esterpeel™

heat sealable lidding films

user's guide

PACKAGING SOLUTIONS

esterpeel™

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Esterpeel users guide

Introduction

Esterpeel is the market leading heat seal lidding film from FFP Packaging Solutions. Whatever your sealing needs you can be sure that there is an Esterpeel to meet your needs.

The aim of this handbook is to provide you with guidelines to help achieve good consistent and reliable seals when using Esterpeel. It covers the whole filling and sealing operation, highlighting potential areas of difficulty and how to overcome them.

While many types of heat sealing machines are available, most of them share similar sealing, cutting and film rewind systems, so the day to day problems that occur with each type should be recognisable and resolvable.

Film Care

Storage

To maintain Esterpeel in prime condition it is important that reels of film are stored in a temperature range of 17-23°C, in a dry environment (relative humidity 35-55%). When not in use they should be kept wrapped in the polythene tube and bungs supplied to protect against dust. All films should be stored on their edge away from potential sources of contamination and not in direct contact with the floor.

Details of order number, specification, weight and use by date are printed on labels found on the outside of all reels and inside the core. This allows easy identification of the product and helps ensure efficient stock rotation. Reel labels are colour coded for the Esterpeel grade in use.

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Subject to the film being stored correctly, all products in the Esterpeel range are guaranteed for six months and this should be taken into account when considering stock rotation.

Swollen or damaged cores, damaged reel edges or torn polythene tubes are typical signs that reels have been poorly handled.

If part reels are returned to stores they should be put back inside their polythene tube.

Pre-conditioning

We recommend that you pre-condition reels for 24 hours prior to use by storing them at the same temperature at which they will be used. This ensures that all materials put on the machine are at consistent temperatures.

If materials are not pre-conditioned, alterations may be required on the heat setting when sealing.

Basic Machine set-up

Film Width

Film should be of the appropriate width, which for most machines will be equal to the tray width plus 25mm either side. Film that is too wide for the tray, apart from being wasteful, may cause excessive creasing and an increase in leakers, while film too narrow may cause snapping, especially if the rewind tension is too high.

Reel alignment

It is important that the reel is set up with equal amounts of film on either side of the sealed tray so that when the tray is

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sealed and the rewind is advanced, the film does not snap. In addition, some machines only run specific film widths so any misalignment will cause the film to run against the guides and crease. The reel should be squarely set on the cones so that the film does not track off line.

Care must be taken to ensure the rewind is set evenly so that when the film is pulled through after sealing, it does not track to one side putting uneven tension on the web.

For machines which use the sealed tray to pull the film through, but do not have any rewind, it is still important that the reel is aligned centrally to stop the film being creased as it travels through any guides.

Film Tension

Most machines have either drive/drive or drive/drag rewinds. Both systems allow a small but consistent tension to be applied to the film.

Correctly setting the film tension, for winding and unwinding, increases the ease of sealing and the quality of seal produced.

The film should be smooth and taut, but not tight, through the sealing head. This creates a drum-like appearance when the film is sealed to the tray which improves presentation and ensures that creases do not get sealed in, significantly reducing the chances of leakers.

If the film is too slack the trimming of the film around the tray can be affected, leading to an incomplete cut. When this occurs, the film does not wind on until it has torn itself from the tray.

Guides

Guides direct the film through the machine and keep the film taut transversely as it enters and exits the sealing head, which helps ensure good quality seals.

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Guides also direct the film and stop wander when it leaves the reel and when it is wound up after sealing. Adjustable cones should be spaced equidistantly and far enough apart so that the web is flat and tracking truly. This is most important when rewinding since the film "ladder" is drawn together and can cause creasing of the film on the seal closest to the exit from the tool.

Tool set-up

Tool alignment

Most tools have location features to help alignment when sealing. When worn or changed regularly, their accuracy can be reduced.

It is important that the top and bottom tools are matched up precisely to ensure that the film fits the tray perfectly when sealed.

Where tools are not symmetrical, it is important that they only fit into the machine one way, or that both parts of the tool are marked so that their orientation in the machine is clear.

Tray fit

It is important that the tool manufactured for a particular tray is used rather than an "equivalent".

There are three main issues to consider.

- Often, the flange radii vary and although the tray fits the tools, the seal width is reduced considerably, causing a weakening of the seal.

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- If the product is cooked in a tray or the top needs to be grilled or browned, there can be shrinkage as well as distortion in the tray. This needs to be taken into account when designing the tool.
- A tray which has a peel tab is asymmetric, so that while the tray can fit into the tool more than one way round, the top and exterior edges of the flange do not match the profile of the sealing head.

This can create potential leakage problems through a narrow seal.

Tray seat beading

One of the most vital areas and one of the easiest to maintain is the tray seat rubber. However, it's importance is often underestimated.

To produce a good seal, the rubber needs to be 100% intact with no gaps and of an even height. If not, the seal pressure will vary, running the risk of an uneven seal with weak points.

If the rubber seat has been replaced, it often does not meet perfectly. A searching product, such as ratatouille, can find it's way through very small channels causing leakers.

Film Cutting

To create a tidy pack, the cutting blades must cut the film cleanly. Worn or damaged teeth create two major problems:

- If a clean cut is not made the trim will not be able to move away from the tray as it is being wound on. This can lead to either the web being torn, or as the film is wound on, the tray being pulled out of the tool and crushed during the next sealing operation.

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- Damage to the corners or sides of the cutting blades often causes a nick in the film. As tension is applied to the film the nick tears, causing a film breakage.

In addition, it is worth noting that excess contamination on the sealing head can create similar problems if the effectiveness of the cutting action is reduced.

Some machines trap the film outside the cutting blades using "clamps" which keep the film under tension to help produce a clean cut. If these "clamps" allow the film to slip as the blades come down, an incomplete cut may occur causing problems similar to those mentioned above.

Heat transfer

The quality of seal relies on efficient heat transfer through the tool and profiled head onto the tray. Loss of heat can cause poor sealing or reduce line speeds by increasing the dwell time required to produce a reasonable seal.

Heat transfer is greatly reduced for the following reasons:

- Large or multi-cavity trays often use several heating units. If a unit is damaged or incorrectly fitted, one head or part of a tool would be running at a lower temperature, causing heat loss.
- If the individual heads are not tightly bolted against the heated platen, heat will be lost between sealing operations. Although the gap may be closed during sealing, the dwell time will not be enough to reach the optimum temperature.
- Profiled heads that have been badly worn through wire brushing to remove contamination will not be of even depth. This reduces the pressure applied during sealing and therefore the quality of the seal produced.

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Achieving good seals

Seal width

A minimum seal width of four millimetres is advisable for all specifications. While weld seal films can operate effectively with narrow seals, the risk of failure is increased. With peelable seals the integrity and strength of the seal is directly related to the width, therefore the wider the seal, in general, the stronger the seal.

It is particularly important that the width of the seal is maintained around the corners, since this area is most affected by distortion during cooking. In addition, poorly sealed corners can give during cooking, causing the product to dry out.

Seal pressure

Pressure should always be sufficient to achieve good contact, maximum seal width and heat penetration.

It is particularly important that the pressure is evenly distributed across the whole tray, especially with multi-head tools, where each head should produce equal levels of pressure.

Temperature

The temperature will vary according to the film and tray specification, the type of product and the temperature and environment in which it is being packed.

It is advisable to run the film at the optimum temperature, without causing distortion to the tray, so maximum heat is transferred through the film to the sealing surface. This helps minimise the dwell time and therefore maximise production speed.

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It is important that when more than one line is being used for the same product, the temperatures used for all the lines are accurate. It is best to take a probe reading from a known working line and set up a second or third line from the datum temperature.

In addition, different machines will have slightly different levels of heat transfer efficiency and will therefore need to be fine tuned.

Dwell

The fundamental aim is to minimise the amount of dwell time required, while ensuring the necessary quality of seal is achieved, although the requirements of individual products may vary.

Dwell times can be as little as 0.2 seconds but are normally about 0.6 - 1 second. If a product needs more than two seconds dwell, a higher temperature or greater pressure may be required.

Aluminium Foil Trays

Because of the characteristics of the foil tray, a successful seal will only be achieved if optimum machine conditions are maintained. The foil will draw heat from the sealing head and, as the tray is manufactured under stress and with an oil lubricant, weaker seals will occur at the corners of the tray where stress is greatest. To make sure that sealing to foil is successful:

- Ensure that elements of the sealing head are capable of dealing with the heat sink and that pressure can be maintained.
- Increase temperature and/or dwell time.
- Trays should be pre conditioned in the production area as per the film.

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Other tray materials

The optimum settings will in part depend upon the tray material, and even within the same material class settings may differ markedly depending upon the method of manufacture. For detailed advice, please refer to your FFP contact.

Dealing with the product

Successful sealing may be affected by a number of factors, in particular, how the product is delivered into the tray and characteristics of the ingredients themselves.

Contamination can be caused by the product, for example if sauce is left on the flange prior to sealing. This can be the result of:

- Poor manual filling, causing spillage.
- Poorly timed closing or badly set up equipment, which allows sauce to drip onto seal areas.
- The tray being over-filled so that the product protrudes over the tray flanges. This creates tension on the film which leads to creasing in the seal area, causing non-hermetic seals and leakers. In addition, if tension is created before the seal has cooled, the seal will give the impression of being acceptable but will in fact be considerably weakened.
- Poor manual loading onto the conveyor or rough movements during sealing.
- The consistency of the sauce itself; very thin sauces tend to spill/splash over the seal areas during the sealing process; sauces that are too thick often drip after being dosed, leaving residue on the seal area.

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- Air expanding immediately after sealing of hot fill products so that pressure builds on the newly formed seals. The seal does not get enough time to cool and reach maximum strength which creates weaker peel strengths. To help to overcome this a reduced dwell time helps the seal set more quickly and so hold the increasing pressure.
- Seal contamination from oil in products, is one of the hardest problems to resolve. Even when apparently wiped clean from the surface, it can still cause seal integrity problems with peelable films.

When cooking product in some types of tray prior to sealing several problems can occur.

- The A-PET layer on a C-PET tray, used to help sealing, crystallises. While it is still possible to seal to the tray, the choice of specification becomes more limited.
- As the product rises during cooking it can often spill over the seal area. This can cause impossible conditions to seal in, regardless of the specification chosen.
- Where product is cooked in the tray after sealing it may be necessary to overspecify the film to cope with the pressure created within the pack and therefore the seals.

If there is a large head space between the product and the film, the pressure exerted can be quite high. The only solutions are either to pierce the film or to use a weld seal film.

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Notes

Machine	Sealing Temperature	Dwell Time	Tray	Esterpeel Film Grade

Further Information

If you would like to talk to us further about Esterpeel and your packaging needs, do not hesitate to contact us. We would welcome the opportunity to discuss any technical issues or potential requirements that you may have.

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