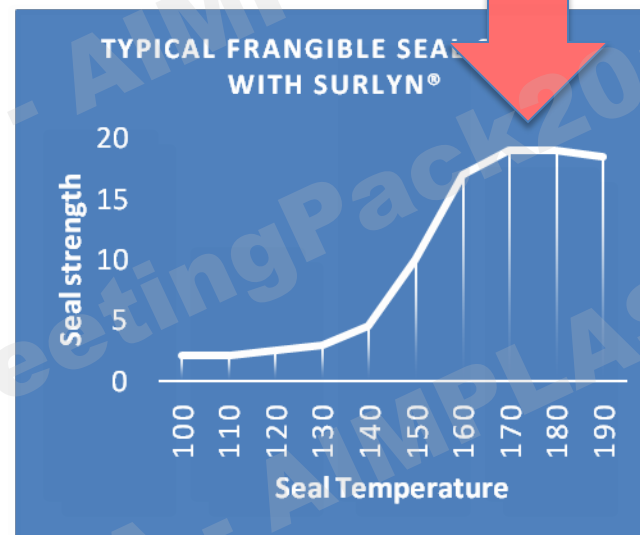
Frangible pouches
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A lock seal is achieved at temperatures $> 160^{\circ}\text{C}$



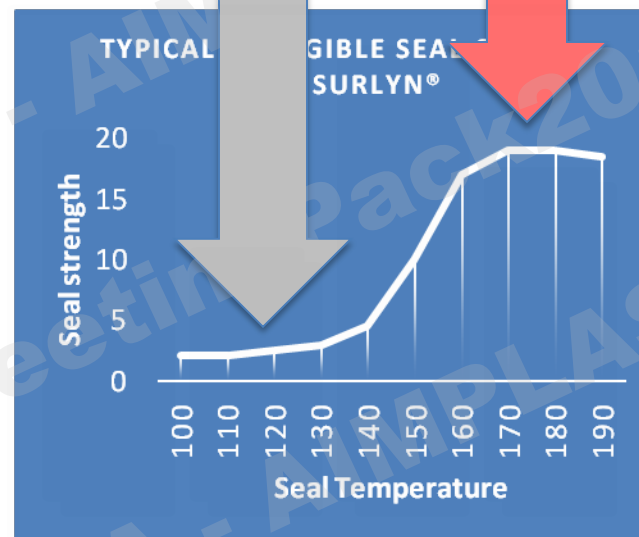
The Science Behind It

Frangible pouches
require two types of
seals:

**1- permanent or lock-up
seals**

2- frangible or burstable seals

A frangible seal is achieved at temperatures <
150°C



Adapting the frangible seal force...



Opening by a **child**

- Temperature
- Strength



Opening by an **adult** in **normal transport conditions**

- Temperature
- Strength



Opening by an **adult** in **extreme transport conditions**

- Temperature
- Strength



Medium barrier to moisture and oxygen - TRANSPARENT



Duplex Laminate :

OPET (Reverse Print)

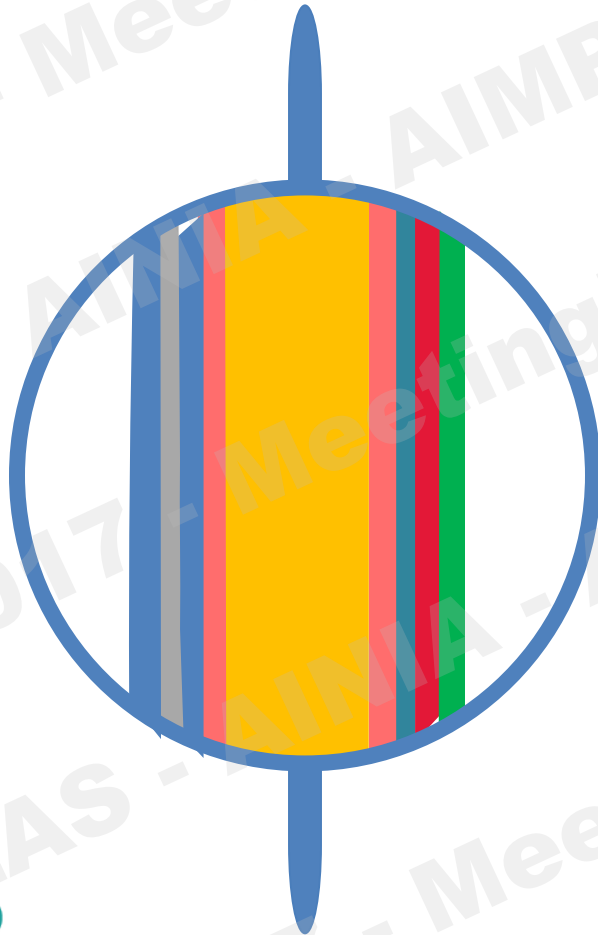
Adhesive

LDPE

NUCREL®

SURLYN®

High barrier to oxygen and moisture - TRANSPARENT



9-11 layer coextrusion:

PA (Surface Print)

EVOH

PA

BYNEL® (Tie)

LDPE / HDPE

BYNEL® (Tie)

PA

NUCREL® (Tie)

SURLYN® (Ionomer/Olefin)

Ultra high barrier to oxygen, moisture and light - OPAQUE



9-11 layer coextrusion:

OPET (Reverse Print)

Adhesive

ALUMINIUM FOIL

(Opaque)

Adhesive

LDPE

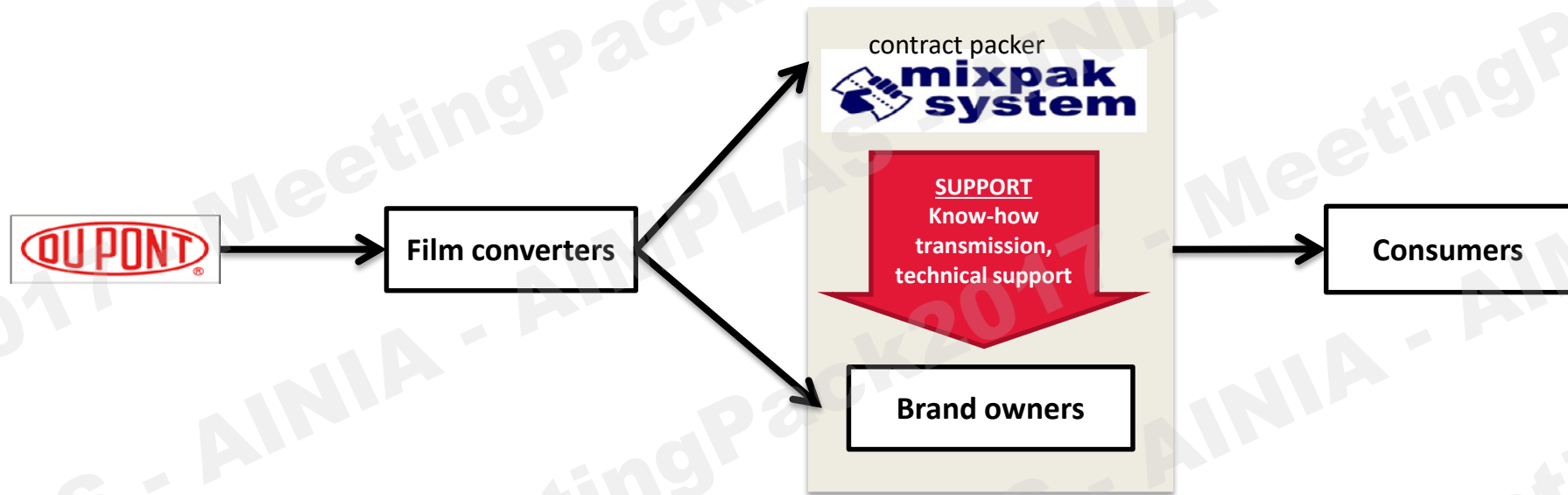
NUCREL® (Tie)

SURLYN® (Ionomer/Olefin)



Picture courtesy of Mespac

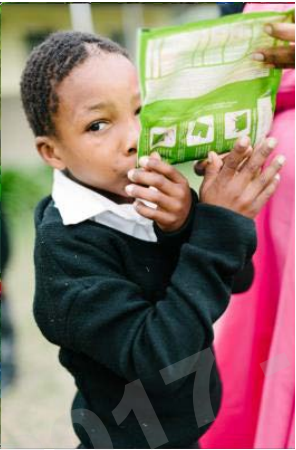
Business model – Best Practice for Shorter Development Time



Mixpak System SL specializes in Dual Compartment Pouch technology and can provide:

- packaging services
- Prototyping and short runs for market survey
- Know-how and turn-key solutions to Brand-Owners

Creating a Sustainable Value Chain



The Dual Compartment Pouch with frangible seal brings an extra element of functionality that allows brand owners to reach new market spaces where the middle class is developing faster than the supply chain.

In the Western World, this new concept will be opening doors to a new on-the-go usage, with an element of fun and consumer participation and a more effective integration of active food ingredients.

Packaging is about making Freshness reach the Consumer.

Thank you for your Attention !!



The miracles of science™

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For more information:

Maurice Azagury – Business Development Manager – mauri.azagury@dupont.com - +34 609 32 30 38

Sarah Perreard – Brand Owner Leader & Sustainability Value Chain Leader – sarah.perreard@dupont.com - +41 22 717 52 46