**Activity: Identifying cheese characteristics**

In this activity, students investigate a range of cheeses to identify their characteristics and determine how these different characteristics are created.

By the end of this activity students should be able to:

* describe the characteristics of a range of different cheeses
* identify similarities and differences between cheeses
* devise a system of classifying cheeses
* explain how key differences in cheese characteristics are achieved.

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Student handout: [Cheese characteristics](#Characteristics)

Student handout: [Matching cheeses with characteristics](#matching)

Student handout: [Cheese-processing operations](#operations)

**Introduction/background**

Cheese is all made from the same basic ingredient – milk – and it all undergoes the same process to be made into cheese. However, there are numerous varieties of cheese available, all made in different styles with different textures and flavours. There is no one single method of classifying cheeses.

What you’ll find is that, to group or classify cheeses, one or a combination of a number of different criteria/characteristics are used.

These include:

* the type of milk used (for example, cow, sheep, goat)
* whether the milk is pasteurised or not
* the country or region of origin
* the texture of the cheese
* appearance (colour, firmness, shape)
* fat content
* the microorganisms used
* the method of making (for example, traditional, artisan, mass-produced)
* whether the cheese is aged or not.

This activity can be tailored to suit different levels by providing and/or requiring more or less information.

**What you need**

* Samples of 8–10 different types of cheese, including textures from very soft to very hard – a suitable range could include, cottage cheese, goats’ milk Feta, Camembert, mild Gouda, blue cheese, Emmental, Parmesan and mozzarella (where possible, include the labels that accompany the cheeses)
* Access to or copies of the article [Creating different cheese characteristics](https://www.sciencelearn.org.nz/resources/829-creating-different-cheese-characteristics)
* Access to the video clips [Characteristics of Gouda cheese](https://www.sciencelearn.org.nz/videos/414-characteristics-of-gouda-cheese) and [Processing variations for different Gouda varieties](https://www.sciencelearn.org.nz/videos/415-processing-variations-for-different-gouda-varieties)
* Copies of the student handout [Cheese characteristics](#Characteristics)
* Copies of the student handout [Matching cheeses with characteristics](#matching) (2 pages)
* Copies of the student handout [Cheese-processing operations](#operations)

**What to do**

1. Start by discussing with students what they know about cheese. What is cheese? What ingredients is it made from? How is it made in basic terms? What are curds and whey, and how are they formed? How many different types of cheese can they name or describe?
2. Show the video clip [Characteristics of Gouda cheese](https://www.sciencelearn.org.nz/videos/414-characteristics-of-gouda-cheese) and have students list the characteristics mentioned to introduce types of characteristics and words they might use. Ask the students to describe other characteristics they have experienced in cheeses they have seen or tasted. Discuss appropriate words to use to reflect the descriptions given by the students and compile a list to display for reference.

1. Working in small groups, have students look at the different cheese samples and identify characteristics that make them different from each other, such as colour, firmness, texture, aroma and so on. Ask them to examine their characteristics closely, taste each of the different cheeses, discuss and record the characteristics on the student handout [Cheese characteristics](#Characteristics). Adapt the chart as required for more or fewer cheese samples and types of characteristics.
2. Supplement the cheese samples with the student handout [Matching cheeses with characteristics](#matching), which contains images of cheeses to match with their characteristics for students to match up. Use [useful links](#links) for research to support this activity if needed. Cheese images shown:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Caerphilly | Aged Gouda | Gruyere | Mascarpone | Edam |
| Maasdam | Gorgonzola | Jack cheese | Cream cheese | Roquefort |

1. Have students decide on a way of classifying the cheeses. There’s no right or wrong method but the group needs to agree. Decide on a name for each group of cheeses and record the common characteristics. Have groups share with the class how they grouped the cheeses and explain their reasons.
2. Discuss how they think the differences in characteristics may be created. Have students read the article [Creating different cheese characteristics](https://www.sciencelearn.org.nz/resources/829-creating-different-cheese-characteristics) and watch the video clip [Processing variations for different Gouda varieties](https://www.sciencelearn.org.nz/videos/415-processing-variations-for-different-gouda-varieties). Ask them to return to their group’s method of grouping the cheeses and decide whether to revise it or not.
3. Give each group a copy of the student handout [Cheese-processing operations](#operations). Using the information they have learnt and the list of processing operations, ask them to create a flow diagram of the relevant processing operations for each of their cheese groups and record a brief explanation of the unique characteristics of each group of cheeses in terms of the processing operations.

**Extension activities**

* Research the country of origin of each of the cheeses.
* Research the history of cheese and write a report on how and why so many different cheeses have evolved.
* Research the role of microbes in cheesemaking and explain how they contribute to the characteristics of different cheeses.

**Useful links**

**Cheesemaking**

Read about a small range of cheeses, including information on the history of the cheeses, their characteristics and how they are made.

[www.cheesemakingrecipe.com/Mozzarella\_Cheese.html](http://www.cheesemakingrecipe.com/Mozzarella_Cheese.html)

**Encyclopaedia of cheese**

This site presents a comprehensive list of cheeses grouped by country of origin. It includes information about the origin of the cheeses and describes their characteristics. Many also link to images and further information.

[www.igourmet.com/st/encyclopedia.asp](http://www.igourmet.com/st/encyclopedia.asp)

**Types of cheese**

Read an introduction to different ways of categorising cheese, including some examples and descriptions of key characteristics.

<http://en.wikipedia.org/wiki/Types_of_cheese>

**A history of cheese**

Read about the history of cheese from its early beginnings to the present.

[www.thenibble.com/REVIEWS/main/cheese/cheese2/history.asp](http://www.thenibble.com/REVIEWS/main/cheese/cheese2/history.asp)

**Cheese characteristics**

| **Cheese name** | **Appearance**  e.g. wheel, wax coat, natural rind, holes/‘eyes’, green or blue coloured veins, firm white outer shell | **Flavour**  e.g. mild, tangy, buttery, nutty, spicy, sour, sweet, salty, full-bodied | **Texture**  e.g. moist, crumbly, grainy, sliceable, spreadable, thick, creamy, smooth, rubbery, runny | **Firmness**  e.g. soft, semi-soft, semi-hard, hard, very hard | **Type of milk** e.g. cow, whole, skimmed, cream, goat, sheep, raw (unpasteurised) |
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**Matching cheeses with characteristics**





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| --- | --- | --- | --- | --- |
| **Aged Gouda** | **Caerphilly** | **Cream cheese** | **Edam** | **Gorgonzola** |
| **Appearance**: Comes in round wheels and has a natural rind  **Colour**: Caramel  **Firmness**: Very hard  **Texture:** Dry, crumbly  **Flavour:** Full-bodiedflavour  **Milk type**: Cows’ milk | **Appearance**: Traditionally made in rounds with thin natural rind  **Colour**: White  **Firmness**: Semi-hard  **Texture**: Moist and creamy  **Flavour**: Mild with slightly sour tang  **Milk type**: Cows’ milk (traditionally raw) | **Appearance**: A spreadable cheese  **Colour**: White  **Firmness**: Soft  **Texture**: Smooth and spreadable  **Flavour**: Mild, slightly acidic, often flavoured with fruit or herbs  **Milk type**: Made from whole milk, enriched with cream | **Appearance**: Comes in round wheels with red or yellow wax coating  **Colour**: Pale yellow  **Firmness**: Semi-hard  **Texture**: Sliceable, melts readily  **Flavour**: Mild, slightly salty, nutty  **Milk type**: Made from partly skimmed milk | **Appearance**: Streaks of blue throughout  **Colour**: Creamy white, streaked with blue  **Firmness**: Semi-soft  **Texture**: Moist, almost spreadable  **Flavour**: Creamy, tangy  **Milk type**: Cows’ or goats’ milk |
| **Gruyere** | **Jack cheese** | **Maasdam** | **Mascarpone** | **Roquefort** |
| **Appearance**: Comes in large round wheels with natural rind, small holes and cracks when aged  **Colour**: Yellow  **Firmness**: Semi-hard  **Texture**: Slightly grainy mouth feel  **Flavour**: Nutty, spicy flavour  **Milk type**: Cows’ milk (traditionally raw milk) | **Appearance**: Comes in a round wheel shape  **Colour**: Pale yellow  **Firmness**: Semi-hard to very hard (depends on ageing)  **Texture**: Crumbly  **Flavour**: Sweet nutty flavour  **Milk type**: Cows’ milk | **Appearance**: Round shape with natural rind and large ‘eyes’ created by propionic bacteria  **Colour**: Yellow  **Firmness**: Semi-hard  **Texture:** Creamy  **Flavour:** Mild, subtle flavour  **Milk type**: Cows’ milk | **Appearance**: A very soft dessert cheese that comes in containers  **Colour**: Ivory  **Firmness**: Very soft  **Texture**: Thick, smooth, creamy  **Flavour**: Semi-sweet, cream-like  **Milk type**: Made from cream | **Appearance**: Streaked with veins of green mould, created by *Penicillium roqueforti a*nd aged in caves  **Colour**: White, streaked with green  **Firmness**: Soft  **Texture**: Crumbly, slightly moist  **Flavour**: Tangy  **Milk type**: Raw sheep’s milk |

**Cheese-processing operations**

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| Pasteurise milk | Age – long period |
| Acidify | Put curds into shaped mould |
| Coagulate | Press gently |
| Drain whey | Press firmly |
| Cut curd | Stretch curd |
| Release whey | Heat curds to release whey |
| Add mould spores | Add acid |
| Ripen | Add starter bacteria |
| Age – short period | Add rennet |

**Teacher answer sheet**



Caerphilly Aged Gouda Gruyere Marscapone Edam



Maasdam Gorgonzola Jack cheese Cream cheese Roquefort

The Science Learning Hub acknowledges the contribution of a number of images for this activity from [www.igourmet.com](http://www.igourmet.com).