williams

Design Excellence : Cool Technology

Guide to Cook-Chill

Easy as 1-2-3

WILLIAMS - YOUR FIRST CHOICE

Williams Refrigeration is the market leading manufacturer and provider of quality refrigeration solutions meeting commercial catering and foodservice requirements worldwide.

For over 30 years Williams has been producing high quality, award winning professional refrigeration equipment exceeding international quality and performance standards.

With extensive manufacturing facilities in the UK, Australia and China, Williams has built a global reputation for performance and reliability of its wide range of high performance cabinets, counters, blast chillers and freezers, coldrooms, merchandisers and bakery equipment, all carrying ISO standards of quality and design.

Williams is a truly international company with global capability and an outstanding reputation for innovation and excellence.

Our commitment to our customers is absolute. Not only do we offer the widest product range on the market, but also provide specialist help and advice on choosing and installing the right equipment through our technical and after-sales support offering a total solution for any refrigeration requirement.

INTRODUCTION

Advances in technology means that catering establishments of all sizes and types can now benefit from using Cook-Chill systems.

Williams Refrigeration, the market leader in refrigeration technology, is leading the way, producing compact, yet sophisticated equipment that suits your needs and your pocket, with simple to use controls.

In the past, only large catering operations were able to take advantage of Cook-Chill systems which, because of their size, were often thought to be very complicated. In fact, the system is quite simple and uses much of the equipment you will already have in your kitchen.

At Williams we lead the way in manufacturing and marketing Blast Chilling and Freezing systems worldwide.

From the smallest caterer to the largest production unit, whether on land or at sea, Williams provides the innovation and flexibility to answer 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, Williams range of Blast Chillers, Chiller Freezers and Freezers are all driven by our unique Simple to Use 1-2-3 Control Panel featuring the 3-step operation that all staff will find easy to operate within only a few moments of basic induction. In fact, many users need no induction at all – it's that Easy!

In a fast moving world with increasing caution over food hygiene 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, Chiller Freezers and Freezers will help you to show due diligence and comply fully with UK and International Food Safety Regulations and Hygiene Guidelines such as the Food Safety Act and Food Hygiene Regulations – HACCP (Hazard Analysis Critical Control Point) and the Department of Health Cook-Chill/Freeze Guidelines.

The purpose of this guide is to explore some of the many myths that surround the Cook-Chill system, while at the same time providing an accurate description of its operation and the benefits it can bring to your business.

As you will see in the following pages, Cook-Chill systems can save you time, money and also help increase your turnover and profitability. What's more, your Environmental Health Officer will be happy, letting you get on with your business.

We hope that you find this guide useful and informative.

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 required, the food must be regenerated before service. The production system itself is simple to operate if well managed, and completely safe provided the Department of Health Guidelines on temperature/time controls are followed.

Cook-Chill Systems have the added benefit of maintaining food quality, nutritional value, flavour and appearance.

Installing a Cook-Chill System also offers the caterer added flexibility and management – and of course profitability!

Who uses Cook-Chill Systems?

Thousands of establishments throughout the whole spectrum of the Catering Industry use Cook-Chill systems.

Anyone who has eaten at a top restaurant or hotel, at a banquet or reception, or on an aeroplane or ship is likely to have eaten a Cook-Chill meal. Cook-Chill systems are also used by many institutional caterers such as hospitals, universities and in much of Armed Forces catering. The largest Cook-Chill user is the housewife buying a wide selection of chilled ready meals to take home from the supermarket.

Will my business benefit from Cook-Chill?

While Cook-Chill is commonly associated with institutional catering, no catering operation is too small to adopt a Cook-Chill system. If your business is serving hot meals and is one of the following, then you will almost certainly benefit:

- Hotel
- Pub
- Restaurant
- B&B
- Fast food restaurant
- Care home
- Contract caterer
- Bakery
- Staff restaurant
- Institutional caterer
- Cafe/bistro
- Travel caterer
- Meals on wheels
- Pizzeria
- In-flight catering

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

- Hospitals
- Universities
- Armed forces catering
- Government
- Local authorities

For large and small establishments the 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 volume.

For the simplest Cook-Chill system, all that is required in addition to the cooking equipment you already have is a Blast Chiller, Chiller Freezer or Freezer, a suitable storage area such as a refrigerator (at +3°C) and an understanding of the guidelines to Cook-Chill/Freeze systems.

Why do caterers use Blast Chillers/Blast Freezers?

The principle feature of Blast Chillers, Blast Freezers or Blast Chiller Freezers is that they are capable of rapidly reducing the temperature of hot foods (+90°C) to low, safe temperatures (+3°C or -18°C). Therefore, they make it easier for caterers to comply with Food Safety and Temperature Control Legislation. 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 and Freezers can also be used as short term storage cabinets too.

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 and litigation and prosecutions are on the increase. Bacteria divide in two every 20 minutes and in 12 hours one bacteria multiplies to become almost 69 billion bacteria. 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 labour 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.

The equipment required by hospitals and local authorities which produce high volumes of food is large and can therefore be expensive. But this is not the case for small to medium sized establishments. Many of these caterers will already have suitable ovens and storage facilities, so they will only need to acquire a blast chiller.

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

Cook-Chill gives you more time to utilise your skills more effectively than any other method.

Instead of spending valuable time on mundane tasks, the professional caterer can use that time to improve presentation, create new dishes and menus, and attend to all other things that make a successful business.

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 Hygiene Regulations.

ADVANTAGES OF COOK-CHILL

Suitable for any foodservice operation

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

Effective time management and control system

The system allows caterers to better organise their time and that of their staff. Prime cooking can take place when the business is quiet, for example, leaving less to do when you have customers to attend to, while at the same time providing a safe and controlled environment and system of work.

Effective resource management

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

Improvement in service

Because most food will be prepared in advance, the caterer will have more time to improve on presentation and attend to customers.

Menu extension

The flexibility of the system allows you to prepare a greater selection of dishes, offering your customers more choice while still maintaining or, improving on 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 favourite recipes without alteration.

Flexibility in service

Because all dishes only require simple regeneration before service, caterers can serve a wide variety of food all day and can easily cope with the fluctuating numbers of customers throughout the day.

Reduced food wastage and improved portion control

Portions can be made up precisely and only the meals ordered will need to be regenerated. This means little or no wastage for you.

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 cope with larger numbers of customers and at short notice. This will result in increased turnover and profitability. You should be aware, therefore, that you may, eventually, have to extend your washing up facilities to cope with the extra business.

Fantastic opportunity for expansion

If the meal turnover of 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

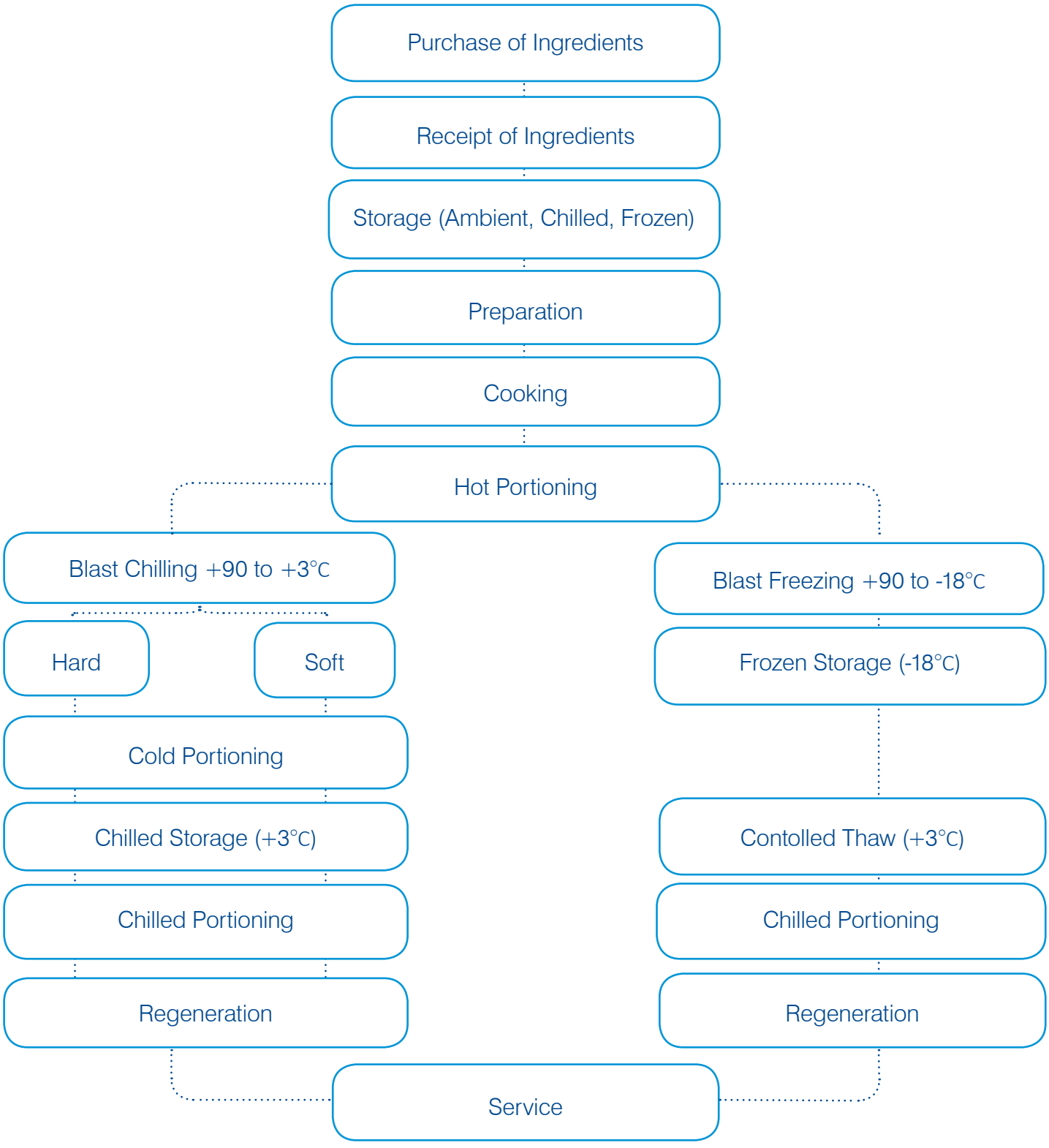
If you are already serving hot food, the only additional equipment you will require for a small to medium sized Cook-Chill operation is a suitable Blast Chiller or Chiller Freezer. You will also need a suitable refrigerator or coldroom (0°C/+3°C) for the storage of the finished product.

As with any cooking operation, a Cook-Chill system requires care to ensure that food does not become vulnerable to harmful bacteria. Staff should, therefore, be given specific training on the Cook-Chill operation, in addition to basic Food Hygiene training. Williams Refrigeration and its dealers are able to help you with this.

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 dishes.

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

FOOD SERVICE OPERATION : HOW DOES IT WORK?



HOW IT WORKS

1. A selection of raw materials

Poor quality raw materials are not going to improve with cooking. It is vital, therefore, that you ensure your supplier only supplies you with high quality products and, if necessary, check their storage, handling and distribution methods.

2. Storage of raw materials

It makes sense to keep good quality raw materials in safe storage and in prime condition before they are needed. This means following basic Food Hygiene 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 Hygiene Regulations and HACCP Guidelines apply. Separate surfaces/ areas and separate implements should be used for the preparation of certain products such as raw fish, meat and poultry to prevent cross-contamination and spread of bacteria.

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

If some raw materials arrive in a frozen condition, 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 the oven is specifically designed to ensure even thawing.

In order to make chilling more efficient after cooking, joints or packs of meat should not weigh more than 2.5kg, or measure more than 100mm in thickness. For dense foods such as meat sauce based dishes - lasagne, moussaka, shepherds pie or stews (or even mashed potato) we recommend no more than 50mm thickness, as described in the Department of Health Cook-Chill/Freeze Guidelines.

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 70°C, 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, and 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 50mm 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 hygienic conditions.

6. Rapid Chilling or Freezing

Whatever the type of Blast Chiller you Whatever the type of Blast Chiller or Chiller Freezer you use, it must be capable of chilling the hot food to between 0°C and +3°C within 90 minutes of placing it in the Blast Chiller and commencing to chill. This is not only to ensure safety, but also preserves the appearance, texture, flavour and nutritional value of food. Your Blast Chiller or Chiller Freezer should be equipped with a food probe or probes with which you can monitor the temperature of the food.

Large joints of meat etc, may not chill as quickly as first required. In this case, the temperature of the joint must be reduced to +10°C or below within 150 minutes, and then portioned before final chilling to between 0°C and +3°C.

Every dish has its ideal cooking method to suit 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 food is not damaged in the process and the quality is maintained.

Hard Blast Chill - during the 90 minutes the air temperature in the cabinet drops below freezing point.

This is designed for dense, large products, which are difficult to chill and have a higher fat content such as meat based sauces, meat joints, mashed potato and lasagne. The air temperature of the cabinet ensures the product reaches the required +3°C within the 90 minutes without the risk of freezing or damaging the food.

Soft Blast Chill - During the 90 minute process the air temperature remains above 0°C. 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 +3°C in the required 90 minutes with no 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.

It is also at this stage that you would choose to Blast Freeze the product ready for storage in a frozen food cabinet for several weeks or months at below -18°C.

Williams Reach-in equipment offers Blast Chilling or the dual function of Blast Chilling and Freezing – taking the core temperature of the product from +70°C to -18°C within the guideline time of 240 minutes (4 hours). The Blast Freeze cycle (see graph - page 15) 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 thawing.

7. Storage of chilled foods

CChilled food should be stored in a dedicated refrigerated storage cabinet at a temperature of between 0°C and +3°C, in order to control the growth of micro-organisms.

You should use a refrigerated cabinet or coldroom designed for chilled food storage, and use it solely for your Cook-Chill products. Williams storage cabinets and coldrooms feature alarms which will alert you should temperatures, for any reason, rise above the recommended levels.

Chilled food may be kept under the above conditions for up to five days (including production and regeneration 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 colour-coded labels, a different colour 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. If, for any reason, the food (in store or during distribution) reaches a temperature over +5°C but no more than +10°C, the food should be consumed within 12 hours.

Should any food in the store exceed its expiry date or reach a temperature over +10°C, it should be destroyed immediately as it will be unfit and unsafe for consumption.

8. Distribution

If you intend to operate a centralised Cook-Chill system and supply food to one or more other locations, the dishes must be transported to the other site whilst in their chilled state (kept below +5°C). The use of refrigerated vehicles is recommended, or at the very least, pre-chilled insulated containers 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 (+3°C) 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 regenerated, this should start no more than 30 minutes after the food is removed from chilled storage. Regeneration must take place close to the point of consumption.

Suitable reheating equipment, recommended in the Department of Health Guidelines, includes infra-red units, forced air and steam convection ovens and special chill/regeneration trolleys. Hot-air oven may be used, but you must ensure that exposed areas of food do not become dehydrated.

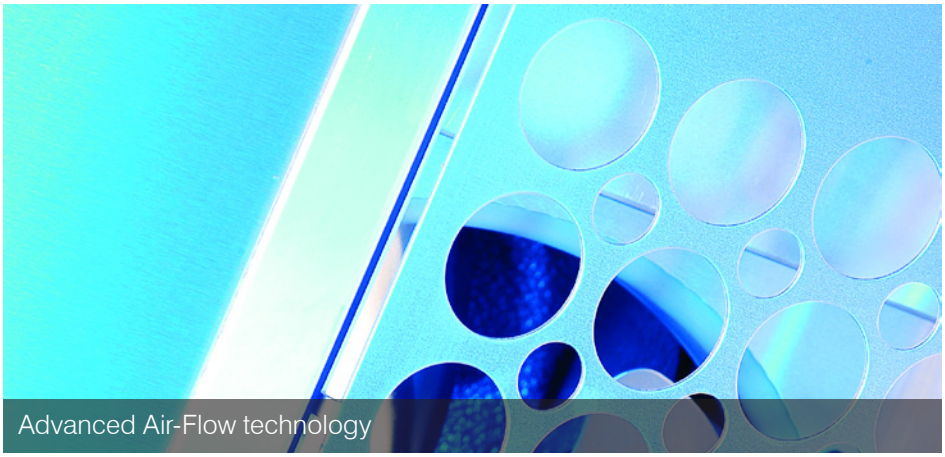
Commercial microwave ovens may be used, and we recommend these for the regeneration of individual portions or small numbers of meals. Ideally, of course, it is preferable to install purpose-built regeneration equipment.

In order to ensure the destruction of any pathogens present, the core temperature of the food must reach at least +70°C, 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 centre).

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

10. Service

Once food has been regenerated to the required temperature, it should be consumed as soon as possible, and preferably within 15 minutes of regenerating. The temperature of the food should not be allowed to fall below +63°C.


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

- Curved, sleek looks with excellent functional hygienic design including Williams unique simple to operate 1-2-3 control panel and easy to read 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 core food temperature probes
- Operating the Blast Chill cycle using the food probe ensures perfect temperature control every time and removes any uncertainties from the Blast Chilling/Freezing process
- Audible alarm sounds at end of Blast Chill or Freeze cycle to notify staff – hi/lo and fail safe alarms will also sound to indicate if product temperature is too high or too low or the cabinet is not functioning
- Range of models to suit all types of requirements and environments. Most models are designed for 43°C ambient environments
- Advanced air flow design for uniformity of chilling/freezing of product load and eliminate the risk of dehydration and damage by large ice crystals ensure excellent product quality every time
- All models feature stainless steel exterior and interior with easy to clean, hygienic 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 hygiene 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 coldroom
- All models compatible with range of temperature monitoring and control systems available from Williams
- As with all Williams equipment, Blast Chillers, Chiller Freezers and Freezers are 100% CFC free and manufactured to meet or exceed international build quality and health and safety standards including ISO9002 and CE
- Reach-in Blast Chillers and Freezers can also be built to meet marine specifications and include positive latch handles, marine voltages, flanged legs for deck fixing and bulkhead fixings
- Selected models comply to ETL/UL Approvals for USA

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

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

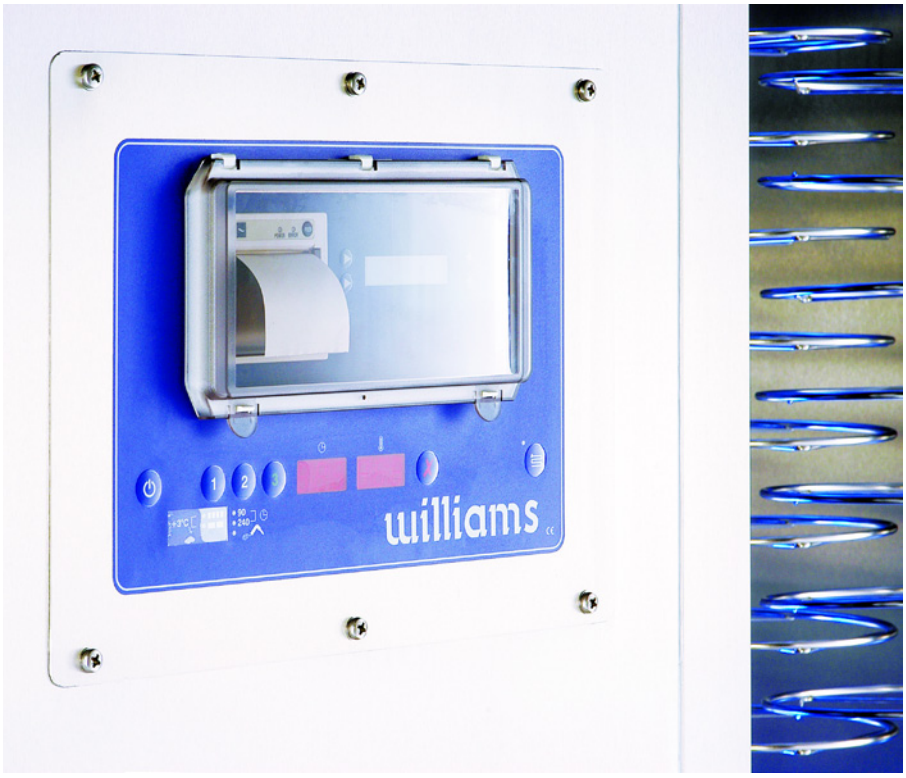
3 Press to start cycle

* 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 is the most suitable for your operation, consider the type of food you will be blast chilling or freezing, as well as the volume of food you need to produce, calculated in quantity of kilograms.

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 gastronorm tray slides. An ordinary non-gastronorm 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 store must be capable of holding products at a constant temperature of between 0°C and +3°C, and this should be indicated clearly by a visible temperature indicator.

The equipment should ideally feature an audible alarm which will alert you if the storage temperature reaches unacceptable levels. A temperature recording device is also required.

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 sited in an area that allows for easy access, and must be sufficiently close to the Blast Chiller to ensure that food arrives at the store without risking any fluctuations in the 0°C/+3°C chilled temperature - whilst still at the optimum chill temperature.

IMPORTANT! make sure your cooking, chilling and storage equipment are all compatible with the containers you use (Gastronorm or designed for Combi ovens).

PRACTICAL EXAMPLE

In this example, the owner of a business in a busy holiday resort, serving 600 meals per week over six days (50 covers, two sittings and a turnover of one per sitting), realised 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, to the quality of the staff who 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.

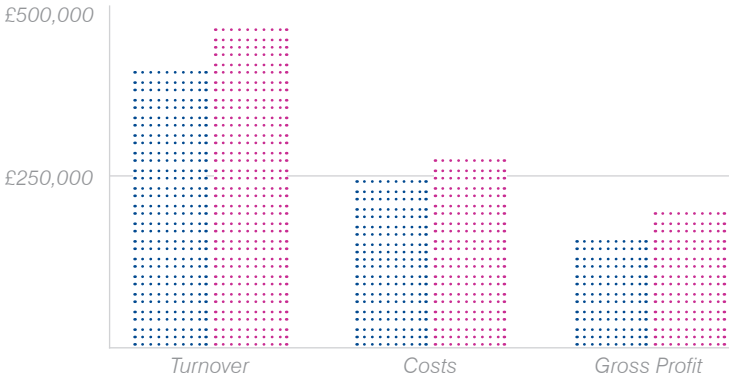
The restaurateur worked out that by installing a Blast Chiller capable of chilling 175 meals per day he could reward his staff by giving them weekends off, prime cook on only four days per week starting at 8.00am and increase his meal turnover by 100 meals a week without incurring any additional staff or premises costs.

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

The machine he selected was a WBCF30. The machine is actually capable of chilling 335 x 340g portions per day based on five 90 minute cycles of 30kg per day. Of course, a greater number could be achieved if the machine were used more times per day.

The machine 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 banqueting 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 a 28% increase in net profit as illustrated by the following figures:



Profit and Loss	With Blast Chiller	Without Blast Chiller
Turnover	£472,000	£405,000
Staff Wages	(£59,520)	(£59,520)
Raw Materials	(£157,500)	(£135,000)
Other Expenses	(£58,000)	(£57,000)
Gross Profit	£196,480	£153,480
Less Tax (33%)	(£64,838)	(£50,648)
Net Profit	£131,642	£102,832

*Average price of meal is £13.50

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*

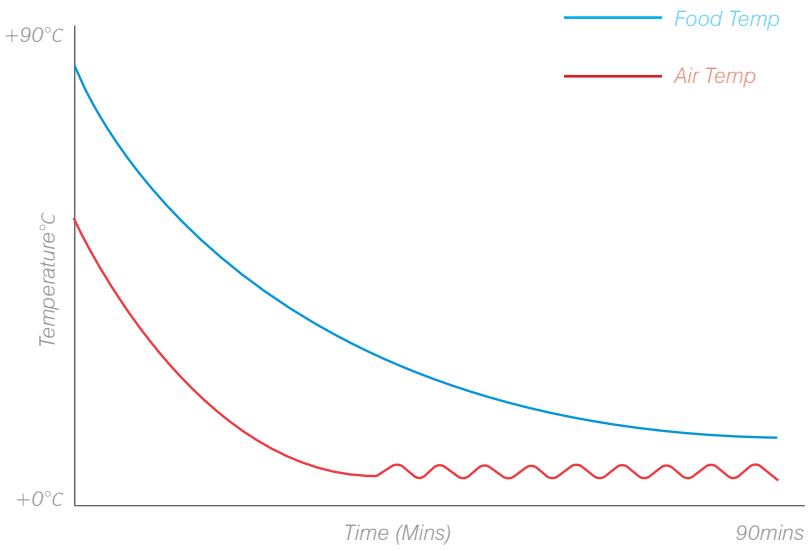
With Blast Chilling	Store	Cook	Serve	*Balance*
Monday	0	175	100	*75*
Tuesday	75	175	100	*150*
Wednesday	150	0	100	*50*
Thursday	50	175	100	*125*
Friday	125	175	100	*200*
Saturday	200	0	100	*100*
Sunday	100	0	100	*0*

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.



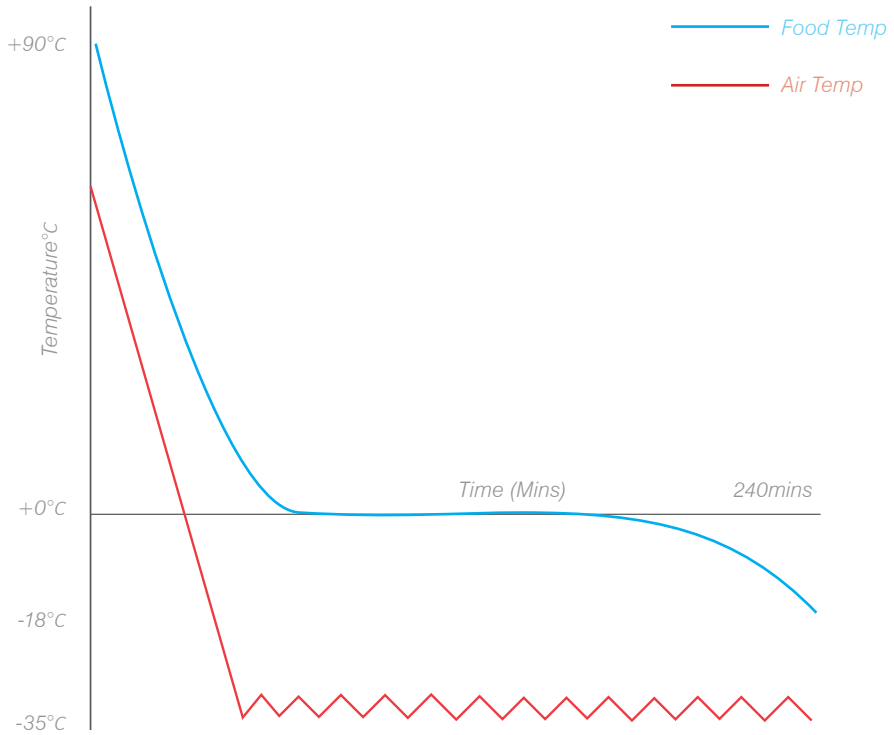
MEAT	Hard Blast Chill 40 - 90 mins depending on type, size and quantity (Includes beef, pork, lamb, poultry pieces, stock and mince)
FISH	Soft Blast Chill 30 - 90 mins depending on type, size and quantity (Includes fish, e.g. haddock, plaice, cod fillets, salmon, shellfish, - fried, poached or baked)
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 cuWstards, 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

A Cook-Freeze system involves the full cooking of food, followed by rapid freezing and storage of food at -18°/-22°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 +90°C to -18°C within 240 minutes (4 hours - see graph on page 15). A range of Williamsn 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 -18°C. 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 and Overnight Thaw cabinets for safe storage and controlled thawing of products after Blast Freezing.

NUTRITIONAL INFORMATION

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 much smaller amounts and are more suited to restaurants, pubs, function caterers, etc, or where space is limited.

Some models can Blast Chill and/ or Blast Freeze should you wish to operate both systems.

Features to look for:

Whatever the type of Blast Chiller or Chiller Freezer you choose, it must be capable of reducing the temperature of a 50mm layer of food from +90°C to between 0°C and +3°C within 90 minutes, when fully loaded.

It must also feature an accurate (+/- 0.5°C) temperature display, with a built-in food probe featuring digital display. Digital and audible timers are also useful features.

Upon completion of the rapid chill cycle, the machine should automatically revert to storage mode (0°C/+3°C), 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.

Where needed, Williams offers the facility to audit temperatures at the end of the process via a printer or data port.

When selecting a Blast Chiller or Chiller Freezer, be sure that its capacity is sufficient to match maximum production so that rapid chilling can commence within 30 minutes after cooking.

For the same reason, the Blast Chiller must be sited near enough to thecooking area to allow for this time limit to be met.

Make sure that the model you choose is compatible with the electrical supply you have. Smaller models will operate satisfactorily on a 240 volt domestic 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 machine and will cost you money in increased power consumption and less effective to comply with the important times referred to in the Cook-Chill/Freeze 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 sides and racking. Cabinets with these features are easier to clean.

Automatic defrost and evaporation are essential features to look for when selecting a machine.

THE WILLIAMS PRODUCT RANGE

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

- Designed to accommodate 1/1 Gastronorm containers
- Stainless steel exterior and interior
- Hard and Soft Chill Options
- Designed for 43°C ambient environments
- Easy to use as 1-2-3 with the simple control panel or using the single core food temperature probe
- Designed to Blast Chill the full capacity from +90°C/+3°C in 90 minutes and dual function models Blast Freeze a full load from +90°C/-18°C in 240 minutes*

WBC10/WBCF10

- Capacity 10kg
- Blast Chiller or Dual Function - Chill and Freeze
- Accommodates 3 1/1Gastronorm pans
- Dimensions: H885 x D804 x W707mm

WBC20/WBCF20

- Capacity 20kg
- Blast Chiller or Dual Function - Chill and Freeze
- Accommodates 6 1/1Gastronorm pans
- Dimensions: H1290 x D804 x W707mm

WBC30/WBCF30

- Capacity 30kg
- Blast Chiller or Dual Function - Chill and Freeze
- Accommodates 10 1/1Gastronorm pans
- Dimensions: H1735 x D804 x W707mm

WBC40/WBCF40

- Capacity 40kg
- Blast Chiller or Dual Function - Chill and Freeze
- Accommodates 10 1/1Gastronorm pans
- Dimensions: H1735 x D804 x W707mm

WBC50/WBCF50

- Designed for larger catering operations
- Suited to 43°C ambient environments
- Accommodates 13 1/1 Gastronorm pans
- Uses simple 1-2-3 control panel and single core food temperature probe
- Capacity 50kg
- Blast Chiller of Dual Function - Chill and Freeze
- WBC50/WBCF50 are 3 phase and require connection to a main drain
- Dimensions: H1905 x D804 x W707mm

*Blast Chill full load at 40mm depth / Blast Freeze full load at 20mm depth

All Williams models feature CFC free insulation and 12 month warranty. We reserve the right to change the specification without notice.

WILLIAMS RANGE OF REACH IN BLAST CHILLERS

A SELECTION FROM THE WILLIAMS PRODUCT RANGE

Designed for larger foodservice operations such as corporate catering, large hotels, hospitals or airline catering, the Williams range of Modular Blast Chillers, Blast Chiller Freezers and Blast Freezers are installed all over the world.

Featuring Williams unique easy to operate 1-2-3 control panel offering the choice of timed cycles or control using three core food temperature probes, the modular range are designed to accommodate standard Gastronorm or Combi oven trolleys.

Stainless steel interior and exterior as standard, a choice of finishes is available to suit all budgets. With easy to access large area evaporators and high velocity fans for even chilling and efficient operation, easy cleaning and servicing, the modular roll-in range offer the option of roll-through design and Williams unique “pod” refrigeration system for longer term storage. Blast Freezing is an optional upgrade on Blast Chiller Models

WMBC90

- Capacity 90kg
- Blast Chiller with Blast Freeze option available
- Accommodates 1 2/1 GN or Combi oven trolley
- Dimensions: H2295 x W1370 or 1570 x D1250mm
- Choice of door opening of 700mm or 900mm

WMBC120

- Capacity 120kg
- Blast Chiller with Blast Freeze option available
- Accommodates 1 2/1 GN or Combi oven trolley
- Dimensions: H2295 x W1370 or 1570 x D1250mm
- Choice of door opening of 700mm or 900mm

WMBC160

- Capacity 160kg
- Blast Chiller with Blast Freeze option available
- Accommodates 1 2/1 GN or Combi oven trolley
- Dimensions: H2295 x W1370 or 1570 x D1250mm
- Choice of door opening of 700mm or 900mm

WMBC200

- Capacity 200kg
- Blast Chiller with Blast Freeze option available
- Accommodates 1 2/1 GN or Combi oven trolley
- Dimensions: H2295 x W1370 or 1570 x D1250mm
- Choice of door opening of 700mm or 900mm

WMBC240

- Capacity 240kg
- Blast Chiller with Blast Freeze option available
- Accommodates 2 2/1 GN or Combi oven trolleys
- Dimensions: H2295 x W1370 or 1570 x D2350mm
- Choice of door opening of 700mm or 900mm

WMBC320

- Capacity 320kg
- Blast Chiller with Blast Freeze option available
- Accommodates 2 2/1 GN or Combi oven trolleys
- Dimensions: H2295 x W1370 or 1570 x D2350mm
- Choice of door opening of 700mm or 900mm

WMBF100

- Capacity 100kg
- Blast Chiller with Blast Freeze option available
- High performance rapid Blast Freezing of 100kg from +90/-18°C in 240 minutes
- Accommodates 1 2/1 GN or Combi oven trolley
- Dimensions: H2295 x W1370 or 1570 x D1250mm
- Choice of door opening of 700mm or 900mm
- 90mm insulated floor either recessed or with ramp

WMBF200

- Capacity 200kg
- Blast Chiller with Blast Freeze option available
- High performance rapid Blast Freezing of 200kg from +90/-18°C in 240 minutes
- Accommodates 2 2/1 GN or Combi oven trolleys
- Dimensions: H2295 x W1370 or 1570 x D2350mm
- Choice of door opening of 700mm or 900mm
- 90mm insulated floor either recessed or with ramp

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.

GLOSSARY

Blast Chiller

A mechanical unit designed to chill hot food rapidly - from +70°C to +3°C within 90 mins. It works by recirculating low temperature air at high velocity.

Hard Blast Chill - +90ºC to +3ºC in 90 mins

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

Soft Blast Chill - +90ºC to +3ºC in 90 mins

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 above 0°C.

Blast Chiller Freezer

A mechanical dual function unit designed to chill or freeze hot food rapidly.

Blast Freezer

A mechanical unit designed to freeze hot food rapidly - from +70°C to -18°C within 240 mins (4 hours).

Blast Freeze - +70ºC to -18ºC in 240 mins

Fast freezing of cooked foods to -18°C which transforms the liquid present in the food into microcrystals – preventing damage to tissue structure of the product and ensures food quality after defrosting. During the cycle the air temperature of the cabinet reaches -25°C or -35°C (dependent on model used - see graph on page 15).

Chill Chain

The whole process of maintaining strict temperature control throughout receipt, 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 cooling point - normally the centre.

Pathogenic Micro-Organisms

All foods contain a certain level of organisms or bacteria which can carry disease if allowed to multiply to large numbers. Cooking food kills them, while keeping 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 each time using a special impregnated tissue or cloth.

Regeneration

The technical term for returning the pre-cooked chilled food back to the safe temperature of +90°C ready for immediate serving.

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 the Food Safety (Temperature Control) Regulations 1996.

PREPARATION
- Raw materials should be prepared in areas separated from cooking and post-cooking areas.
- Products should be held at temperatures below +10°C until cooking commences.
- Frozen products should be control thawed before use.

COOKING
- The core temperature of food must reach at least +70°C and should be held at this temperature for at least two minutes.
- 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 0°C and +3°C within 90 minutes.
- Foods such as joints of meat can be chilled to below +10°C within 150 minutes before portioning and final chilling.

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 -5°C within 90 minutes, and a subsequent temperature of at least -18°C.

CHILLED STORAGE
- Cook/Chill foods should be stored in a cabinet designed for the purpose.
- Pre-cooked chilled food should be stored at between 0°C and +3°C for a maximum period of 5 days.
- If the storage temperature rises to over +5°C, but no more than +10°C, the food should be consumed within 12 hours.
- Food should be clearly labelled with a description, production date and expiry date.
- A stock rotation system should be operated.

FROZEN STORAGE
- Pre-cooked frozen food should be stored at -18°C 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 in their chilled state (0°C to +3°C), until they reach the regeneration site.
- If the core temperature rises to over +5°C, but no more than +10°C, the food must be consumed within 12 hours.
- If the core temperature rises above +10°C the food must be discarded.

REGENERATION

- Cooked and chilled foods that are to be eaten cold should be consumed within 30 minutes after removal from storage.
- Regeneration must take place close to the point of consumption.
- The core temperature of the food must reach at least +70°C and be held at this temperature for at least two minutes.
- Regenerated food that has cooled below +65°C should be reheated for service.

SERVICE

- Once food has been regenerated to the required temperature, it should be consumed as soon as possible, and preferably within 15 minutes of reheating.
- The temperature of the reheated food should not be allowed to drop below +65°C.
- Any food left after service which has been regenerated must be destroyed.

REGENERATION

- Regeneration must take place close to the point of consumption.
- The core temperature of the food must reach at least +70°C and be held at this temperature for at least two minutes.
- Reheated food that has cooled should be reheated above +65°C.
- Reheated food should not be re-frozen.
- Regenerated food not sold must be destroyed.

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.

DISTRIBUTION

- Frozen foods must be transported to the regeneration site under controlled conditions.
- If a product starts to thaw, it must not be refrozen.

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