



**CORMACK
PACKAGING**
A TRICORBRAUN® COMPANY

TECHNICAL TIPS

CHOOSING YOUR LINER MATERIAL

LINER SELECTION IS QUITE A COMPLEX AND VERY IMPORTANT PROCESS.

Bottle type and how they are made, ingredients being packed and how the consumer will use the pack are just a few of the considerations you need to examine.

First decision is what will be the bottle material. There is often a different liner for Glass, PE and PET bottles. The next step is knowing what process is being used to make the bottle. The key point is how well formed, flat and repeatable the top surface of the bottle neck will be. The ultimate is a PET injection blow bottle made on a new machine. The worst will be an extrusion blow HDPE bottle made on a very old machine with a non-uniform bottle shape such as a 5 litre bottle with a carry handle.

Will the lined cap be used on just the one bottle or a family of different bottles? Is the product a dry product, a wet product, hot filled and will the bottle face be wet with product when sealed. We generally regard a "Hot Fill Pack" as any product greater than 60 degrees C as it enters the bottle.

Why do you need a liner? We have quite a range of ring seal and bore seal closures that may render a liner unnecessary. Entry level lining is a standard 0.7 mm basic foamed polyethylene wad. For a wider diameter cap or bottle necks with poor trimming and flash, this may need a 1.0 mm thick wad. These liners serve to take up variations on the mouth of the bottle.

If you are looking for tamper evidence by the liner, and/or sterilisation of the head space of a food or beverage, induction foil is a good solution. Induction seal can be a clean peel that leaves no product on the bottle face (so no tamper evidence) or the non-clean peel that leaves fibre evidence that shows the bottle has been open but non clean peel is generally not recommended for beverage bottles as it will feel rough on your consumer's lips. Some new grades of induction foil include one grade that will do multiple bottle materials (HDPE, PP & PET). We also now have a good grade for use on difficult glass bottles. Wider diameter caps may need a form of foamed backing to provide sufficient rigidity to the wide liner diameter until it is sealed to the bottle.

There can also be versions with a cheaper paper backing. Induction foil provides a second form of Tamper evidence to closures with a tamper band for some markets that want dual tamper evidence. In rare cases we have also had customers experiencing fine powders that escape a simple foam liner due to the very long and rough distribution routes that tend to excite the powder and result in it gradually working its way under the foam seal. Induction foil can be used to hold these powders inside the pack.

Often you may need a secondary seal after the initial liner is removed. This can be foam or paper based. For induction seal and a PE wad, the grade of foam needs to change so that it doesn't simply bond to the induction foil when it is red hot during the induction sealing. Liners can also be a wax bonded structure. The backing is permanently glued into the closure, with the wax layer holding the induction foil in place. Once applied to the bottle tightly and induction sealed, the heat of the induction process melts most of the wax layer so when the closure is removed it breaks the seal of the backing to the liner. The foil still bonded to the bottle face for the consumer to remove for first use, the backing still glued into the cap for resealing for the life of the pack.

We continue to offer Pressure Seal liners. These have an adhesive face on one side of the foam so bond to the bottle when closed tightly. Whilst widely used in vitamin and tablet packs, the TGA no longer view pressure seal as a form of tamper evidence. Consumers can partially peel back the pressure seal, remove products then reclose that pack tightly so no evidence of previous opening.

For demanding applications where pressure can be building inside the bottle over foam (Bottle bloating) of where a specific breathing rate is required, we do supply a complex vented foam liner that can hold all the liquid within the container but allow a high breathing rate allow the product to vent.

Recently we are seeing increased demands by the EU and FDA on liners due to them being potentially in contact with the product. This can include Migration rates. Some liners are engineered for EU compliance while other will only meet FDA (USA) regulations.

Options on liners include a Lift and peel tab that makes it easy for the consumer to pull open the foil. They can often also be printed with standard messages such as "Sealed for your Protection" or "Sealed for Freshness". Custom prints can be supplied with very large order quantities and very long initial lead-times.

The most important step in selecting your liner will be performing long term stability testing. This can include holding the pack at elevated temperatures of over 40 degrees C for 30 days to check for any reaction between the liner and the product. As the filler of the product you must always perform this level of testing before ordering a cap with a liner as the result will vary dependant on variables only you can control.

Below is a list of common liners we generally carry in certain slit widths

We also have on our website under Technical Tips a related article on "Foil Induction Sealing Guidelines"

LINER CODE	LINER DESCRIPTION - COMMON LINERS WE GENERALLY STOCK	GLASS	PET	PP	PE	PVC
FOAMS						
SS22	PE standard foam 0.7 and 1.0 mm thick	Yes	Yes	Yes	Yes	Yes
F217	Central Core PE. Coated with PE/EVA both sides (Improved chemical resistance and less likely to Stress Crack)	Yes	Yes	Yes	Yes	Yes
LAF 217	PE foam coated one side with Aluminium faccing. Used on many automotive type products	Yes	Yes	Yes	Yes	Yes
INDUCTION FOILS						
FS1-15	Induction foil, PE backing facing and Heat seal facing, Clean Peel	No	No	Yes	Yes	No
FS3-19	Induction foil, PE backing facing and Heat seal facing, Clean Peel	No	YES	No	No	YES
FS1-18	Induction foil, Barrier layer, PE backing facing and Heat seal facing, Clean Peel	No	No	Yes	Yes	No
Alkoflex 190	One piece induction foil, PET backing, Alu foil and wax bondfacing	Yes	Yes	Yes	Yes	Yes
PRESSURE SEAL						
PS22	PE foam with an EVA based Pressure seal facing	Yes	Yes	Yes	Yes	Yes
2 PIECE						
FS 5-5 HS	Two piece paper backed with wax bond to induction foil. Dry product only. Limited venting	Yes	Yes	No	No	Yes
HS 035	Paper backed Aluminium foil coated	Yes	Yes	Yes	Yes	Yes
SG75	2 piece pulp backed induction seal with wax inner layer and a PET basic barrier centre layer	No	No	No	Yes	No
SG90	2 piece pulp backed induction seal with wax inner layer	No	Yes	No	No	Yes
SG100	2 piece pulp backed induction seal with wax inner layer	No	No	No	Yes	No
SPECIALISED						
Lift and Peel	Induction foil has option of Lift and Peel tabs on most grades. Special orders only and MOQs	Yes	Yes	Yes	Yes	Yes
Vented - P400V	Complex venting foam for difficult products such as high concentration Bleach type products	Yes	Yes	Yes	Yes	Yes

Note: Cormack do import many other liners to customer order This table is an indication document only and you need to validate any liner for your use.