

Chapter One

Definitions / Origins / History

Definition of Pizza

Dish consisting of a dough made of **flour, water, salt** and **yeast** and *other ingredients such as fats (oils, butter), sugar, etc* that is flattened topped with tomato sauce, olive oil, mozzarella *and/or other ingredients* and then baked.

Etymology

The word “pizza” is a word that the Italian and then the rest of world borrowed from the Neapolitan language. It was the word used for cakes in Naples in the 18th century, and only in the following century, still in Naples it started to be used to call a dish that is similar to what we call pizza nowadays.

The modern pizza so has its own origin in Naples even though it is a local evolution of flat breads with toppings that are presents all over the world from the ancient times.



A classic Neapolitan pizza with the iconic view of Naples



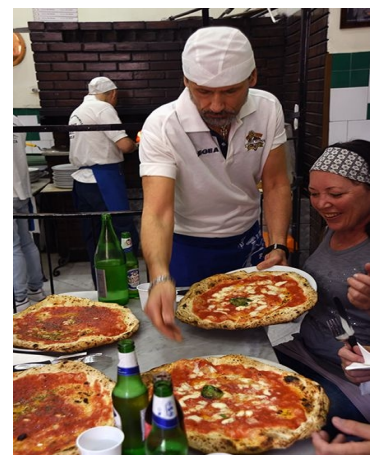
One of the many ovens found in ruins of Pompeii near Naples

Pizza Marinara, Margherita and the myth

The most popular and traditional pizzas in Naples are the simplest. Marinara is a topping made of San Marzano tomatoes, extra virgin olive oil, oregano, garlic and sometimes anchovies.

Margherita is the most classic pizza of the tradition and it's made with San Marzano tomatoes, mozzarella/fior di latte, extra virgin olive oil, fresh basil, grated pecorino/parmesan. Those two types of pizzas are probably the oldest. We have records of the a Marinara from 1722.

According to the popular legend, the pizza Margherita was invented in 1889 by Raffaele Esposito, chef at Pizzeria Brandi. The pizza was allegedly created in honour of Italy's unification, it was specially served to the queen Margherita of Savoy in occasion of her visit to Naples and named after her. The pizza had the three toppings—basil, mozzarella, and tomato respectively representing the green, white, and red of the Italian flag.



Actually it's not really certain if this story is truth or just partially truth, but it seems to be proven that pizzas with tomato sauce and mozzarella were made in Naples before Italy's unification in 1860.

Chapter Two

Different styles/ Ovens / The Association

Pizza styles

Starting from Naples pizza spread all over the world and with the Italian emigration of the beginning of the 20th century, it landed in the United States where lots of different styles of pizza were generated.

- Neapolitan – Round pizza style, very thin base but with higher crust. It cooks at a very high temperature (450 ~ 500 C) for a very short time (60 ~ 90 seconds)
- Romana (pizza in the baking tray) - It is a variety of pizza baked in large rectangular trays and generally sold in rectangular or square slices, it is thick (a couple of cm) and it can be cooked in a regular kitchen oven (200 ~ 300 C)
- New York – The shape vaguely reminds a Neapolitan, but it's cooked at lower temperature, the cheese on the top dries, the crust is crispy and toasted.



Neapolitan style



Roman style



New York style

There are many more styles of pizzas all around the world, especially in America that we are not going to talk about in this class as we are going to focus on the Neapolitan and the Roman style.

In order to cook a Neapolitan style pizza we need an oven able to reach at least 450 C degrees. Traditionally these are wood fired ovens, but recently a lot of new products came to the market of different sizes and quality and with different combustion systems (gas, electricity, pellets). Ideally a Neapolitan pizza needs an oven with a live flame as it cooks through the 3 fundamental modes of heat transfer:

- Conduction – the transfer of heat by the direct contact of the baking stone and base of the pizza
- Convection – the transfer of heat by the hot air present in the oven
- Radiation – the transfer of energy by the emission of electromagnetic radiation from the flame



ASSOCIAZIONE
VERACE
PIZZA
NAPOLETANA



The associations

In order to protect the Neapolitan pizza from imitations, other styles and the inappropriate use of the label “Original Neapolitan Pizza” the private association Associazione Pizza Verace Napoletana (Original Neapolitan Pizza Association) and the association Associazione Pizzaioli Napoletani (Neapolitan pizza chef association) were founded in 1984 and 1998 by some of the most important pizza masters at the time. Through the APVN and the APN a set of codified rules before just orally transmitted by generations of pizza makes, were written down. The two private associations have a slightly different set of rules. The International Regulation of Neapolitan Pizza is a document that can be downloaded on the website of the APVN either in English or in Italian and it’s a very precise and detailed instruction manual. Thank to the work of the APVN and the APN, in 2017 the Neapolitan pizza was included on UNESCO's list of intangible cultural heritage. Both associations offer pizza classes get their original certification.



Chapter Three

Trends / Contemporary pizza

Some of the rules of the APVN are constantly bent to respond to the latest market requests. A classic example is the thickness of the crust. According to the International Regulation the crust shouldn't be higher than 2 cm. This sub-style of the Neapolitan pizza (which is the most authentic and traditional style) is called in Neapolitan language *a rot 'e carretto* (wagon wheel style). Lately more and more pizza makers using specific techniques they make a much higher crust with very big air pockets inside. This contemporary sub-style is commonly called *contemporanea* or *a canotto* (rubber dinghy style). Lately lots of pizza makers like to show the developments of the inner structure, the air pockets, as sign of quality and proper maturation process of the dough.



Pizza a canotto and pizza a rot 'e carrett (last one on the right)

Chapter Four

Planning the pizza / The ingredients

The Ingredients

The 4 ingredients of the Neapolitan Pizza are:

- Water
- Flour (common wheat)
- Salt
- Yeast

The same 4 ingredients are also used for a Roman Pizza with the addition of some extra virgin olive oil.

Planning the pizza

Two very important processes are involved in a pizza, but also bread dough making:

- Proofing
- Maturation

The **proofing** is the action of the yeast that realising gasses during the fermentation of the dough literally inflates the dough making it rise and grow in volume. This process is visible by human eye/

The **maturation** is an invisible process that starts as the flour is mixed with the water that consists of a series of biochemical and enzymatic processes that split the most complex structures, proteins and starches into simpler elements. This process, depending on the type of flour and the amount of water used lasts from 8 to 24 hours.

It's very important to have done a proper maturation before baking a pizza or bread dough, in order to have a product is rich and flavour and fragrance, and having a dough with the right features (extendible, and not breakable).

For these reasons we can't make a pizza on the spot in 2 hours, but we need to plan it, possibly the day

before, or at least 8 hours before.

Dosing the right amount of yeast (adding more yeast, for example will make the dough complete the proofing quicker, but if you go any further the structure of dough will collapse and will be impossible to make a pizza) is essential in order to have the proofing and the maturation completed at the same time.

Chapter Five Water

The amount of water present in the dough is called *hydration* of the dough.

Hydration of the dough is normally expressed as percentage of the flour.

- Example 1: 1 kg of flour + 500 gr of water means the dough has 50% hydration
- Example 2: 1 kg of flour + 1 kg of water means the dough has 100% hydration

The Neapolitan pizza hydration is between 55 and 65 %. The Roman style can have a much higher hydration as it cooks at lower temperature and it stays much longer time in the oven. Not to get a very dry dough after cooking it's preferable to use higher hydrations than Neapolitan, and depending on the type of flour and your skills you can reach 100% hydration. You can still obtain an excellent Roman pizza with 70% hydration.

Dough with higher hydration is more difficult to knead and work. It requires more skill and special flour.

Dough with higher hydration develops bigger air pockets.

Dough with higher hydration must be baked at lower temperature.

Less hydration

50%

- Dry dough
- Cooks at higher temperature for shorter time
- Longer maturation time

More hydration

100%

- Stickier dough-
- Cooks at lower temperature for longer time-
- Bigger air pockets-
- Softer structure-

Chapter Six Flour

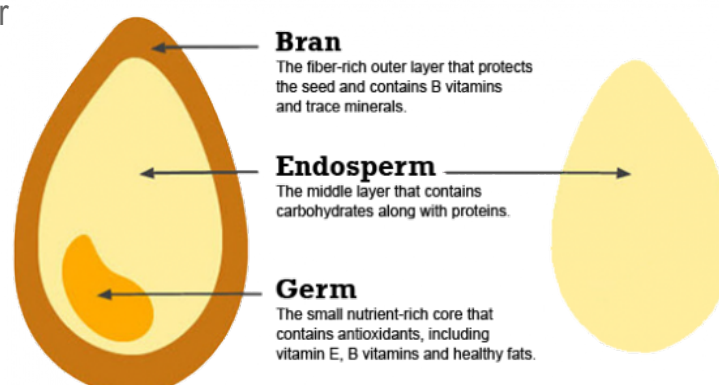
Pizza can be made and appreciated with different types of flour but to make a Neapolitan pizza you can only use common wheat flour.

There are two ways to classify the wheat flour:

- Strength
- Sifting

Whole Grain vs. "White" Grain

The sifting of the flour



The sifting of the flour is an industrial process that takes away from the final product elements of the grain such as the *bran* and the *germ*, leaving for the market the *endosperm* of the grain, which is the white flour rich in starch we commonly find in our shops.

Excluding the bran and the germ of the grain from the final product means also excluding a lot of important nutrients such as fibres, B vitamins, minerals and good fats that must be found elsewhere in the diet. Less processed flours (with more bran) are darker in colour. The most refined flours are white and also commonly called white flours.

More bran

Less bran

Farina integrale
Whole grain

Farina 2
First clear flour

Farina 1
Coarse Flour

Farina 0
Plain Flour

Farina 00
Pastry Flour

The proteins of the flour

We have two groups of proteins in the wheat flour:

- Soluble: Albumins, Globulins (about the 20% of the total protein content in a flour)
- Insoluble: Gliadins, Glutenins (about 80%)

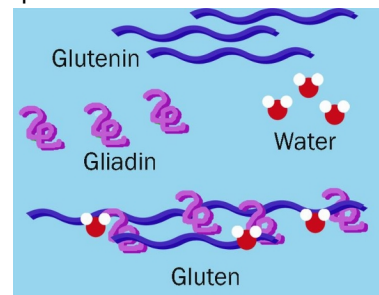
This last group, the insoluble proteins are very important for the structure of the dough.

In particular, the **gliadins** make the dough elastic and extensible and the **glutenins** make the dough rigid and resistant.

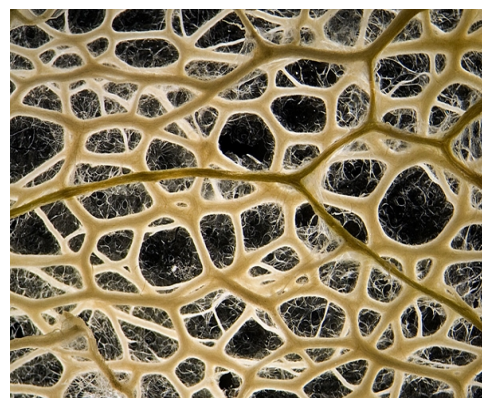
Combined together with water these two proteins make a composite protein called **Gluten**.

The gluten that looks like a net, is the structure of every dough, it's able to contain the gasses realised by the yeast during the fermentation and can also keep around it the starches and the other nutrients of the dough.

The gluten is made of insoluble proteins which means that if you wash under the tap a dough, you will be able to wash all the other soluble elements and what will eventually remain is pure gluten.



Structure of gluten in a dough



Gluten seen with a microscope

The Strength of the flour

The **strength (W)** is the ability of the flour to absorb water and keep the gases in the air pockets and it is strictly connected to the quality and the quantity of the gluten (gliadin and glutenin) present in the dough.

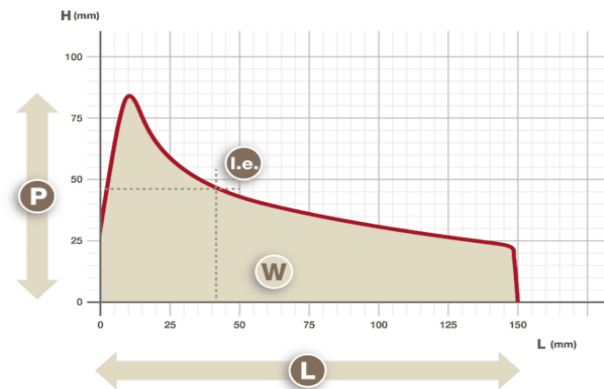
weak flour
w180

- Absorbs less water
- Weak structure
- Can't support long fermentation
- Flat shape of the dough

strong flour
w460

- Absorbs more water-
- Smooth, elastic, non sticky dough-
- Keeps the gases-
- Can support big air pockets-

The number W, strength of flour can be found empirically through some machines like the Chopin Alveograph. This machine inflates air in a disc of dough generating an air balloon. The pressure needed to inflate the balloon and max diameter of the balloon make a function. The integral of that function is the W, strength of the flour.



Alveograph of Chopin

Chapter Seven

Yeast / Salt

The yeast

Two types of yeast are used for making pizza and bread.

- Brewer yeast
- Sourdough

In this class we will only talk about the brewer yeast as it's the most common to use. We can find brewer yeast on the market in two forms: dry and fresh. They are the same identical product, but the don't forget that the dehydrated yeast quantity is equivalent of 1:3 of the fresh yeast.

Keep also in mind that the dough will proof faster by adding more yeast or with higher temperature and vice versa.



Sourdough



Fresh brewer yeast



Dry brewer yeast

The brewer yeast (also called **Saccharomyces Cerevisiae**) is a species of yeast (single-celled fungus microorganisms). The species has been instrumental in winemaking, baking, and brewing since ancient times.

This type of yeast :

- Eats only simple sugars (glucose)
- Is active between 4 and 35 degrees C
- Generates fermentation process

The fermentation

Yeast breaking the simple sugars to find nutrients, generates Alcohol + CO₂

The CO₂ generated makes the dough proof filling the air pockets of gas and making the dough grow in volume (proofing).

The alcohol evaporates during the cooking.

The maturation

The starch present in the flour starts decomposing into simple sugars when it's mixed with water. That will provide nutrients (simple sugars) to the yeast, make the proofing happen and will make the final product fragrant and tasty.

The maturation process lasts between 6 hours for weaker flours and 24 hours for stronger flours.

For this reason we can't add large amounts of yeast to make the dough prove faster.

The salt

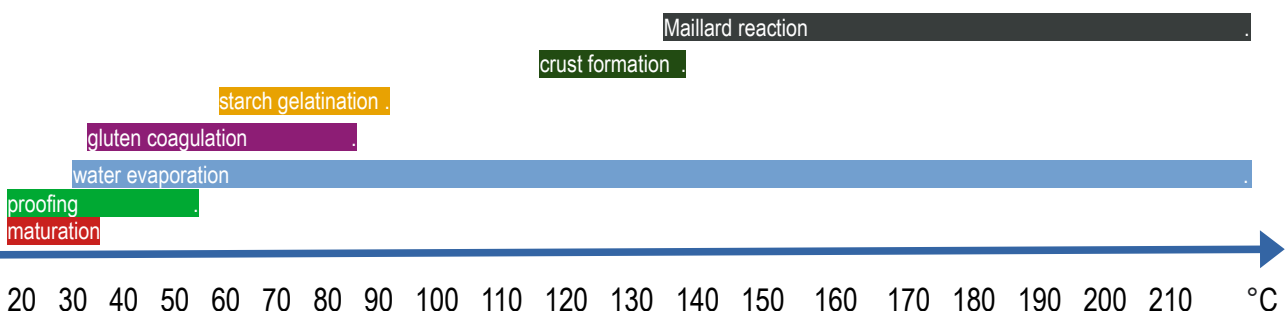
The amount of salt recommended for pizza dough is 50 gr per litre of water. Dough will prove slower by adding more salt. Salt kills the yeast cells, that's why we add it to the dough at the right moment. The salt is also functional to the dough development: it strengthens the gluten net.

Chapter Eight

The Cooking

The different phases of the cooking as the temperature rises in the oven:

- 1) The yeast activity continues until roughly 60 degrees when the yeast cells die, but before that temperature the pizza drastically increases in volume as result of a high production of CO₂
- 2) The water present in the dough evaporates during the whole cooking. The dehydration on the surface create the crust. Before 100 degrees the alcohol created during the fermentation is already all evaporated.
- 3) At 90 degrees the gluten net has become rigid and stable
- 4) At 50 degrees the starch turns into a gel. The dehydration of this gel makes the crumbs.
- 5) At 140 degrees the Maillard reaction starts that will give the aroma and the brown colour to the surface of the pizza.



Guidelines to make a good pizza in a baking tray at home

To make a good pizza it's important:

1. How we make the dough
2. How we keep the dough
3. How we handle the dough
4. How we cook the dough

Ingredients for a pizza to cook in a baking tray 30x40 cm

360 gr strong flour
270 gr water (75% hydration)
10 gr salt
7 gr extra virgin olive oil
1,5 gr fresh yeast or 0,5 gr dried yeast

Tip - If you don't have a scale that indicates gram's decimals you can take a bag of dry yeast (usually they are 7gr) empty on a board and try to split in 10 parts that look like the quantity.

Important: the yeast quantity in this recipe is ideal for a room temperature of 20 C.
If the house gets colder you must add more yeast, if it is warmer less, experiments and experience will tell you how much yeast you will need in every circumstance.

Procedure

Put all the water in a bowl, melt the yeast in the water and stir with a fork (as like as you were beating eggs but more gently) while you add flour with a spoon, making sure the flour is completely absorbed (no clumps) before adding more.

When the mixture looks creamy, add all the salt and keep stirring, adding the rest of the flour (always little by little).

Add the oil in the end and now start massaging the dough with the hands to let the oil be absorbed.
The technique to knead the dough is to stretch it (but not breaking!) and then refolding on itself.



Tip – Wetting your hands in water helps not to get them too sticky

After folding the dough a few times (4 or 5) the dough might still look a bit rough, then cover the bowl, and put it in the fridge for at least 10 minutes, before getting the bowl out again a make a few more folds. Repeat this procedure until the dough looks smooth.

Then cover the bowl and let it rest for 18 hours in the fridge.

After 18 hours get the dough out of the fridge, ## do more folds and let it proof at room temperature for 5 hours or until it doubles the volume.

After 5 hours put the dough in the baking tray and spread it, starting from the centre pushing it toward the sides with your fingertips being very careful not to tear the dough. Remember to lift your fingertips from the dough and gently tap it until the dough covers the whole tray.

Put some extra virgin olive oil on the top of the dough, spreading it evenly and let it rest for one more hour.

After one hour top the pizza as you like, but remember to add mozzarella and other cheese only a few minutes before the end of the cooking otherwise they will become too dry.

Bake for about 20 minutes (until the dough becomes golden brown) in a preheated static oven at the max temperature (220 ~ 250 C). Don't overcook or the pizza will become too dry and toasted.

Guidelines to make a pizza that looks like a Neapolitan in a fry pan at home

Ingredients for two pizza balls of 250 gr each

320 gr medium strength flour

200 gr water (65% hydration)

10 gr salt

7 gr extra virgin olive oil

0.5 gr fresh yeast or 0,2 gr dried yeast

3 gr sugar

Important: the yeast quantity in this recipe is ideal for a room temperature of 20 C.

If the house gets colder you must add more yeast, if it is warmer less, experiments and experience will tell you how much yeast you will need in every circumstance.

Follow the same procedure to make the dough as above but adding the sugar to the water at the beginning. This dough will be easier to knead as the hydration is lower and will need less folds before getting a smooth surface.

We won't use the fridge this time to let the dough rest and mature, but it will all happen at room temperature. The dough must be covered not to let the air dry the surface and create a skin on the top.

After 18 hours at room temperature the dough has more than doubled its volume and we are ready to make the two pizza balls cutting with a sharp knife the dough mass in 2. Being very careful not to ruin the structure of the dough we need to fold the two parts of the dough into two balls. There are different techniques to do that.

I would recommend to dust one side of the dough with flour and folding the dough on itself leaving the dusted

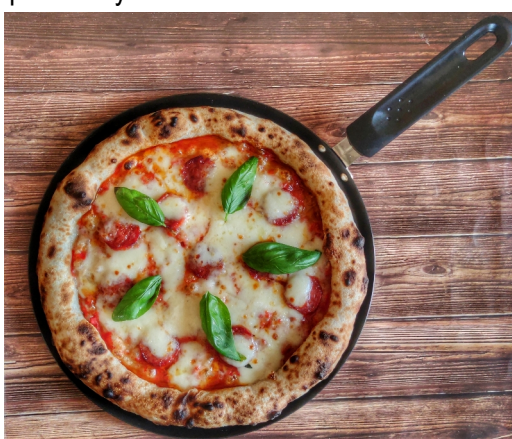


side on the outside, and keep folding until you feel that the external membrane of gluten is well tense again. You can let the two pizza balls rest for 6 more hours or until they look slightly collapsed. At this stage they are ready to be cooked.

Switch on your kitchen oven on grill mode at the max temperature and in the meantime put a fry pan on the hob at max temperature.

Now dip the dough ball into flour on both sides and spread it into a disc, using the finger tips, applying a gentle pressure from the centre to the sides, trying to make a disc. Lift the finger tips from the dough before pressing again and push all the air to the sides leaving a crust all around the disc. When the shape is ready, lay the pizza disc on the fry pan with the hob still on and start putting the toppings on.

For a Margherita you can use a sauce made with hand crashed San Marzano tomatoes from the can, a bit of extra virgin olive oil and a couple of grams of salt. Spread the sauce evenly using a spoon on the pizza in the fry pan, drawing circles from the centre to the sides, leaving the crust without sauce. Put some mozzarella previously diced and drained from the excessive water. Add a drizzle of extra virgin olive oil.



Cover the top of the pan with a lid after finished with the toppings and cook for 2 minutes. Then take off the lid and put the pan in the oven on the highest level, just under the element and cook for one more minute. Then the pizza is ready to be eaten. Add some basil and serve.

Enjoy and share your results on our Facebook Group.