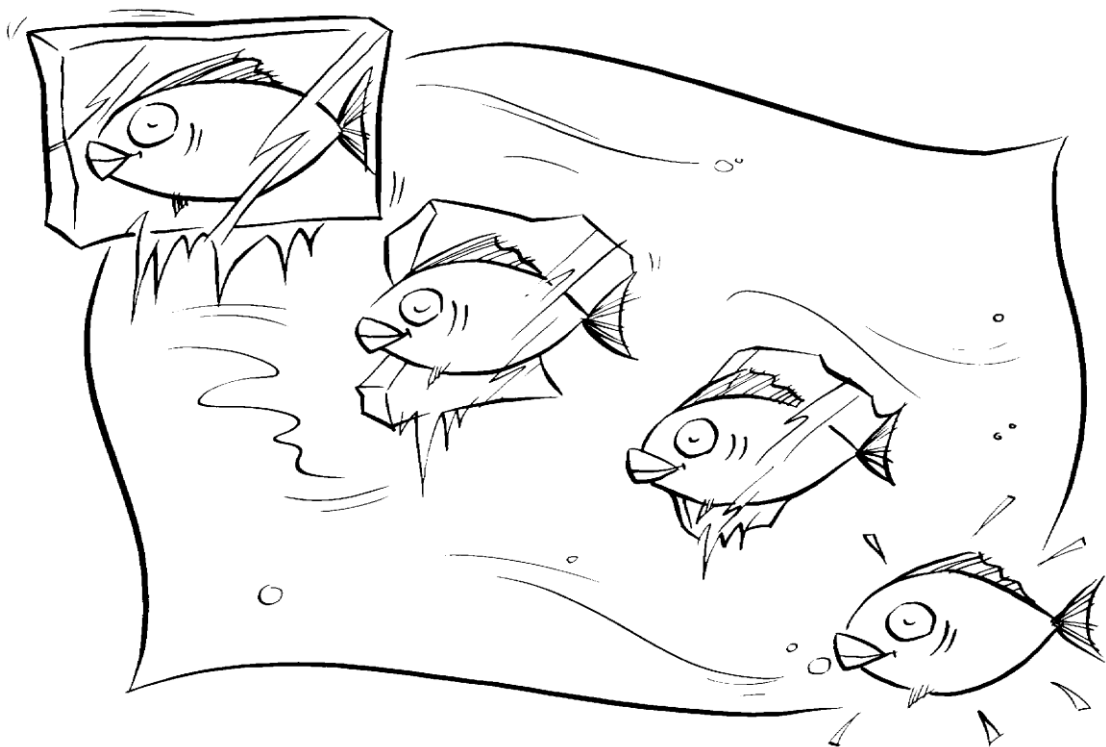


Thawing Seafood



*A Learning Resource for Unit
Standard 6203*

You are welcome to use this resource for all training purposes within the seafood industry.

It is available from:

- The website: www.sito.co.nz
A master copy can be downloaded by clicking on 'Resource Materials', then clicking on 'Self Paced Learning Materials'.
- Seafood Industry Training Organisation (Seafood ITO)
A paper master can be obtained.
Bound copies @ \$10 per copy.

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Comments or suggestions for change or improvement are welcomed. They can be sent to the Seafood ITO directly.

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Welcome to this Learning Resource

This resource will introduce you to and help you to prepare for the assessment of the Seafood ITO unit standard 6203 – Thaw seafood products.

1: Introduction

1: | Introduction

About this resource

- This resource has been written for you to learn by yourself, at your own pace or for you to use with a training provider. It may take one to three hours for you to complete each section and the activities that follow. This will depend on how familiar you are with the material.
- At the beginning of each section, there is a box that tells you what to expect in the section.
- At the end of each section there is a **Summary** of key points. This is to help you revise the section. It is marked like this: 
- Each section contains some **Activities** to help you revise what you have learnt. They are marked like this: 
- The **Answers** to the activities in each section are provided. They can be found in section 5. They are also marked like this: 
- Section 7 contains **Assessment Activities**. These can be used in preparation for the assessment of the knowledge elements of unit standard 6203. Answers are not provided for these activities.

Extra Help

Additional information and resource material can be found in 'Fish for Food'. It is recommended that you get a copy of

this. Another recommended resource is the Learning Resource for Unit Standard 5316. Both of these are available from the Seafood ITO. Information about the Seafood ITO, unit standards and the assessment process can be found in the '**Trainee Manual**' which is also available from the Seafood ITO.

The Seafood ITO's details can be found on the first page of this resource.

If you cannot find what you need, ask your training provider, supervisor or manager for help.

Assessment of Unit Standard 6203

Once you feel ready for assessment and have completed this learning resource, you will need to contact a Registered Seafood ITO Assessor. If you do not know of any, contact the Seafood ITO.

Additional information about the assessment process can be found in **Section 6, Preparing for Assessment**.

Top Learning Tips

- Always have a pencil (or pen) handy to write notes for yourself.
- Use the margins to write these notes, they will help you to remember.
- Underline or highlight key points, to make revision easier.
- Take regular breaks (about every 20-30 minutes), this will help you to concentrate.
- Find a quiet place to work through the resource, so you are not easily disturbed.

What to Expect in this Section

In this section you will find information about thawing seafood.

It will help you to:

- *Describe air thawing*
- *Describe water thawing.*
- *Give advantages and disadvantages of each method.*

2: Thawing Seafood

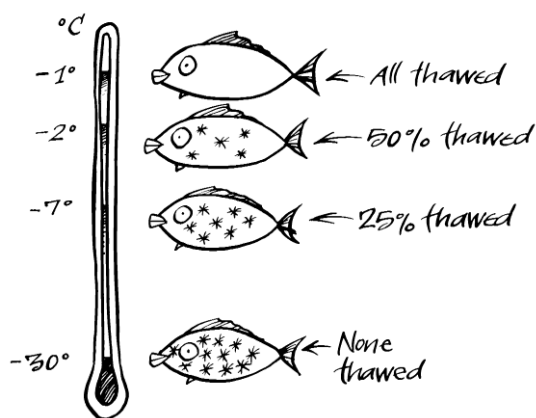
2: Thawing Seafood

Thawing Seafood

Thawing is the process of changing the state of a product from frozen to unfrozen. It involves transferring “heat” to a frozen product to melt the ice that was formed within the flesh during the freezing process.

Like freezing, thawing should be carried out as quickly as possible to maintain the quality of the product. The time taken to thaw products depends mostly on the thickness of the product and how long it takes for the “heat” to transfer to the frozen core (center of the product). Thawing is complete when there is no ice remaining in the flesh of the product. This occurs once the temperature has reached -1.0°C right through to the core.

It is very important that the product does not get too warm during thawing, as thawed seafood will spoil as quickly, or faster than, fresh (unfrozen) seafood, if chilled temperatures are not maintained. Once thawed, seafood must be kept chilled or processed immediately. For more information on the spoilage of seafood, have a look in **Fish for Food**, available from the Seafood ITO.



If the thawing process is carried out correctly there should be little effect on the quality of the product. The conditions of thawing should not allow for the growth of microorganisms or for the loss of flesh texture. The final quality of thawed seafood will depend not only on the thawing process but also on factors such as frozen storage conditions and the length of time that it has been frozen, packaging, product form and product type.

There are two main methods of thawing used in the seafood industry - air thawing and water thawing. Other methods of thawing are available, such as vacuum thawing and electrical methods (dielectric heating, electrical resistance heating and microwave heating). However these are not commonly used in the New Zealand seafood industry.

Air Thawing

Air thawing, as the name suggests, is thawing product in the air. Outer packaging is removed and the product is simply left at ambient or chilled temperatures until thawing is complete. It is not often used for large volumes of product in the seafood industry but it is a good thawing method for small quantities of product and for products such as fish fillets or individually frozen shellfish that are not suitable for water thawing. Careful attention to thawing times, air temperatures and general hygiene is very important to ensure that the quality of the product is maintained. The problem with air thawing is that the amount of control the operator has is limited.

To air thaw product the following procedure can be used:

Step	Action	Important Points
1	Remove product from freezer & spread out on tables or benches.	These should have been cleaned & sanitised first. They should also be designed so that they are free draining to prevent the product from sitting in pools of 'water'
2	Discard the cardboard carton but leave any plastic liners that the product may be wrapped in.	The liners will help you to break the product apart without damaging the product itself
3.	Leave product to thaw in cool temperatures – about 12-15°C.	If the temperature is too cold, thawing will take too long, but if temperatures are too warm, quality will be lost through spoilage.
4.	If possible remove the outer layers of product as they start to thaw & place in chilled storage.	This will allow the inner layer to thaw quicker and prevent the already thawed product from becoming too warm.
5.	Once thawed, process product as quickly as possible.	If rapid processing is not possible store the product in the chiller.



- Not suitable for large volumes of product
- Difficult to control
- Can take up large amounts of space in the factory

Water Thawing

Water thawing is commonly used in the seafood industry and can be used to thaw a variety of products such as whole, headed & gutted, or dressed fish, rock lobster tails and squid. Water thawing is not recommended for fish fillets because the fillets becomes water logged and there is some loss of flavour.

With water thawing there are a number of factors that can be controlled including water temperature, flow rate and product separation. "Controlled thawing," means that the product can be thawed quickly and a better quality product obtained. Water thawing also takes up less space in the factory compared to air thawing but requires a large supply of fresh potable water.

Slow thawing over a few days should be avoided, as the outer surface may begin to spoil before the center has thawed. The total thawing time should not be any longer than 15-20 hours.

Advantages and Disadvantages of Air Thawing

Advantages

- Good for small quantities of product, eg product for a retail outlet.
- Can be used for products that cannot be water thawed such as fillets or shellfish.
- Minimal loss of flavour.

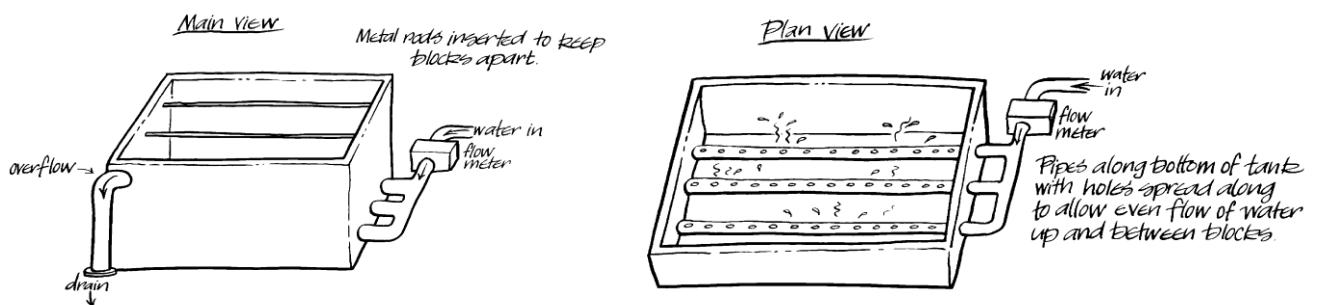
Disadvantages

- Slow thawing time

Batch Thawing Example

The following steps are those which are generally followed for the batch thawing of H&G product frozen at sea:

Step	Action	Important Points
1	Remove product from frozen storage and de-carton.	
2	Load blocks into the thawing tank, plastic outer in place but open end down. Insert dividers between rows of blocks.	Leaving the plastic outers on prevents the blocks from sticking together as the tank is loaded. Divider rods prevent the blocks from leaning on each other, ensuring that water can flow evenly over and around all blocks.
3	Turn water on to fill tank. Remove plastic outers when the tank is full, and adjust the flow rate of the water. Where controls exist, water flow rate and temperature should be optimised.	Water should ideally flow from the bottom and over flow (or be drained away) from the top. <i>See diagram below.</i> The flow rate of water should allow steady movement of water over the surfaces of all blocks in the tank.* Water temperature should be maintained at around 18°C.**
4	Run water through tank until blocks are ready for breaking.	The time taken to reach this point will depend on the type of fish, the size of the block, water temperature and flow rate.***
5	Begin breaking the blocks by hand when fish can be easily freed. The water may be turned off at this point (decision based on operator's judgement and experience).	Care is needed to avoid damaging product by pulling fish apart that are not easily freed. Fish should be held firmly at the "head end" and gently pulled away from the block.
6	Complete breaking the blocks apart. If not done already, turn the water off.	All fish should be separated at this point. The outer layer of flesh will be thawed but the core still frozen and hard.
7	All product in the tank is left for the temperature to "equilibrate".	During this stage, the temperature at the core continues to rise and the outer layer of fish (and the thawing water) gradually gets colder. Ideally, the temperature of the water and throughout the fish at the end of this stage should be -1°C to +2°C.
8	Drain tank and transfer product to the processing line.	Alternatively product should be iced and placed in chill storage.



* **Flow rate**

Ideally, the flow rate of water in the thawing tank should be about 3 litres per kg of product, per hour. A flow meter can be used to obtain the correct flow rate.

In many premises however, water flow rate changes at the point of use, depending on whether water is being drawn somewhere else (eg when hoses are being used for clean down.) Provided there is a steady flow over the frozen product thawing should proceed at a good rate.

** **Water temperature**

Most premises will not have invested in equipment to control the temperature of water at 18°C for thawing. There is potential to recover heat from other operations and equipment in many premises however, and use this heat to raise the temperature of thawing water.

Where water temperature is not controlled, the thawing process can vary depending on the time of year and the ambient water temperature. In summer, thawing will be completed more quickly than in winter.

*** **Thawing time**

The total time to thaw blocks of fish also depends on the factors listed (type of fish, size of block, water temperature and flow rate). With a well-controlled system with good operator management and supervision, thawing times can be significantly reduced when compared with operations where there is little control. Hoki blocks can be thawed and ready for processing in 2 – 3 hours. Larger fish will take longer. Once thawing times are known, through experience, schedules can be developed to ensure that processing lines are regularly supplied with thawed product throughout the day. Refer also to **Section 3 – Factors Affecting Thawing Time**

Continuous Water Thawing

For continuous thawing, the same principles as for batch thawing are used, except that the product is placed on a conveyor that moves through a long tank of circulating water. Part way along the slow moving conveyor, operators are able to break the blocks apart. By the time the fish reaches the end of the conveyor it is ready to be transferred to the processing line.

Specific Products

▪ **Salmon**

When frozen salmon is the only source of supply for the manufacture of cold smoked salmon products, extra care is needed to ensure that the thawing process does not affect the texture of the fish. This can be achieved by thawing over a longer period of time using water at cool temperatures (6° to 10°C). Slow thawing at low temperature helps to ensure that the texture of the final product is firm and does not break apart during slicing and packing.

▪ **Rock Lobster Tails**

In some southern areas of the country, frozen bags of rock lobster tails are still received from catching vessels for grading and packing on shore. The main factor in thawing rock lobster tails is the need to minimise the wastage of valuable tail meat. The tails do not need to be completely thawed, but they must be thawed enough so that they can be easily separated without breaking off any tail meat.

Water thawing is most commonly used for rock lobster tails and allows for the product to be partly frozen, then removed for grading, wrapping and packing before being refrozen.

▪ **Squid**

Frozen squid thaws very quickly and requires close attention to prevent spoilage and the development of pink coloured flesh. Once the flesh has

changed from white to pink, product quality is significantly reduced and the product must be down-graded. “Cool” water temperatures should be used for thawing squid.

Cleaning & Sanitation

Tanks used for thawing should be drained, cleaned and sanitised at the end of thawing. Hygiene control measures are necessary to ensure that product contact surfaces are maintained in a clean and hygienic condition.

There will always be some loss of weight during thawing. This can be as high as 5% for properly frozen fish and can be even higher if poor thawing procedure is used.

The objective is for a controlled flow of thawed product onto the processing line that is at a temperature suitable for cutting (ie not frozen in the middle) but is not too warm that spoilage occurs. An ideal thawing system will achieve even product temperatures of -1°C to +1°C.

Advantages & Disadvantages of Water Thawing

Advantages

- Quick thawing of large quantities of product
- Thawing system doesn't take up large amounts of space in the factory

Disadvantages

- Can be loss of yield, texture and flavour if procedure is not controlled
- High water usage - water can be expensive and hard to get in some areas

Methods for Thawing Seafood

Generally air thawing should be used for small and individually frozen products as they can become waterlogged during water thawing. Large and block frozen products should be thawed using the water thawing method to allow for a quick thawing time with minimal loss of quality.

Product	Thawing Method
Whole Fish	Water
Headed & Guttled Fish	Water
Fish Trunks	Water
Fish Fillets	Air
Rock lobster tails	Water
Whole Shellfish	Air
Shucked Shellfish	Air
Squid	Water

Consequences of Poor Thawing

Poor thawing can result in the product being over or under thawed. This will affect the quality of the product:

Over Thawing

- The flesh may soften & discolour
- Loss of flavour
- Lower yield
- Possible growth of bacteria that may cause spoilage or food safety problems
- Possible increase in enzyme spoilage
- Waste of water if using water thaw method

Under Thawing

- Fish may be difficult or dangerous to fillet
- Poor filleting will result in a lower yield



Summary

- Air thawing is slower but is good for small and individually frozen products, such as fish fillets and shellfish and for small quantities of product.
- Water thawing is fast and is good for large fish or block frozen product, such as fish blocks, squid and whole fish.
- There are advantages and disadvantages of each thawing method
- Poor thawing will result in a poor quality product and lower yields

Activities for Section 2

If you feel confident you have learnt this section, try doing the following activities.



Activity 2.1

List a product that you thaw in your premise.

Product: _____

For this product write down the steps that are taken in the thawing procedure and list the important points for each step.

Thawing Step/Action Taken	Important Points



Activity 2.2

List 2 advantages and 2 disadvantages for air thawing and water thawing.

	Advantage	Disadvantage
Air Thawing	1. 2.	1. 2.
Water Thawing	1. 2.	1. 2.



Activity 2.3

For the following products, what is the best method of thawing?

Product	Method of Thawing
Blocks of whole fish	
½ shell oysters	
Rock lobster tails	
Squid	
Headed & gutted fish	
Fish fillets	

Now check your answers from section 5 to see how well you did.

How did you go?

If you didn't get everything correct, don't give up! Go back and revise this section again, then use the summary to check that you can remember all the key points. Then when you feel ready, try doing the activities again.

If you got everything correct, well done! Continue on to the next section.

NOTES:

What to Expect in this Section

In this section you will find information about factors that affect thawing.

It will help you to:

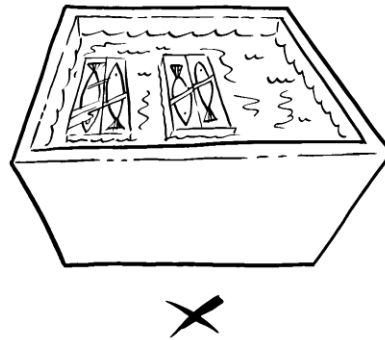
- *Describe factors that affect thawing times.*
- *Describe work practices that help to control thawing times.*

3: Factors Affecting Thawing

3: Factors Affecting Thawing

Factors Affecting Thawing Time

Good control over the thawing process is needed to ensure that production and quality requirements can be met. The time taken for thawing has a direct effect on the final quality of the product. The longer thawing takes the higher the quality loss. There are a number of factors that affect thawing time:



- **Type, size and form of product to be thawed**

Blocks of frozen fish will take longer to thaw than individually frozen whole fish. Blocks of large fish will take longer to thaw than blocks of small fish.

- **The type of thawing method used**

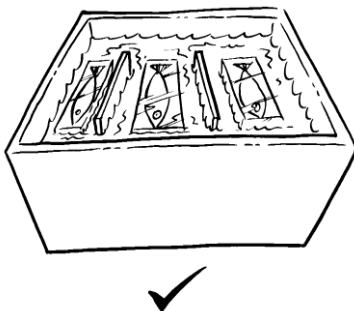
Water thawing is quicker than air thawing but is generally not suitable for small or individually frozen products as they become easily water logged.

- **The water or air temperature**

The warmer the water or air temperature the quicker thawing will take place. However it cannot be too warm otherwise the product will begin to spoil.

- **The way product is loaded into the thawing system**

When the product is first loaded into the system it needs to be kept apart so that it doesn't stick together otherwise it takes longer to thaw.



- **The separation of product during thawing**

If product is separated or 'broken apart' (usually for blocks) as it starts to thaw, the thawing time will decrease. This is because, as they are being broken apart more surface area of the fish is being exposed to the water or air.

- **The water flow rate (for water thawing)**

The faster the water flow rate, the quicker the thawing time. However too fast and it will result in a waste of water. It could also damage any product that has thawed.

- **The time product has to equilibrate after the water flow is stopped**

Product can be removed from the thawing system just before thawing is completed so that it is able to equilibrate (where the temperature becomes the same throughout the product). Refer to the steps for water thawing in the previous section. The product can also equilibrate in the water.

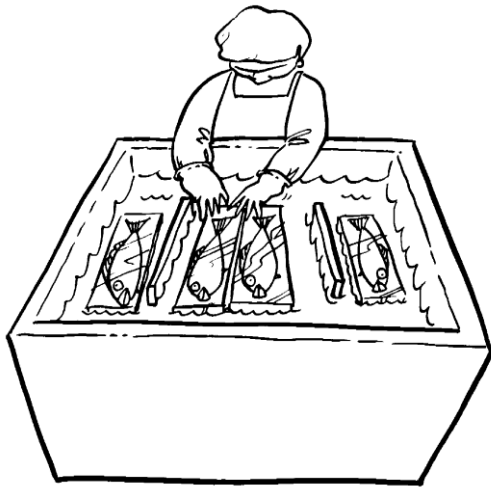
Work Practices

Selecting the right method for the product being thawed is critical for maximising quality and yields. Good personal hygiene and hygienic work practices, including cleaning and sanitation before and after thawing is also critical to ensure that product is safe for the customer.

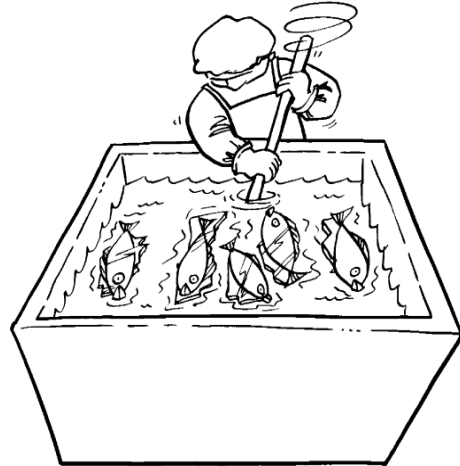
Practices that help to control thawing time, include:

For Water Thawing

- Control the temperature of the inlet water so that it is around 16-18°C.
- Make sure that blocks of frozen product are kept separate when first loaded into the thawing system to prevent them from becoming one 'big' block.



- Make sure that the water flow rate is sufficient to allow an even flow around the product, but is not too fast so that water is wasted.
- Help to break the blocks apart as they start to thaw to expose more surface area of the fish to the water.



Look at the following example, where the thawing process for thawing blocks of headed & gutted fish has been documented. It is important that all stages of the process are checked and monitored to ensure that thawing time is minimised.

<i>Operation</i>	<i>Details</i>	<i>Monitoring</i>
Removal from storage ↓	Blocks are de-cartoned.	
Load Tank ↓	Blocks loaded into tank, plastic outers left on, separate blocks where possible	Start Time
Water On ↓	Tank filled with water; water flow rate checked, plastic outers removed.	Flow rate Time
Monitor Process ↓	Thawing process is monitored through feel and temperature of the product, blocks are broken apart as thawed.	Temperature 'Feel', Time
Water Off ↓	Fish is left in the thawing tank to allow temperature to equilibrate. If required, fish can be held in the tanks until required for processing. Ice added to maintain chilled temperature.	Temperature Time
Release Water ↓	Tanks drained	
Remove Fish ↓	Thawed fish is removed to baskets or transferred directly to processing.	Temperature
Process or Place in Chiller	Thawed fish not processed immediately is iced and placed in the chiller.	

For Air Thawing

- Spread the product around as much as your space allows.
- Try to maintain the air temperature around 16-18°C or colder.
- Help to separate the product (if frozen together) as it starts to thaw to expose more surface area to the air.





Summary

- There are a number of factors that affect thawing time, such as:
 - product size & form
 - species
 - thawing method
 - temperature of water or air
 - separation of product at loading
 - separation of product during thawing

- Thawing needs to be controlled by good work practices so that product quality and yields are maximised.

Activities for Section 3

If you feel confident you have learnt this section, try doing the following activities.



Activity 3.1

You are the thawing supervisor at Sunshine Bay Seafoods and are showing a new staff member how to water thaw 10 kg blocks of headed & gutted fish. You want to give them a brief checklist of the work practices they need to remember so that the thawing time is kept to a minimum.

Write down the things you would include in the checklist:

Sunshine Bay Seafoods Limited – Thawing Work Practices
1.
2.
3.
4.
5.
6.
7.
8.
9.

What to Expect in this Section

In this section you will find information about how thawing can affect seafood yields.

It will help you to:

- *Describe thawing factors that affect yields*
- *Describes methods or work practices that maximise thawing yields.*

4: Thawing and Seafood Yields

4: Thawing and Seafood Yields

Seafood Yields

Yield is the amount of product produced relative to the original weight of the raw material. Yield can be affected by the thawing process. If thawing is not controlled, there may be excessive weight loss. Fish will normally lose some weight during thawing (up to 5%) but with good control this can be minimised. Over or under-thawing can also affect yield.

Factors that Affect Yields when Thawing

There are a number of factors that will affect the yield:

- **Initial product condition**

The initial quality of the product prior to thawing will effect the yield of the product after thawing. Product that is not in good condition or has been incorrectly stored prior to thawing will have a lower yield, requiring extra trimming or down-grading.

- **Final thawing condition**

If the fish is not thawed completely and the area around the backbone is still surrounded by ice, it will be very difficult to remove the fillet completely (as well as being very dangerous). This will result in a lower yield. It is better if the fish is just thawed near the backbone as it is easier to remove the fillet completely and maximise the yield.

If the fish is over-thawed the fish is soft and difficult to fillet. This is a particular problem when filleting machines are used. If the fish are too soft they will be damaged or rejected

by the machine, and the yield will be reduced.

If the product is over-heated during thawing – ie the temperature rises above 7°C, the fish may begin to change colour. This discolouration will need to be removed and would result in a lower yield. Over-heating may also result in an increase in spoilage and rapid drip loss. For more information about seafood spoilage have a look in **Fish for Food**.

- **Time of storage after thawing**

Product should be processed as soon as possible after thawing. The longer it is stored the more weight it will lose through drip, resulting in a lower yield. For example, storing in ice overnight will result in a loss of about 1.5% and storing in the chiller – without ice will result in a loss of about 2-3%.

Methods or Work Practices that Maximise Thawing Yields

In order to maximise yield the thawing process must be controlled.

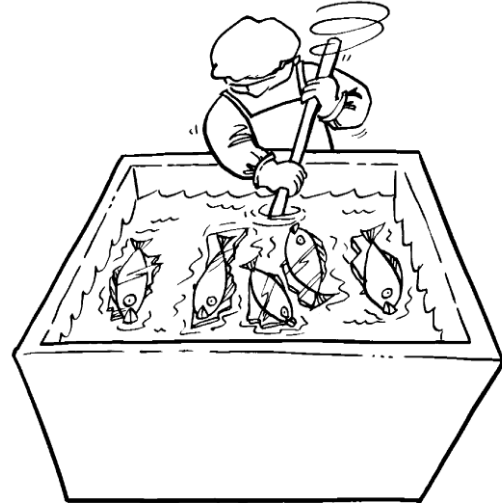
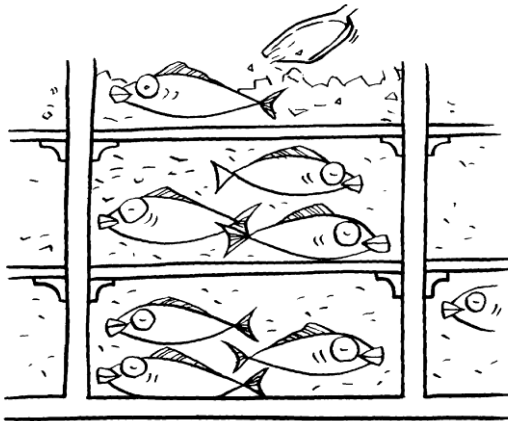
- Select the right method for the product being thawed.
- Product should not be under-thawed. The product should be removed from the thawing system when the core is about -3°C and left to equilibrate so that the temperature becomes even throughout the fish.
- Product should not be over-thawed. The product temperature should not be allowed to reach 7°C or above. Well

controlled thawing should result in product temperatures no higher than 2-3°C in the final product.

- Product should be processed immediately after thawing. Thawing should be scheduled so that the processing line is ready for the thawed product soon after it has thawed. Thawing needs to be staggered during the day to allow for a regular supply to the processing line.

If product is required to be stored for short periods of time, it must be chilled with ice or placed in the chiller until it is required for processing. Storing for long periods of time should be avoided.

- Product should be carefully handled at all times during thawing. Rough handling of any kind results in damage and poor quality product. Excessive force must not be used to break the blocks apart during thawing.





Summary

- There are a number of factors that affect thawing yields, such as:
 - Initial product condition
 - Final thawing condition
 - Storage time after thawing

- There are a number of work practices that can be used to maximise thawing yields
 - Selecting the right thawing method
 - Product should not be under-thawed
 - Product should not be over-thawed
 - Product should be processed immediately after thawing
 - Product should be handled with care at all times

Activities for Section 4

If you feel confident you have learnt this section, try doing the following activities.



Activity 4.1

What does the term 'yield' mean?



Activity 4.2

List 3 thawing factors that affect yields and state why they are important.

Factors affecting Yield	Why it is Important?



Activity 4.3

List 5 good work practices that can be used to maximise thawing yields and state what is important. The first one is done for you.

Good Work Practices	What is Important
Selecting the right thawing method	Making sure you know what method best suits the product you are thawing

5: Answers to Activities

5: | Answers to Activities



Activity 2.1

The answers for this activity will depend on the product you have chosen. Next time you are thawing this product take the activity page with you and tick off each step as you complete it, this way you will know if you have recorded the steps in the right order. If you are unsure, ask your supervisor what to do.



Activity 2.2

You may have thought of other advantages or disadvantages. These are some examples.

	Advantage	Disadvantage
Air Thawing	<ol style="list-style-type: none"> 1. Good for small products 2. Minimal flavour loss 	<ol style="list-style-type: none"> 1. Slow thawing time 2. Can take up large amounts of space in factory
Water Thawing	<ol style="list-style-type: none"> 1. Quick thawing of large amounts of product 2. Thawing system doesn't take up large amounts of space 	<ol style="list-style-type: none"> 1. Can be a loss of yield and quality if not controlled 2. Water can be expensive and hard to get



Activity 2.3

Product	Method of Thawing
Blocks of whole fish	Water
½ shell oysters	Air
Rock lobster tails	Air
Squid	Water
Headed & gutted fish	Water
Fish fillets	Air



Activity 3.2

The types of examples you would include in the checklist are:
(There may be others that you have included)

Sunshine Bay Seafoods Limited – Thawing Work Practices	
1.	Use water thawing for blocks of headed & gutted fish
2.	Check that the water temperature is between 16-18°C
3.	Check that the water is flowing evenly around the product
4.	Manually break up the blocks as they begin to thaw.
5.	Remove the product from the thawing system when the core temperature is about <3°C. This will make sure that the product is properly thawed.
6.	Do not let the temperature of the fish rise above 7°C.
7.	Handle product with care at all times.



Activity 4.1

A description of yield is:

Yield is the amount of product produced relative to the original weight of the raw material.



Activity 4.2

List 3 thawing factors that affect yields and state why they are important.

Factors affecting Yield	Why it is Important
Initial product condition	The better the initial condition of the product the better the yield will be.
Final thawing condition	To maximise the yield, the final condition of the thawed product must be correct. If it is over or under thawed it will be hard to process and will result in a lower yield.
Storage time after thawing	The longer the storage time after processing the more weight will be lost – resulting in a lower yield.



Activity 4.3

Good Work Practices	What is Important?
Selecting the right thawing method	Making sure you know what method best suits the product you are thawing.
Product should not be under thawed	The temperature of the product should be monitored regularly to ensure that the product is correctly thawed before removing from the thawing system.
Product should not be over thawed	The temperature of the product should be monitored regularly to ensure that the product is correctly thawed before removing from the thawing system.
Product should be processed immediately after thawing	Product should be processed as soon as possible after thawing. If it needs to be stored the product should be placed in chilled storage or with plenty of ice. Storage time should be kept to a minimum.
Product should be handled with care at all times	Any form of rough handling will result in damage and a second grade product.

6: Preparing for Assessment

6: | Preparing for Assessment

Assessment of Unit Standard 6203

Unit standard 6203 – Thaw seafood products, consists of 2 elements. One of these is based around knowledge of thawing seafood and the other is based on being able to water thaw seafood products, following company procedures.

Included in this section is a summary of the unit standard and a copy of the observation records that will need to be completed.

you know the type of questions the assessor may ask.

- Complete the observation records. The assessor will ask you to arrange for the observation records to be completed by an authorised evidence collector. This may be your supervisor, manager, assessor or some other person as agreed by the assessor. The assessor will tell you who can do this for you.

What to do Next?

If you have decided to be assessed to this unit standard then you will need to do the following:

- Contact a Registered Seafood ITO Assessor. The assessor should be able to confirm that you are ready for assessment and explain what you need to do.
- Review the assessment activities in the next section.
- As part of the assessment for this unit standard you have the choice of deciding whether you want to complete the assessment in writing or orally (talking about it). The activities in the next section are there for you to complete before your assessment if you want to. You can take them with you when you meet with your assessor. Your assessor may discuss your answers with you during your assessment and use these to count towards your assessment. If you would prefer to do the assessment orally, then you may like to have a look at the assessment activities so

Summary of Unit Standard 6203

Unit Standard 6203 – Thaw seafood products

This information is a summarised version of a registered standard from the National Qualifications Framework

Level 3

Credit 5

An employee credited with this standard is able to:

- Describe thawing techniques
- Water thaw seafood

1. The employee is able to describe thawing techniques.

- The description includes factors that affect thawing time.
- The description includes practices that control thawing time.
- Air and water thawing methods for seafood products are described.
- The description includes thawing methods used for different types of product.
- The description includes advantages and disadvantages of each thawing method.
- The description uses examples to identify the consequences of poor thawing techniques.
- The description includes factors affecting thawing yields.
- The description includes methods and/or work practices that can be used to maximise thawing yields.

2. The employee is able to water thaw seafood products.

- Company procedures are followed during thawing.
- Inlet temperature and water flow rate is maintained within company specifications during thawing.
- Internal and external temperatures of product meet company specifications when thawed.
- Product is not broken and damaged during thawing in accordance with company requirements.
- Product is not bent and forced during separation in accordance with company procedures.
- Company's production throughput requirements are met.
- Thawing yields meet company requirements.
- Thawing equipment is cleaned according to company procedures.
- Other requirements are met according to company procedures.

Observation Record

Element 2: Water thaw seafood products
Range: one of - whole fish, head and gutted fish, fish trunks, fish fillets, shellfish, squid.
Assessment conditions:
 1 This observation record can be completed by a Seafood ITO registered assessor or an evidence collector authorised by the registered assessor.
 2 The employee must comply with all company safety procedures when completing activities for this standard

Activity	Evidence needed	Details of dates, time periods and outcome of specified activity
Water thaw seafood products over a minimum period of 40 hours.	2.1 Company procedures are followed when thawing seafood products, and may include: <ul style="list-style-type: none"> - amount of product thawed - layout of frozen product - time of thawing - separation of product - draining and chilling after thawing 	
	2.2 Company specifications for water inlet temperature and flow rate are maintained when randomly checked on 5 occasions.	Check: 1 2 3 4 5
	2.3 Company specifications for internal and external temperature of thawed product are met when randomly checked on 5 occasions.	Int temp. Ext temp. Check: 1 2 3 4 5
	2.4 Company requirements are confirmed for avoiding broken, torn and squashed product when thawing seafood products.	

	Company procedures for bending and forcing product are followed when separating seafood products.	
Activity	Evidence needed	Details of dates, time periods and outcome of specified activity
Water thaw seafood products over a minimum period of 40 hours.	2.6 Company throughput requirements are met when thawing seafood for five batches of product.	Batch: 1 2 3 4 5
	2.7 Company thawing yield requirements are met when thawing seafood for five batches of product.	Batch: 1 2 3 4 5
	2.8 Company procedures for cleaning thawing equipment are followed, and may include: - cleaning frequency - cleaning procedures - disposing of waste - recording	
	2.9 Other company procedures associated with thawing are met, and may include: - recording - disposing of waste - maintaining equipment.	

Signatures.

Employee: _____

Authorised Assessor: _____

7: Assessment Activities

Bibliography

Seafood Industry Training Organisation. 1998

Fish for Food – an introduction to seafood quality and spoilage.

Aitken A, Mackie I.M, Merritt J.H, Windsor M.L. 1982

Fish Handling & Processing – Second Edition

Neil Boyd and Neil Wilson

Fish Quality and Processing Notes – Thawing of Fish Blocks