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Thank you for taking the time to read this, and I hope you enjoy the rest of your Seafood Guide.

Lee Cooper
Seafish and the Seafood Training Academy.

Segment Four - Frying Skills

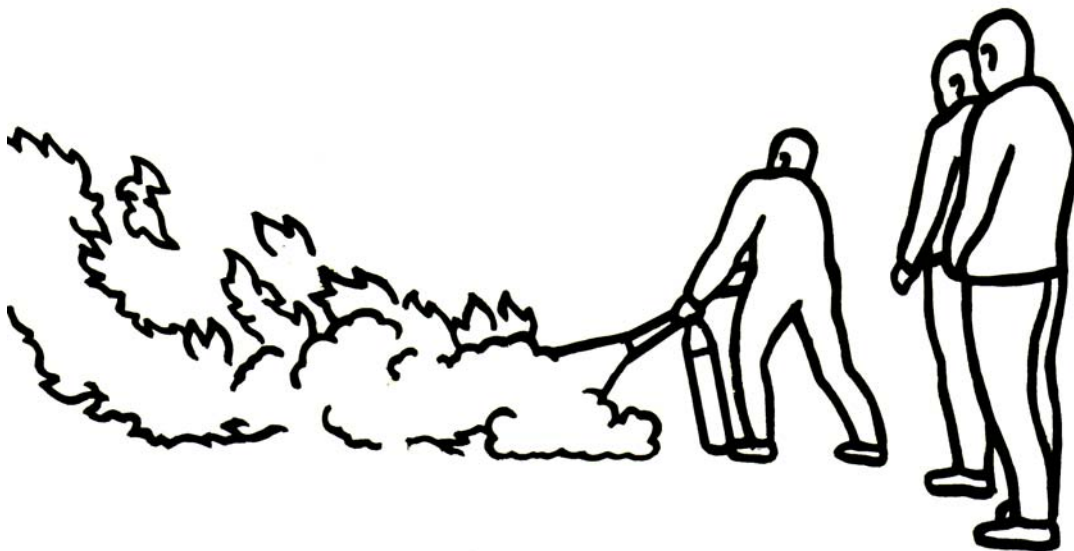
INTRODUCTION

A vital skill to be held by any fish frier is that of frying. How you fry your fish and chips will have a huge impact on the quality of the cooked product that you serve to your customer. You must look after your frying media and be aware of the dangers that can be caused if you don't follow basic health and safety procedures.

AIMS OF THE SEGMENT

By the time you reach the end of this segment you should be able to:

- Be aware that different regional areas prefer different frying media;
- List several different frying media and their qualities;
- State the causes of deterioration of frying media;
- Describe how to get the best results;
- State the recommended frying temperatures for some different foods;
- List the smoke point and flash point of frying media.



CHOOSING A FRYING MEDIUM

When you are deciding what you are going to use to fry with, you'll have to have a good look at the preferences in your area of the country. Parts of the country such as Merseyside and Lancashire prefer solid vegetable fat while the people of Yorkshire seem to like animal fats. In the South of England more use is made of liquid vegetable oils. These preferences are personal but you should find out what is generally used around you.

Which frying media will you choose?

- OIL
- Groundnut
 - Vegetable, for example, rape seed and soya
- FAT
- Dripping
 - Palm or hydrogenated mix
 - Lard

Different frying media behave in different ways. This is mainly due to their basic chemical make-up. Some fats are more stable than others.

Frying Medium	Smokepoint (approx)	Flashpoint (approx)
Unrefined dripping	180°C (356°F)	302°C (575°F)
Refined dripping	204°C (392°F)	302°C (575°F)
Vegetable oil/solid	204°C (392°F)	350°C (662°F)

Other frying media will have slightly different smokepoints and flashpoints from those above.

When you have decided on the frying medium that you are going to use it should have some of the following characteristics:

- Be odourless;
- Have no unpleasant flavour;
- Have a high smoke point;
- Have a high flashpoint;
- Melt at a low temperature.

If your frying medium develops some of the characteristics below, you should discard this and replace it with fresh fat/oil:

- Discolours too quickly;
- Sticks to the pans;
- Foams or froths;
- Becomes greasy.

WHY DO FRYING MEDIA DETERIORATE?

Edible fats and oils are natural products that will deteriorate as they absorb oxygen from the air. This process is speeded up when they are heated and as the oil or fat takes in more oxygen it will go frothy and foamy. As it is used, a number of other changes also happen to the oil or fat. It tends to develop an odour and flavour and also get darker. As the oil or fat gets older, it gets thicker. It will also smoke at steadily lower temperatures.

Here's a list of things that you may do (inadvertently) that will shorten the life of your fat:

- Frying at too high a temperature;
- Incorrect use of thermostats;
- Frying chips which are too wet;
- It has come into contact with copper or brass;
- The fat is too deep;
- It is not sieved regularly;
- The equipment being used is not clean enough;
- The pans are over loaded with fish and/or chips;
- Pans with no food in are not switched off.

Let's look at these more closely as the deterioration of the frying medium is a serious problem for many friers.

Firstly, the temperature at which you fry is important. A very high temperature leads to a breakdown of the fat or oil. A low temperature allows food to absorb fat and will give you a very greasy product. You will also use more fat. Check your temperatures with a thermometer rather than the thermostat. It is more reliable.



Next, the fat should be kept clean and uncontaminated. This means sieving it after each time you lift food out. Your equipment should be clean too, and copper or brass equipment kept away as these metals make the fat go off more quickly.

You should switch off empty pans. Customers will always wait for fresh food cooked in freshly heated oil. When you are cooking food, don't be tempted to put another piece of fish or a few more chips into the pan. The temperature of the frying medium will be lowered and the food will take longer to cook. (Different conditions apply to high efficiency ranges.) It will absorb more fat along the way. As you must not overload the pan with food, you must not overload it with oil either. Use enough fat or oil for the work in hand.

Those are the causes of deterioration in frying media and some ways of avoiding it. Now let's think of ways of getting the best results in frying.

You should:

- Regulate the temperature;
- Follow the suppliers instructions;
- Use the correct amount of oil or fat;
- Understand your particular medium;
- Prepare the food properly;
- Keep it dry;
- Clean and filter oil regularly;
- Replace that proportion of the fat lost daily by usage.

Taking care of your frying media makes good business sense. It saves on the cost of oil or fat and also encourages customers to come back.

With the increasing emphasis on health care and the role of fat in this battle you need to convince your customers that the fish and chips are **not** a greasy product.

Another good practice is to keep your range clean whilst frying, by regularly wiping away any fat that splashes onto the range.



DIFFERENT METHODS OF FRYING CHIPS

Before we take a look at recommended frying temperatures, I would like to make you aware of the different methods of frying chips. The table below summarises these methods and is taken from the National Federation of Fish Friers' training manual, which all attendees of their course receive.

Frying method: Straight Through

Description: A full cooking consists of 4.54kg to 5.45kg (10lb to 12lb) of raw chips. As the cooking session progresses, smaller loads must be used as the oil level drops preventing overload and the subsequent breakdown of the frying medium. The chips must be well drained before cooking.

Allow the chips to bunch and rise in the pan, then separate them from underneath. **Do not stir.**

Never leave a pan unattended whilst frying.

Raw chips on introduction will reduce the temperature of the fat by approximately 60°C (140°F). This is why a high starting temperature is needed. When the temperature has risen back to approximately 150°C (302°F) the chips will be cooked and ready for lifting. The oil must be allowed to recover to 185°C (365°F) before the next batch of chips is introduced.

Frying Temperature: 185°C (365°F)

Time: 4 to 5 minutes

Frying method: Blanching

Description: Blanched chips are partially cooked, removed from the fat, allowed to drain then re-introduced to the pan when the temperature has recovered to 160°C (320°F) to 170°C (338°F). They fry up quickly and are useful during quiet periods. They can be used as "stock" during busy periods.

Frying Temperature: 160°C (320°F) to 170°C (338°F) **Time:** 2 minutes

Frying Method: Finishing

Description: Fry the chips initially at a slightly lower temperature.

Finish at a temperature of 185°C (365°F) until cooked.

Frying Temperature: 185°C (365°F)

Time: 2 to 3 minutes

Storage: (relevant to all three frying methods)

Cooked chips should be stored in the chip box, which is normally equipped with infrared heaters. Sometimes they have thermostat controls.

Chips must be rotated in the box. Bring standing chips forward and place fresh chips behind.

Don't pile chips high at the back of the box or against the element.

Keep the perforated plate on which the chips stand clean on both upper and undersides.

RECOMMENDED FRYING TEMPERATURES

The temperatures and times used for frying will depend on:

- The type of equipment being used;
- The condition of the oil and fat;
- The size of the food being fried;
- Local preferences.

Standard Frying Range

The following temperatures and times are a guide and you should experiment to find the best results. For instance, different types of potato require different frying temperatures and times. The temperatures shown are based on frying chip quantities of 4.54kg to 5.45kg (10lb to 12lb). Slightly lower frying temperatures are recommended when frying smaller quantities because the temperature loss on immersion will be less.

Items	Suggested Temperature		Approx. Time Minutes
	°C	°F	
Potato Chips 'straight through'	185	365	4 - 5
Potato chips 'blanching'	160 to 170	320 to 338	2
Potato chips 'finishing'	185	365	2 - 3
Fish (battered pieces)	180	356	3 - 5
Prawn and Scampi (battered)	177	350	3 - 5

High Efficiency Range

These ranges are manufactured to provide a more efficient use of gas than the standard range. Manufacturers claim this system can be as high as 94% efficient.

This means that the drop in temperature when frying chips can be as little as 8°C (45°F) making recovery times far shorter.

Frying temperatures vary with the type of range and the amount of food being fried. When basket frying it is possible to add 2.27kg (5lb) of chips every two minutes to the pan with little loss of temperature. However each basket will require between five and six minutes in the pan to cook. Frying temperature required for chips will be approximately 170°C (338°F).

When frying fish a temperature of 180°C (356°F) is recommended with time calculated at one minute for 28.35g (1 oz) uncooked weight.

COOKING OTHER PRODUCTS

Pies

Most businesses buy in their pies ready cooked either fresh or frozen. These must be stored either in the fridge or freezer, whichever is appropriate and used in date order.

Reheating can be either in an oven or microwave but NEVER in the warmer display. If you are using a microwave, a 1700 watt combination oven should be used for best results.

Chicken

This is usually bought cooked and frozen, with 12 legs and 12 breasts to a case. Best practice suggests that the frozen chicken is defrosted in a fridge and then reheated in a microwave to a temperature of no less than 72°C (161°F) at the core for a minimum of 2 minutes. If a crisp skin is preferred, you can place the chicken into the chip pan for a further minute.

Sausages

Frozen or defrosted battered sausages can be fried in the fish pan. If unbattered, it is advisable to use either a table top Lincat frier or a griddle. Temperature regulations state that all meat products must reach a temperature of at least 72°C (161°F) at their core for a minimum of 2 minutes.

In Scotland there are Regulations for reheating food.

Cooked food that is being reheated must be heated to 82°C or more.

THE DANGERS OF OILS AND FATS



It's important that you know the smoke point and the flash point of your frying medium.

You'll also know how to deal with a fire should you be unlucky enough to have one. You should raise the alarm and switch off the gas or electric then call the fire brigade and leave the building. One of the quickest (and safest) ways of finding the smoke point and flash point of your oil or fat is to look at the supplier's specifications.

It may be worthwhile referring to your Food Hygiene and Health & Safety workbook now, to read about how to prevent an oil or fat fire, and how to fight a pan fire.

EXERCISES

Find out the smokepoint and flashpoint of your frying medium. These should be on the packaging of your frying medium. Record your answers below.

Type of frying medium that you use =

Smokepoint =

Flashpoint =

What is the typical weight of a batch of chips for frying in your shop?

What is the usual frying temperature of your fat/oil at the start of the frying process?

How low does the temperature get whilst frying chips (measure by watching your temperature gauge)?

What is the usual temperature of the frying medium when the chips are cooked?

How long do you cook a batch of chips, if you're cooking them straight through in your shop?

Candidate's signature and date



You have now completed segment four and also the Introduction to Fish Frying Skills module. Well done!

APPENDIX

To obtain a copy of the British Quality Chip Charter, contact one of the addresses below.

The British Potato Marketing Association,
Bank House,
Broad Street,
Spalding,
Lincolnshire,
PE11 1TB.

Tel. 01775 722349
Fax. 01775 711307

The British Potato Council,
4300 Nash Court,
John Smith Drive,
Oxford Business Park,
Oxford,
OX4 2RT.

Tel. 01865 714455
Fax. 01865 782231
www.potato.org.uk

British Potato Council – Scottish Office,
Rural Centre,
West Mains,
Newbridge,
Midlothian,
EH28 8NZ.

Tel. 0131 4724064
Fax. 0131 4724665

National Federation of Fish Friers Ltd,
New Federation House,
4 Greenwood Mount,
Leeds,
LS6 4LQ.

Tel. 0113 2307044
Fax. 0113 2307009
www.federationoffishfriers.co.uk