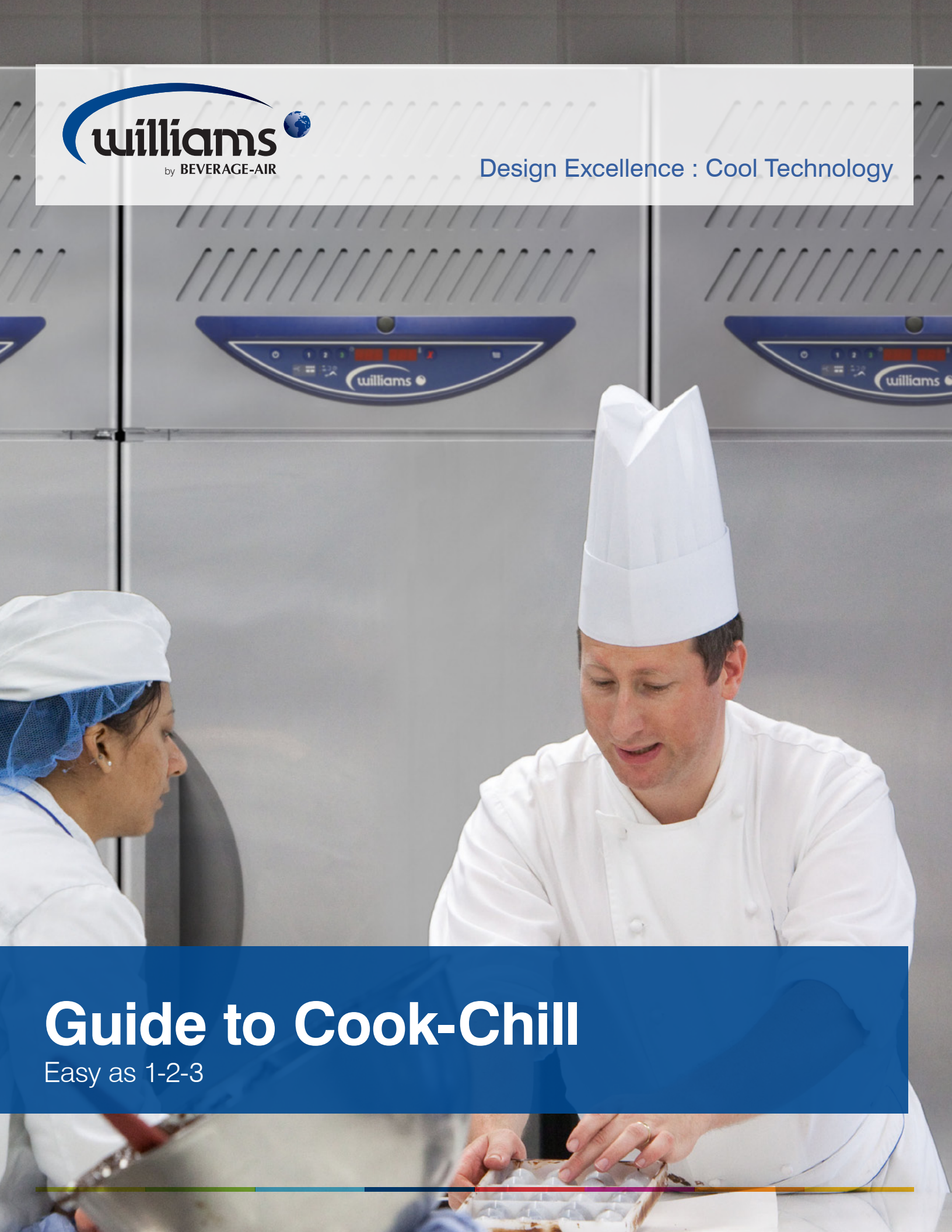




Design Excellence : Cool Technology

# Guide to Cook-Chill

Easy as 1-2-3





## WILLIAMS REFRIGERATION BY BEVERAGE-AIR

Beverage-Air was founded in 1944 and is a leading manufacturer of commercial refrigeration equipment for the foodservice and beverage industries.

Throughout its history Beverage-Air has remained at the forefront of our industry with a firm commitment to offering a full range of premium, and market leading products that meet the operational and environmental needs of its customers.

Beverage-Air is delighted to announce it has partnered with its sister company Williams Refrigeration to bring you the leading expertise in blast chilling solutions.

Beverage-Air and Williams Refrigeration are both members of Ali Group SpA.

With its head quarters in Milan, Italy Ali Group is the world's leading international foodservice and bakery equipment Group, and comprises 68 brands that embrace the leading names in cooking and bread making, refrigeration, ice cream and ice making, through to warewash and meal delivery distribution.

Williams Refrigeration is a world leading manufacturer of commercial refrigeration with a reputation of delivering global innovation and excellence. Formed in 1980, and headquartered in the UK, Williams Refrigeration is also uniquely placed to bring you unrivalled quality, performance and reliability from its international facilities located in China, Dubai and Australia.

Together Williams Refrigeration and Beverage-Air offer an extensive product range and are uniquely placed to bring you the value and benefits of globally accredited products with the key benefit of local service and support.



## INTRODUCTION

Advances in technology mean that foodservice establishments of all sizes and types can now benefit from a Cook-Chill System. Williams Refrigeration is leading the way, producing compact, yet sophisticated equipment that suits your needs as well as your budget with easy-to-use controls.

Until recently, only large foodservice operations were able to take advantage of a Cook-Chill system, which was often thought to be very complicated because of its size. In fact, the system is quite simple and uses much of the equipment you already have in your kitchen.

At Williams, we lead the way in manufacturing and marketing Blast Chillers. From the smallest restaurant to the largest institutional kitchen, Williams provides the innovation and flexibility to respond to your needs.

We continually invest in product design and development to bring you the highest quality engineering performance and reliability.

Using the latest control systems and technology, the Williams range of Blast Chillers are all driven by our unique, simple-to-use, "1-2-3 Control Panel" featuring the 3-step operation that all employees will find easy to operate with only basic introduction.

With increased focus on food safety, you can be assured that in Williams you have quality, performance, accuracy, and reliability for your product and business.

The range of Williams Blast Chillers will help you fully comply with the FDA, state and local requirements, as well as HACCP guidelines. This guide will explore some of the myths that surround a Cook-Chill system, and provide an accurate description of its operation and the benefits it can bring to your business. As you will see in the following pages, a Cook-Chill System can save you time and money, as well as increase productivity and profitability.

We hope that you find this guide useful and informative. Should you require any further information please contact Beverage-Air Sales Department on 800-845-9800



## COOK CHILL EXPLAINED...

### What is cook chill

Cook-Chill is a simple, controlled system of advanced food preparation designed to provide more flexibility in foodservice. The technique involves the full cooking of food, followed by rapid chilling and storage at controlled temperatures, for up to five days.

When needed for service, the food must be rethermalized through the use of a Blast Chiller. The production system itself is simple to operate if well managed, and minimizes the risk of food spoilage or contamination.

Cook-Chill Systems have the added benefit of retaining food quality, nutritional value, flavor, and appearance. Using a Cook-Chill System also offers the foodservice operator added flexibility and management and, of course, profitability!

### Who uses Cook-Chill Systems?

Thousands of establishments throughout the whole spectrum of the foodservice industry use Cook-Chill Systems.

Anyone who has ever eaten at a top restaurant or hotel, at a banquet or reception, or on an airplane or ship is likely to have eaten a Cook-Chill meal. Cook-Chill Systems are also used by many institutional operators such as hospitals and universities.

### Will my business benefit from Cook-Chill?

While Cook-Chill is completely associated with institutional service, no foodservice operation is too small to use a Cook-Chill System.

If your business serves hot meals and is one of the following, then you will most certainly benefit:

- Hotel
- Restaurant
- B&B
- Fast food restaurant
- Caterer
- Bakery Meals on wheels
- Airline Kitchen
- Hospital
- University
- Military kitchen
- Government
- Supermarket
- Correctional facility

For large and small establishments, the



*POTENTIAL PROFIT INCREASE UP TO 28% THROUGH HIGHER PRODUCTION CAPACITY, MEAL TURNOVER AND REDUCED FOOD WASTAGE*

principles and advantages of the system are the same. The only difference is that small to medium-sized operations do not have to invest in equipment designed to deal with large volume.

For the simplest Cook-Chill System, all that is required in addition to the cooking equipment you already have is a Blast Chiller, a suitable storage area such as a refrigerator (at 38°F) and an understanding of the guidelines to Cook-Chill Systems.

### Why do foodservice use Blast Chillers/Blast Freezers?

The principle feature of Blast Chillers is that they are capable of rapidly reducing the temperature of hot foods (+160°F) to low, safe temperatures (+38°F). Therefore, they make it easier for operators to comply with Food Safety regulations. In fact, many caterers are using them solely for that purpose, and in doing so are performing a very simple Cook-Chill operation. Nevertheless, only using a Blast Chiller to cool cooked food rapidly for immediate or same day service, is not making the most of the equipment. Williams Blast Chillers can also be used as shortterm storage cabinets.

### Avoid the risks of food poisoning – control bacteria growth

The very young and elderly are most at risk from food poisoning, however, everyone can be affected. Litigation and prosecution are on the rise, so you can't afford to take chances. Bacteria can divide in two every 20 minutes and in 12 hours one bacterium multiplies to become almost 69 billion. With a proper Cook-Chill System and Williams Blast Chillers, you can take the risk out of your operation.

### How quickly will I be able to recover my investment?

Your business will be able to immediately recover a portion of your labor costs, reduce waste, maximize efficiency and increase turnover, which accelerate your ability to recover your investment.



## THE TRUTH BEHIND COOK-CHILL

The use of Cook-Chill has no limitations. Any meal can be prepared, cooked, chilled, and refrigerated with little or no nutritional or quality loss, and without altering its appearance.

**There are several misconceptions:**

⊗ **Cook-Chill is dangerous because it is difficult to use.**

There is no known case of someone suffering from or dying as a result of eating a properly prepared Cook-Chill meal. Unfortunately, many people have suffered food poisoning and have died from eating conventionally produced food that has not been prepared or stored properly while using traditional methods.

⊗ **Cook-Chill is only for mass catering.**

No; it can be used by restaurants, clubs and even fast-food operations.

⊗ **The equipment is large and expensive.**

Small to medium-sized establishments that already have suitable ovens and storage facilities will only need to acquire a suitably-sized undercounter or reach-in Blast Chiller. The equipment required by hospitals and other institutions produce high volumes of food and must accommodate a large capacity.

⊗ **It is an insult to the skill of the professional caterer.**

Cook-Chill gives you more time to use your skills more effectively than any other method. Instead of spending valuable time on mundane tasks, the foodservice professional can use that time to improve presentation, create new dishes and menus, and attend to all the other things that make a successful business. In Fact Cook-Chill...

Is simple to operate

Is profitable

Reduces food wastage

Is time saving

Can help improve your business

Makes it easy for you to comply with food safety guidelines



## ADVANTAGES OF COOK-CHILL

### Suitable for any foodservice operation

The system can be utilized effectively by establishments of any size or type.

### Effective time management and control system

The system allows operators to better organize their time and that of their staff.

For example, prime cooking can take place when the business is quiet, leaving less to do when you have customers to attend to while, at the same time, providing a safe, controlled environment and work system..

### Effective resource management

Labor and equipment can be used more efficiently. Ingredients can be bought in larger quantities, providing economies of scale. You can also prepare meals for several establishments from one kitchen.

### Improvement in service

Because most food will be prepared in advance, the operator will have more time to improve presentation and serve customers

### Menu extension

The flexibility of the system allows you to prepare a greater selection of dishes, offering your customers more choices while maintaining or improving quality. In addition, because you are preparing meals in advance, you can afford to take time and make fewer mistakes.

### No modification of recipes

A Cook-Chill System allows you to use all your favorite recipes without alteration.

### Flexibility in service

Because most dishes only require simple rethermalization prior to service, operators can serve a wider variety of food all day and can easily cope with the fluctuating numbers of customers throughout the day.

### Increased profitability

All of the above can make your operation more efficient while offering customers greater choice and better service. You will be able to accommodate a larger number of customers, even on short notice, resulting in increased volume and profitability.

### Fantastic opportunity for expansion

If the meal turnover in your business is limited by the number of meals you are presently able to cook and serve with your existing kitchen, Cook-Chill is a fast way to increase your capacity without necessarily expanding your kitchen or employing extra kitchen staff.



## THE COOK-CHILL SYSTEM

### What you will need

If you are already serving hot food, the only additional equipment you will require for a small to medium-sized Cook-Chill operation is a suitable Blast Chiller. You will also need a suitable reach-in or walk-in refrigerator for the storage of the finished product.

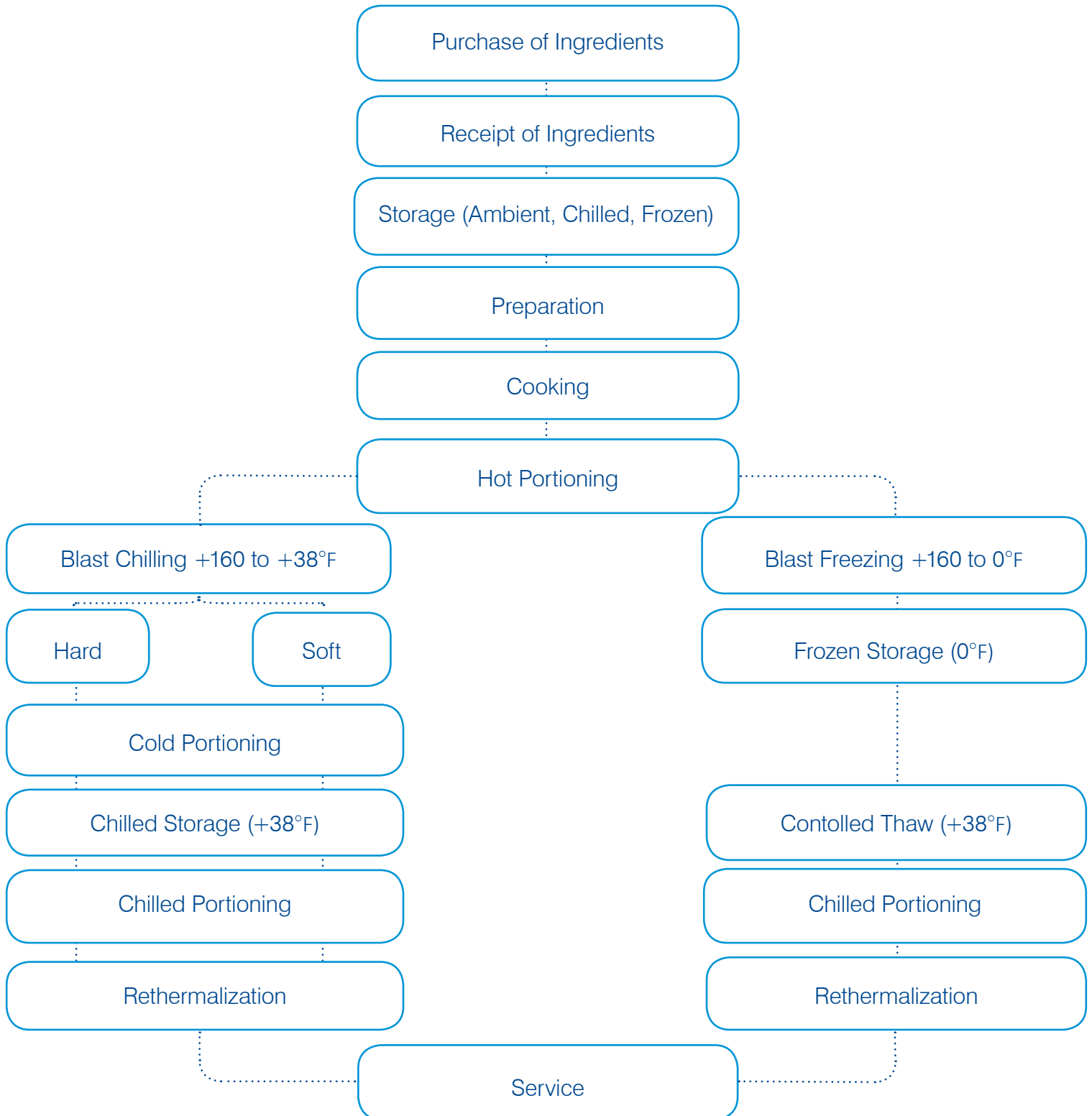
As with any cooking operation, a Cook-Chill System requires care to ensure that food does not become vulnerable to harmful bacteria. Employees should be given specific training on the Cook-Chill operation, in addition to basic food safety training.

It is easiest to view a Cook-Chill System as a series of stages. Each of these stages should be regarded as equally important to guarantee safety and good quality meals.

1. Selection of raw materials
2. Storage of raw materials
3. Preparation
4. Cooking
5. Portioning (Hot)
6. Blast Chilling or Freezing
7. Storage of chilled foods
8. Distribution of chilled foods (If applicable)
9. Rethermalization (Reheating of food)
10. Service



# FOOD SERVICE OPERATION : HOW DOES IT WORK?



# HOW IT WORKS

## 1. A selection of raw materials

If raw materials are of poor quality when you buy them, they are not going to improve with cooking. It is vital that you ensure your supplier only provides you with high quality products. If necessary, check their storage, handling and distribution methods.

## 2. Storage of raw materials

Having purchased good quality raw materials, it makes sense to keep them in safe storage and in prime condition before they are needed. This means following basic food safety and HACCP principles for food storage to ensure the raw products are stored at the correct temperature and humidity levels.

## 3. Preparation

At the preparation stage, basic food safety practices and HACCP Guidelines apply. Separate surfaces/areas and separate utensils should be used for the preparation of certain products such as raw fish, meat and poultry to prevent cross-contamination and the spread of bacteria.

Ideally, food preparation should take place in an area separate from cooking and portioning— as outlined in the HACCP Guidelines.

If raw materials arrive frozen, they should be thoroughly and safely thawed before use. We recommend a controlled thawing cabinet for this purpose. Rapid high temperature thawing can encourage the growth of pathogens and may leave cold spots at the core of the food. For this

reason, we do not recommend thawing products with a microwave oven unless it is specifically designed to ensure even thawing.

In order to make chilling more efficient after cooking, portions of meat should not weigh more than 10 pounds or measure more than 2 inches in thickness. For dense foods such as meat sauce-based dishes— lasagna, casseroles or stews (or even mashed potatoes)— we recommend no more than 2-inch thickness.

## 4. Cooking

Whatever the food product you are cooking and by whatever method, it is essential that the core temperature of the food reaches at least 160°F and is held at this temperature for at least two minutes.

This is to ensure that any pathogenic micro-organisms that may be present are destroyed. (Check the accuracy of all thermometers used every three months and recalibrate if necessary.) You should not find it necessary to alter your traditional recipes for a Cook-Chill System.

## 5. Portioning

Once the food is cooked, the chilling process must start as soon as possible. At most, within 30 minutes.

This leaves time for hot portioning prior to chilling. However, handling of food should be kept to a minimum. Dishes can be assembled from individual components after chilling. Usually, the ideal containers for chilling food

should be no more than 2 inches deep. Note: Some containers are made of materials which can insulate the food, thereby affecting chilling times. Covered containers and vacuum packages can also increase chilling times.

If disposable containers are used, it is essential that they have been stored under sanitary conditions.

## 6. Blast Chilling or Freezing

Whatever the type of Blast Chiller you use, it must be capable of chilling the hot food to 38°F within 90 minutes of placing it in the Blast Chiller to begin chilling. This is not only to ensure safety, but also preserves the appearance, texture, flavor, and nutritional value of food. Your Blast Chiller should be equipped with a food probe or probes with which you can monitor the temperature of the food.

Every dish has an ideal cooking method suited to its density or structure. This applies to Blast Chilling, too. It is important to have the options of Hard or Soft Blast Chilling available to ensure that food is not damaged in the process and quality is maintained.

**Hard Blast Chill** - During the 90-minute cycle, the air temperature in the cabinet drops below the freezing point. This is designed for dense, large products that are difficult to chill and have a higher fat content, such as meat-based sauces, cuts of meat, mashed potatoes, or lasagna.

The air temperature of the cabinet ensures the product reaches the required

38°F within the 90 minutes without the risk of freezing or damaging the food.

**Soft Blast Chill** - During the 90-minute cycle, the air temperature remains above 32°F. This is ideal for delicate and light products such as fish, rice, vegetables, cream, desserts, cakes, and fried foods.

The soft blast chilling cycle gently reduces the product temperature to 38°F in the required 90 minutes without the risk of damaging the delicate product.

The speed at which chilling takes place will be affected by the shape, size and density of the food, its moisture content, heat capacity and entry temperature. Placing lids on containers or stacking them on top of one another will increase the chilling time required. However, covering food can protect against contamination, and is therefore sometimes appropriate as long as chilling can still be achieved within the required time limits.

## 7. Storage of chilled foods

Chilled food should be stored in a dedicated refrigerated storage cabinet at a temperature of between 34°F and 38°F, in order to control the growth of micro-organisms.

You should use the refrigerated cabinet or walk-in designed for chilled food storage, and use it solely for your Cook-Chill products.

Chilled food may be kept under the above conditions for up to five days (including production and rethermalization days). To ensure that

products do not exceed this time span (and are therefore not wasted), a system of stock rotation should be employed. One method is to use color-coded labels, a different color for each day with a “use by” date, production date and product description marked on each label. A “First In, First Out” policy should be used.

## 8. Distribution

If you intend to operate a centralized Cook-Chill System and supply food to one or more locations, the food must be transported to the other site while in a chilled state. The use of refrigerated vehicles is recommended. At the very least, pre-chilled, insulated containers can be used for short journeys.

If chilled food is being transferred to other sites, it must not only be transported at the correct temperature, but, on arrival, it must also be placed in appropriate refrigerated storage cabinets (38°F) until required.

## 9. Regeneration

Cooked and chilled foods that are to be eaten cold or at room temperature should be consumed within 30 minutes of removal from storage. If the food is to be rethermalized, this should start no more than 30 minutes after the food is removed from chilled storage. Rethermalization must take place close to the point of consumption.

Suitable reheating equipment includes microwaves, forced air and steam convection ovens. Traditional types of hot-air ovens may be used, but take care

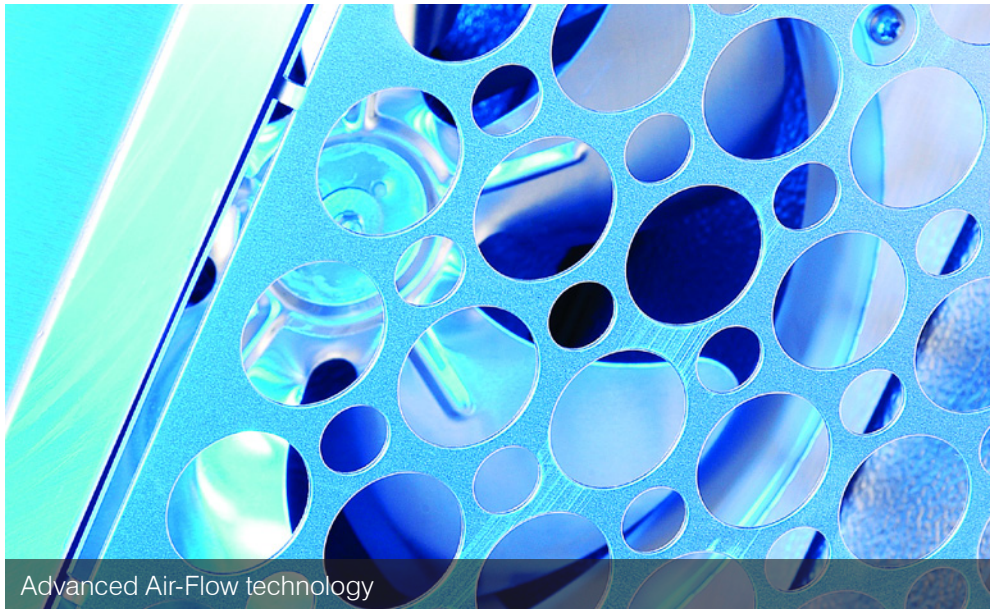
to ensure that exposed areas of food do not dry out. Commercial microwave ovens may also be used, and we recommend these for the reheating of individual portions or small numbers of meals. Ideally, of course, it is preferable to install dedicated rethermalization equipment.

In order to ensure the destruction of any pathogens present, the core temperature of the food must reach at least 160°F, and be held at this temperature for at least 2 minutes. To check that this temperature has been reached, insert a core food probe thermometer into the slowest heating point (usually the center).

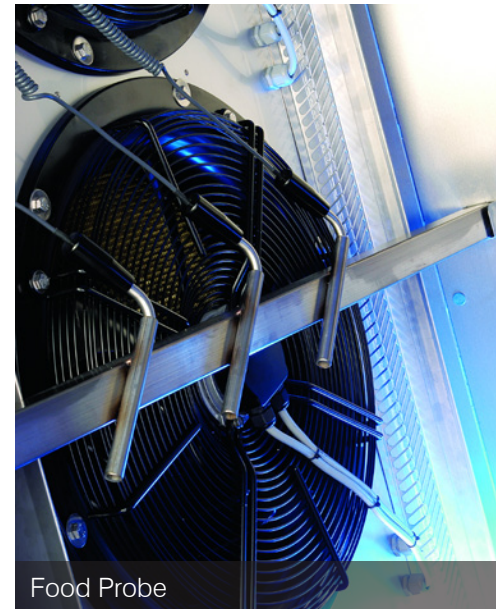
Any food that has been reheated and allowed to cool should be destroyed immediately. Any reheated meals not consumed must be destroyed and never be reheated or returned to chilled storage.

## 10. Service

Once food has been reheated to the required temperature, it should be consumed as soon as possible, and preferably within 30 minutes of reheating. The temperature of the food should not fall below 140°F.



Advanced Air-Flow technology



Food Probe

## WHY BUY WILLIAMS

Williams Refrigeration has over 30 years experience in designing and manufacturing Blast Chillers. During this time, we have built a worldwide reputation for outstanding quality and performance of our Blast Chiller equipment and the leading technology used in the control panel to ensure ease of use and accuracy.

### Key Features and Benefits of Williams Blast Chillers, Chiller Freezers and Freezers

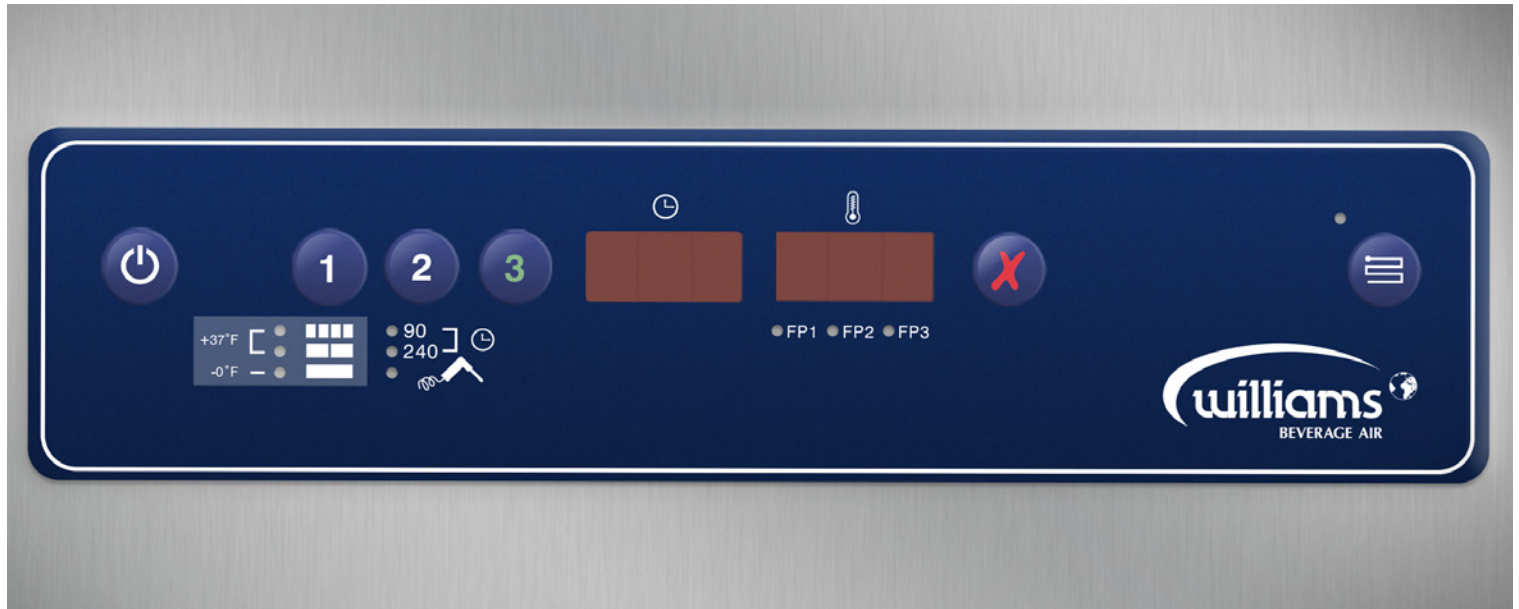
- Sleek looks with excellent functional hygienic design, including Williams's unique, easy-to-use control panel and digital display—simple for all staff to understand, use and control the Blast Chill cycles—designed for accuracy, flexibility and control.
- All models fitted with high quality “L” shaped food core temperature probes designed for easy use.
- Operating the Blast Chill cycle using the food probe ensures perfect temperature control every time and removes any uncertainties from the Blast Chilling process.

- Audible alarm sounds at the end of Blast Chill cycle to notify staff—hi/low and fail safe alarms will also sound to indicate if product temperature is too high or too low or the cabinet is not functioning.
- Extensive range of models to suit all types of foodservice requirements and environments. Most models are designed for 110°F ambient environments.
- Advanced air flow design for uniform chilling of product load eliminates the risk of dehydration and damage by large ice crystals and ensures excellent product quality every time.
- All models feature stainless steel exterior and interior with easy-to-clean, sanitary interiors including removable racking/shelving on reach-in cabinets.
- Auto defrost on completion of every cycle and every six hours to ensure continued operational efficiency.
- Coated evaporator and coils for enhanced life and food safety compliance.

- All models automatically switch to storage mode at the end of each Blast
- Chill cycle for holding product at the right temperature until you are ready to move it to the correct storage cabinet or walk-in refrigerator.
- As with all of Williams's equipment, Blast Chillers are 100% CFC free and manufactured to meet or exceed FDA and HACCP guidelines.

### Options include:

- UV lighting on Roll-in models for additional hygiene safety
- Historical hard data printer option available for Blast Chill/Freeze cycle recording. Graphical print out at the end of each Blast Chill cycle showing the time of cycle and temperature fall
- Available for multi-voltages to suit international requirements
- Roll-in models offer the option of Williams unique storage “pod” refrigeration system which offers increased efficiencies and storage area



## EASY AS ONE-TWO-THREE

Operating Williams Blast Chillers and Freezers is as simple as 1-2-3. With a choice of operating the Blast Chill or Freeze cycle using three buttons or with the food core temperature probe or probes

### Control Buttons

- 1** Press to select Blast Chill or Blast Freeze cycle (on Blast Chillers – chilling is the only option) Press to select Hard or Soft Chill or Blast Freeze (on Blast Freezers – Blast Freeze is the only option)
- 2** Press to select time options 30, 60, 90, 240 minutes and food probe (depending on the size of load and product)
- 3** Press to start the Blast Chill or Blast Freeze cycle  
If you have made a mistake press and start again
- X** During the Blast Chill/Freeze cycle the cabinet temperature will be shown throughout the process

### Food Probe Control\*

- 1** Press to select Blast Chill or Blast Freeze cycle Press to select Hard or Soft or Blast Freeze cycle
- 2** Press to select food probe and ensure the probe or probes are placed in the centre of the products requiring chilling
- 3** Press to start cycle  
\* Not recommended for freezing

During the Blast Chill cycle using the food probe the LED display shows the time elapsed so you can clearly see how long the product has been Blast Chilling and the core temperature of the product.

The time elapsed feature is unique to the Williams range of Blast Chillers and Freezers. The first window will show the time lapsed and the second window will show the core food temperature(s).

Once the cycle is complete the Blast Chiller, Chiller Freezer or Freezer will go through an auto defrost and automatically switch to storage mode to ensure the food is kept at a safe temperature of +3°C or -18°C until you are ready to transfer the load to the correct storage cabinet/coldroom/freezer room.



## CHOOSING THE RIGHT BLAST CHILLER FOR YOUR OPERATION

To find out which model of Blast Chiller is the most suitable for your operation, consider the type of food you will be blast chilling, as well as the volume of food you need to produce, calculated in quantity of pounds.

When calculating volumes, remember that you may be producing meals for consumption over seven days but with production in only five days. It is also wise to allow a little extra capacity than you require at the present time, in order to allow for the expansion of your business and changing menus.

### Storage equipment

The storage equipment used for holding pre-cooked chilled foods must be designed and used specifically for that purpose. Williams cabinets are equipped with shelves or pan slides. An ordinary commercial refrigerator that is in general use within the kitchen is not usually suitable.

Steps must be taken to ensure that possible cross-contamination between raw foods or other cooked products and stored chilled food does not occur.

The storage unit must be capable of holding products at a constant temperature of between 34°F and 38°F which should be indicated clearly by a visible temperature indicator.

The equipment should also ideally feature an audible alarm that will alert you if the storage temperature reaches unacceptable levels.

When selecting storage equipment, allow for sufficient capacity to cope with peak production, as well as room for an efficient stock rotation system. A minimum storage capacity of two days is normal for Cook- Chill products.

Storage equipment will need to be located in an area that allows for easy access, and must be sufficiently close to the Blast Chiller to ensure that food arrives at the cabinet without risking any fluctuations in the 34°/38°F chilled temperature—while still at the optimum chill temperature.

**IMPORTANT!** Make sure your cooking, chilling and storage equipment are all compatible with the containers you use.

# PRACTICAL EXAMPLE

In this example, the owner of a business in a vacation resort, serving 600 meals per week over six days (50 covers, two sittings and a turnover of one per sitting), realized that there was potential to operate at the same daily turnover on a seven-day basis. However, the reputation of the business was due, in large part, to the quality of the staff that were given Mondays off in lieu of weekends. The option of employing extra part-time staff for Mondays only would wipe out the advantage gained. In any case, skilled staff were almost impossible to find.

Meanwhile, potential customers were being turned away to the advantage of other establishments. There had to be another solution.

The restaurateur calculated that, by installing a Blast Chiller capable of chilling 175 meals per day, he could reward his staff by giving them weekends off, prime cook only four days a week starting at 8:00 am and increase his meal turnover by 100 meals a week, without incurring any additional staff or premise costs.

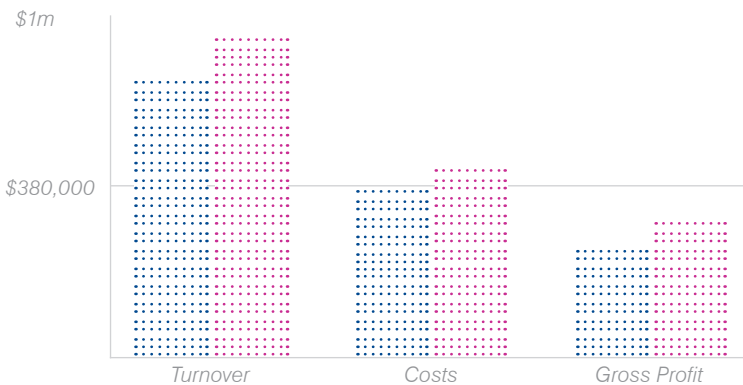
A production schedule (below) was drawn up based upon a turnover of 100 meals per day, cooking on four days.

The unit he selected was the WBC-75. The unit is actually capable of chilling 240 x 20-oz portions per day based on four 90-minute cycles of 75 lbs per cycle. Of course, a greater number could be achieved if the unit were used more times per day.

The unit chosen has plenty of spare capacity to cope with the future expansion of the business, which may include extending the present restaurant or setting up an outside banquet service to supply hotels and weddings in the area.

In addition, a chilled food cabinet was purchased solely for the storage of the blast chilled food.

As a result of installing the Blast Chiller, the restaurateur in question was able to achieve over a 28% increase in gross profit as illustrated by the following figures:



Profit and Loss	With Blast Chiller	Without Blast Chiller
Turnover	\$875,500	\$750,000
Staff Wages	\$85,000	\$90,000
Raw Materials	\$236,250	\$202,500
Other Expenses	\$93,000	\$85,500
Gross Profit	\$294,720	\$230,220
Less Tax (33%)	(£50,648)	(£64,838)
Net Profit	£102,832	£13,1642

\*Average price of meal is \$25.

Without Blast Chilling	Store	Cook	Serve	Balance
Monday	0	0	0	0
Tuesday	0	100	100	0
Wednesday	0	100	100	0
Thursday	0	100	100	0
Friday	0	100	100	0
Saturday	0	100	100	0
Sunday	0	100	100	0

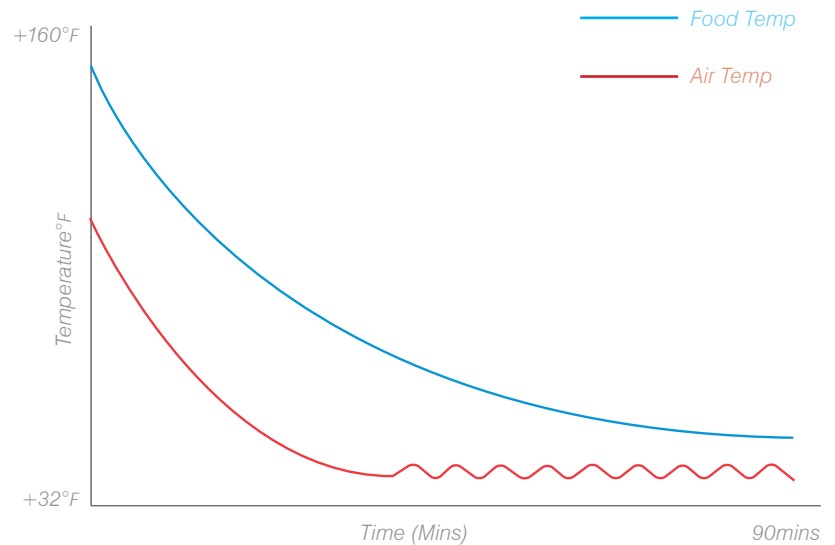
With Blast Chilling	Store	Cook	Serve	Balance
Monday	0	175	100	75
Tuesday	75	175	100	150
Wednesday	150	0	100	50
Thursday	50	175	100	125
Friday	125	175	100	200
Saturday	200	0	100	100
Sunday	100	0	100	0

# BLAST CHILLER TIMES

Approximate times taken to chill different foods by various Williams Blast Chillers

Please note that actual times will depend on the thickness of the product, type of container, actual entry temperature and ambient temperature.

Different food types chill at different rates. If trays or trolleys are loaded with different types of product they will chill at different rates and times will differ.



MEAT	Hard Blast Chill 40 - 90 mins depending on type, size and quantity (Includes beef, pork, lamb, poultry pieces, stock and mince)
FISH	Soft Blast Chill 30 - 90 mins depending on type, size and quantity (Includes fish, e.g. haddock, plaice, cod fillets, salmon, shellfish, - fried, poached or baked)
PREPARED DISHES	Hard Blast Chill 50 - 90 mins depending on type, size and quantity (Includes meat based stews, casseroles, lasagne, moussaka, shepherds pie, mashed potato, risotto)
VEGETABLES/PULSES	Soft Blast Chill 30 - 90 mins depending on type, size and quantity (Includes carrots, all green vegetables, cauliflower, rice, sliced potatoes, - steamed or roasted)
FRUIT	Soft Blast Chill 60 - 90 mins depending on type, size and quantity (Includes stewed apple, peaches, cherries, rhubarb and other cooked fruits)
DESSERTS	Soft Blast Chill 30 - 90 mins depending on type, size and quantity (Includes fruit based desserts, cream based, egg custards, flans and pies)
	Hard Blast Chill 30 - 90 mins depending on type, size and quantity (Includes steam puddings, sponge cakes, dense desserts such as tiramisu, cheesecake)
VACUUM PACKED SOUPS/SAUCES (max 4kg)	Hard Blast Chill 75+ mins (depending on type, size, quantity and packaging) (Includes all types of soup, custard, sweet and savoury sauces)  NB: The type of packaging will affect the Blast Chilling time and in extreme circumstances may take longer than 90 mins
BAKERY PRODUCTS	
Cakes	Hard Blast Chill 30 - 90 mins depending on type, size and quantity
Cream Cakes/Gateaux	Soft Blast Chill 50 - 90 mins depending on type, size and quantity
Pastry	Hard Blast Chill 60 - 90 mins (pies, flans) depending on type, size and quantity

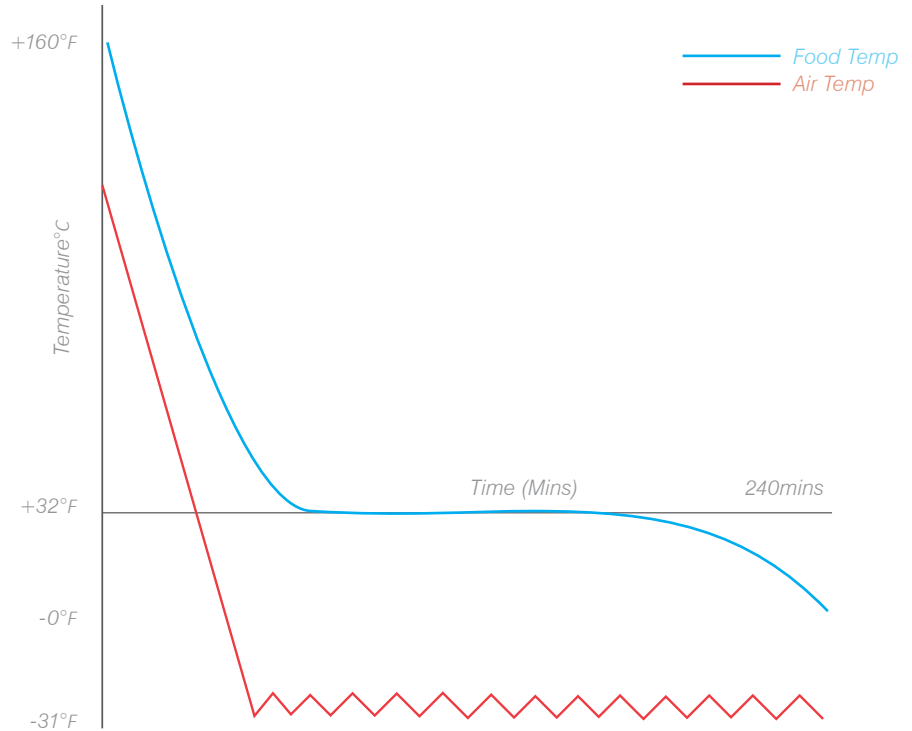


# BLAST FREEZER TIMES

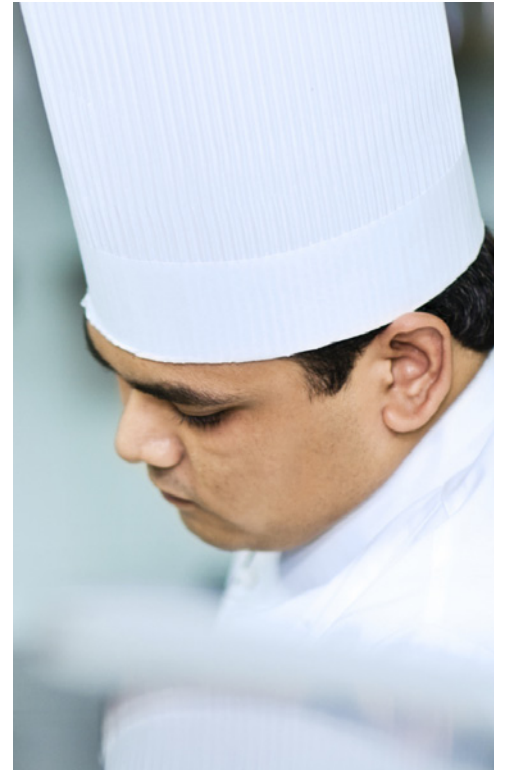
Approximate times taken to freeze different foods by various Williams Blast Chiller Freezers and Freezers

Please note that actual times will depend on the thickness of the product, type of container, actual entry temperature and ambient temperature.

Different food types freeze at different rates. If trays or trolleys are loaded with different types of product they will freeze at different rates and times will differ.



MEAT	Blast Freeze 60 mins up to 240mins (all types of meat product)
FISH	Blast Freeze 60 mins up to 240 mins (Raw fish/cooked shellfish)
PREPARED DISHES	Blast Freeze 90 mins up to 240 mins (Meat based dishes, mashed potato)
VEGETABLES/PULSES	Blast Freeze 60 mins up to 240 mins (Fried potatoes, blanched vegetables)
FRUIT	Blast Freeze 60 mins up to 240 mins (Berries, rhubarb, apples, - cooked or raw fruit)
DESSERTS	Blast Freeze 70 mins up to 240 mins (Raw pastry, mousses, cooked cream desserts, cooked pastry desserts, gateaux)
VACUUM PACKED SOUPS/SAUCES (max 4kg)	Blast Freeze 90 mins up to 240 mins (All types of sauces)
BAKERY PRODUCTS	
Dough/Bread	Blast Freeze 70 mins up to 240mins
Cakes	Blast Freeze 70 mins up to 240mins
Cream Cakes/Gateaux	Blast Freeze 50 mins up to 240mins
Pastry	Blast Freeze 50 mins up to 240mins



## COOK FREEZE

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A Cook-Freeze system involves the full cooking of food, followed by rapid freezing and storage of food at

0°-8°C, before controlled and thorough thawing and regeneration prior to service. Blast Freezing can also be used for raw materials and semi manufactured products.

The Guidelines on Cook-Chill and Cook-Freeze Catering Systems (DHS) require that the food core temperature is reduced from +160°C to 0°F within 240 minutes (4 hours - see graph on page 15). A range of Williams Reach-in models offer the dual function of Blast Chilling and Blast Freezing, whilst there are a range of dedicated Modular Roll-in Blast Freezers for larger volumes. As well as a Blast Freezer, suitable storage cabinets for frozen food and preferably a controlled thawing cabinet are required.

Following full cooking, if required, the product should be portioned ready for Blast Freezing ready for storage in a frozen food cabinet for several weeks or months at below 0°F. The Blast Freeze cycle transforms the liquid present in the food into microcrystals which do not damage the tissue structure of the product and ensures the quality of the food is maintained so you still have a high quality product after defrosting.

NB: Frozen food storage cabinets are often loosely referred to as 'Freezers', however, their purpose is specifically to store pre-frozen foods, not to freeze hot foods. Williams offers a comprehensive range of Freezer

## NUTRITIONAL INFORMATION

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Cooking food always results in the loss of some nutrients, and there can be a further steady loss while the food is kept chilled. However, if the Department of Health Guidelines on Cook-Chill and Cook-Freeze procedures are followed closely, the loss of nutrients from food should be no greater than those from any other conventional catering system.

Nutrition and flavour effects are explained in more detail in the Department of Health Guidelines.



## EQUIPMENT.

### Equipment for rapid chilling

There are two common methods of rapid chilling:

1. Using an electro mechanical Blast Chiller, which circulates low temperature air at high velocity.
2. The immersion of packed products in a suitable refrigerated liquid.

The first of these options is the most suitable and convenient for caterers.

There are two common types:-

### Large Modular Roll-in Models

These are suitable for high volume operations such as hospitals, airline kitchens, schools and correctional facilities. These are designed to move one or more racks of food at a time.

### Reach-In Models

These process smaller amounts and are more suited to restaurants, hotels, employee cafeterias, or where space is limited.

### Features to look for:

Whatever Blast Chiller you choose, it must be capable of reducing the temperature of a 2 inch layer of food from 160°F to between 32°F and 38°F within 90 minutes, when fully loaded. It must also feature an accurate (+/-0.5°F) temperature display, with a built-in food probe featuring digital display. Digital and audible timers are also useful features.

Upon completion of the blast chill cycle, the unit should automatically revert to storage mode (32°F/38°F) until the chilling mode is selected again. This enables the operator to put one load in last thing at night, for example, and remove the chilled product first thing in the morning. Williams Blast Chillers offer the ability to audit temperatures at the end of the process via a printer for easy HACCP record-keeping.

When selecting a Blast Chiller, be sure that its capacity is sufficient to match maximum production so that blast chilling can commence within 30 minutes after cooking. For the same reason, the Blast Chiller must be located close enough to the cooking area to allow for this time limit to be met.

Make sure that the model you choose is compatible with your electrical supply.

The best equipment is made from stainless steel. You should also look for a good seal around the door. Poor seals mean an inefficient unit that will cost you money in increased power consumption.

Plus, they are less able to comply with the important times referred to in the Cook-Chill Guidelines.

Pay close attention to the design. It should be possible to have easy access to the evaporator compartment for cleaning and servicing. Look for removable shelf supports and racking. Cabinets with these features are easier to clean. Automatic defrost and condensate disposal are essential features to look for when selecting a unit.

# THE WILLIAMS PRODUCT RANGE

Take control of the Cook-Chill process and eliminate the hazards of slow cooling with this line of stylish, powerful Reach-in Blast Chillers. Designed for small and medium-sized foodservice operations, the Williams line of products combines style, ease-of-use and state-of-the-art technology.

- Designed to accommodate sheet pans and hotel pans
- Stainless steel exterior and interior
- Hard and Soft Chill options
- Designed for 110°F ambient environments
- Easy as 1-2-3 with the simple control panel or the food core temperature probe
- Designed to Blast Chill from 160°F to 38°F in 90 minutes

## WBC35

- Capacity 35 lbs
- Five pairs of adjustable pan slides for 12" x 20" x 2 1/2" pans
- Dimensions: 35" H x 32" D x 28" W
- Optional left-handed door swing and legs

## WBC60

- Capacity 60 lbs
- Seven pairs of adjustable pan slides for 12" x 20" x 2 1/2" pans
- Dimensions: 33.5" H x 34" D x 57" W

## WBC75

- Capacity 75 lbs
- 12 pairs of adjustable pan slides on 3 1/2" centers for 18" x 26" sheet pans
- Dimensions: 77 1/2" H x 36" D x 35 1/2" W
- Optional left-handed door swing and legs

## WBC110

- Capacity 100 lbs
- 12 adjustable white, resin-coated wire shelves
- Dimensions: 80" H x 40 5/8" D x 43 3/8" W
- Optional left-handed door swing and legs

Model	WBC35	WBC60	WBC75	WBC100
Capacity (lbs)	35	60	75	100
Shelves	5	7	12	12



*WILLIAMS RANGE OF REACH IN BLAST CHILLERS*

# A SELECTION FROM THE WILLIAMS PRODUCT RANGE

The Williams range of Roll-In Blast Chillers was designed for larger foodservice operations like hospitals, large hotels and airline kitchens. These units feature the standard easy-to-use, 1-2-3 control panel and offer the choice of timed cycles or control using three core food temperature probes.

The Roll-In Line accommodates standard roll-in carts and has a stainless steel interior and exterior. Easy access to large area evaporators and high velocity fans promote even chilling, efficient operation, easy cleaning and servicing. There is even the option of a roll-thru design and Williams's unique "POD" refrigeration system that allows the unit to be used as a 38°F storage refrigerator.

## WBC175

- Capacity 175 lbs
- Compartment accepts one roll-in cart 27" W x 40" D x 72" H
- Dimensions: 98.2"H x 49 3/16" D x 58" W
- Options: Roll-thru model, POD-style refrigeration system, left-handed door swing, extra wide doors, insulated floor, floor ramps, and indoor/outdoor condensing units

## WBC220

- Capacity 220 lbs
- Compartment accepts one roll-in cart 27" W x 40" D x 72" H
- Dimensions: 98.2"H x 49 3/16" D x 58" W
- Options: Roll-thru model, POD-style refrigeration system, left-handed door swing, extra wide doors, insulated floor, floor ramps, and indoor/outdoor condensing units

## WBC350

- Capacity 350 lbs
- Compartment accepts one roll-in cart 27" W x 40" D x 72" H
- Dimensions: 98.2"H x 49 3/16" D x 58" W
- Options: Roll-thru model, POD-style refrigeration system, left-handed door swing, extra wide doors, insulated floor, floor ramps, and indoor/outdoor condensing units

## WBC480

- Capacity 480 lbs
- Accommodates 2 roll-in carts 27" W x 40" D x 72" H
- Dimensions: 98"H x 92 1/2" D x 58" W
- Options: Roll-thru model, POD-style refrigeration system, left-handed door swing, extra wide doors, insulated floor, floor ramps, and indoor/outdoor condensing units.

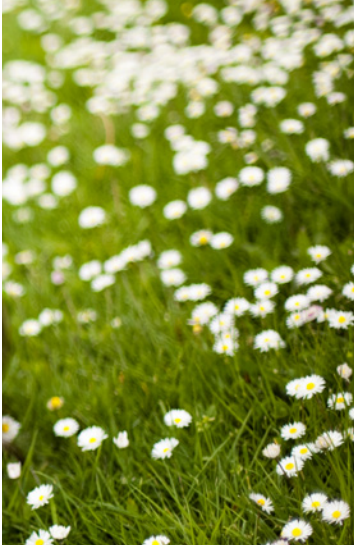
## WBC660

- Capacity 660 lbs
- Accommodates 2 roll-in carts 27" W x 40" D x 72" H
- Dimensions: 98"H x 92 1/2" D x 58" W
- Options: Roll-thru model, POD-style refrigeration system, left-handed door swing, extra wide doors, insulated floor, floor ramps, and indoor/outdoor condensing units

Model	WBC175	WBC220	WBC350	WBC480	WBC660
Capacity (lbs)	175	220	350	480	660
Roll in Carts	1	1	1	2	2



*WILLIAMS ROLL-IN BLAST CHILLERS*



## greenlogic

Greenlogic is Williams' commitment to supplying the most energy efficient and sustainable commercial refrigeration in the market today.

All Williams products must meet our strict environmental criteria. Every component is considered and evaluated for the contribution they make to the product's overall energy efficiency as well as the impact they have on the environment. We ensure components have been sourced or produced in a sustainable and ethical manner. All Williams components are manufactured to our rigorous quality standards ensuring the product delivers the longest possible service life.

Greenlogic is not limited to product design: it covers our manufacturing and management processes too. Williams holds the environment certification ISO 14001 throughout our global facilities, for the design, manufacture, installation and

servicing of refrigeration products.

Every manufacturing process is continually monitored by trained staff to ensure we maximise re-use and recycling, and minimise waste.

Our Greenlogic Customer Support helps you make the right decisions for your business and the environment. As well as helping to identify the most energy efficient and sustainable products, Greenlogic Customer Support offers practical advice on how to save energy, time, resources and money, while creating a better working environment.

Greenlogic forms an important part of Williams Corporate Social Responsibility – and can be part of yours too.



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# GLOSSARY

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## **Blast Chiller**

A mechanical unit designed to chill hot food rapidly—from 160°F to 38°F within 90 minutes. It works by re-circulating low temperature air at a high velocity.

## **Hard Blast Chill—160°F to 38°F in 90 minutes**

Blast Chill cycle suitable for denser items with a higher fat content such as cuts of meat, meat-based sauces, soups, sponge cakes, mashed potatoes, and vacuum-packed products. The air temperature of the cabinet drops below the freezing point during the 90-minute cycle.

## **Soft Blast Chill—160°F to 38°F in 90 minutes**

Blast Chill cycle suitable for delicate and light products such as fish, rice, vegetables, cream, desserts, and fried foods. During the 90-minute cycle, the air temperature of the cabinet remains about 32°F.

## **Chill Chain**

The whole process of maintaining strict temperature control throughout the receiving, storage, preparation, processing, storage and distribution of food to control the growth of micro-organisms.

## **Food Core**

The temperature within an item of food or dish. Temperature taken at the slowest cooking point— normally the center.

## **Pathogenic Micro-Organisms**

All foods contain a certain level of organisms or bacteria that can carry disease if allowed to multiply to large numbers. Cooking food kills them, while keeping the food below certain temperatures limits their growth. Consequently, a Cook-Chill System is a good way of maintaining food safety as it controls bacteria growth.

## **Probe**

A thermometer that is inserted into a food product to record the inner temperature. The needle probe should be disinfected after each use.

## **Rethermalization**

The technical term for returning the pre-cooked chilled food back to the safe temperature of 160°F, ready for immediate serving.

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# SUMMARY

## RAW MATERIALS

- Buy from reputable suppliers.
- Choose good quality products.

## STORAGE

- Raw materials should be stored at recommended temperature and humidity levels, in accordance with food safety and HACCP guidelines.

## PREPARATION

- Raw materials should be prepared in areas separated from cooking and post-cooking areas.
- Products should be held at temperatures below 38°F until cooking commences.
- Frozen products should be control thawed before use.

## COOKING

- The core temperature of food must reach at least 160°F and should be held at this
- Check the core temperature using a probe thermometer inserted into the slowest heating point, normally the centre

## BLAST CHILL

- The rapid chilling process must begin within 30 minutes of cooking being completed.
- Once in the chiller, the food must be chilled to a temperature between 34°F and 38°F within 90 minutes.

## CHILLED STORAGE

- Cook-Chill foods should be stored in a cabinet designed for the purpose.
- Pre-cooked chilled food should be stored at between 34°F and 38°F for a maximum period of 5 days.
- Food should be clearly labeled with a description, product date and expiration date.
- A stock rotation system should be used.

## BLAST FREEZE

- The rapid freezing process must begin within 30 minutes of cooking being completed.
- | Once in the freezer, the food must reach a core temperature of at least 23°F within 90 minutes, and a subsequent temperature of at least 0°F.

## FROZEN STORAGE

- Pre-cooked frozen food should be stored at 0°F or below.
- Foods should be clearly marked with a description, production date and expiry date.
- A stock rotation system should be operated.
- Generally, frozen foods may be stored for up to eight weeks, although certain foods can be stored for longer.

## DISTRIBUTION

- Pre-cooked, chilled foods must remain at their chilled state (34°F to 38°F) until they reach the regeneration site.

## RE THERMALIZATION

- Cooked and chilled foods that are to be eaten cold should be consumed within 30 minutes after removal from storage.
- Rethermalization must take place close to the point of consumption.
- The core temperature of food must reach at least 160°F and should be held at this temperature for at least two minutes.
- Rethermalized food that has cooled below 150°F should be reheated for service.

## SERVICE

- Once food has been rethermalized to the required temperature, it should be consumed as soon as possible, preferably within 30 minutes of reheating.
- The temperature of the reheated food should not be allowed to drop below 140°F.
- Any food left after service which has been regenerated must be destroyed.

## DISTRIBUTION

- Pre-cooked chilled foods must remain in their chilled state (32°F to +37°C), until they reach the regeneration site.
- If the core temperature rises to over +41°F, but no more than +50°F, the food must be consumed within 12 hours.
- If the core temperature rises above +F0°F the food must be discarded.

## THAW

- Pre-cooked frozen foods must be fully thawed before regeneration.
- Thawing must be controlled, preferably with the use of a controlled thawing cabinet.
- Food thawed rapidly in fast thaw cabinets should be consumed within 24 hours.
- Thawed foods must not be re-frozen.

## REGENERATION

- Regeneration must take place close to the point of consumption.
- The core temperature of the food must reach at least +160°F and be held at this temperature for at least two minutes.
- Reheated food that has cooled should be reheated above +150°F.
- Reheated food should not be re-frozen.
- Regenerated food not sold must be destroyed.



Design Excellence : Cool Technology



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