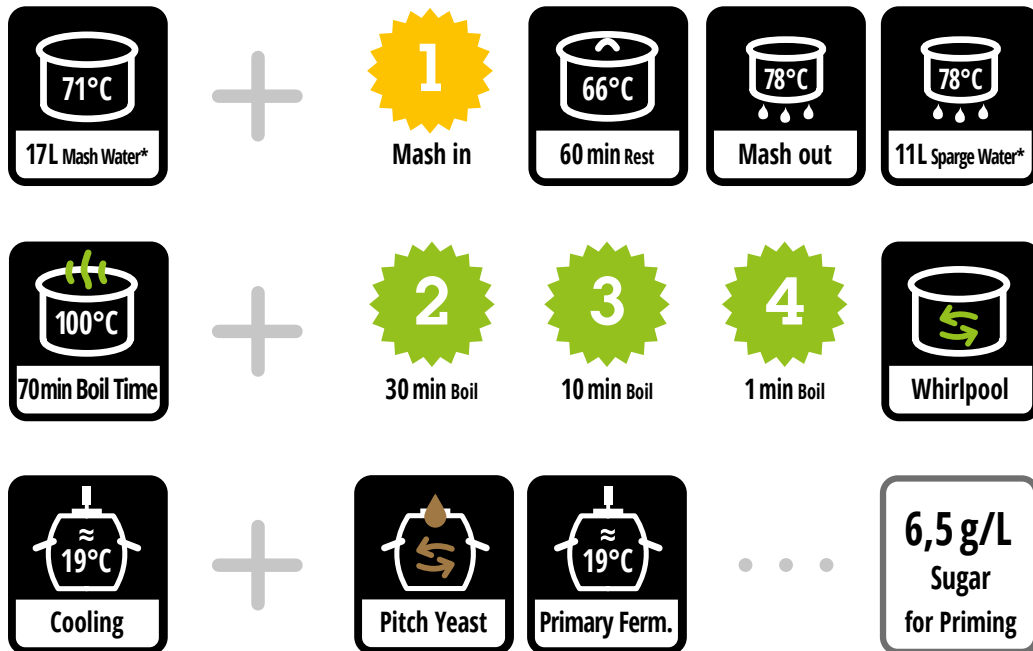


#01 Pale Ale Singlehop

20L 5.5 % ABV · top-fermenting · American Pale Ale



PARAMETERS

- Original Gravity: 1.046 (13 °P)
- Bitterness: 35 IBU
- Colour: Gold (11 EBC)
- Fermentation Temperature: 18-20 °C
- Carbonation: 5 g CO₂ per liter
- Priming sugar amount: 6.5 g per liter
- Maturation: 4 weeks
- Serving temperature: 6 °C

*Malt Pipe Systems Mash and Sparge Water

- Easybrew SB30P: 19 L Mash Water, 8 L Sparge Water
- Braumeister 20 L: 22 L Mash Water, 6 L Sparge Water
- Grainfather G30: 15.5 L Mash Water, 13.5 L Sparge Water
- Other systems: please use the recommended water amounts based on grain bill (4,4 kg) and original gravity 1.046 (13 °P)

Target Water Profile

- Calcium 70-100, Magnesium 0-20, Natrium 0-50, Chloride 70-100, Sulfate 70-100 (all ppm / mg/l)

INSTRUCTIONS

These brewing instructions serve as a supplement to the brief instructions on the front page. The quick start guide contains all the relevant values. The quantities of mash- and sparge water, resting temperatures and times, boiling time, hop addition times and information on fermentation and bottling. We wish you a good brew!

1. Mashing

Mashing is about sugarifying the malt.

The sugar is the basis for alcoholic fermentation.

The main brew is heated to the specified temperature. The malt mixture **1** is mashed, i.e. added to the mash water and stirred well. This lowers the temperature of the mash to to the level of the first rest. This rest is kept at a constant temperature for the specified time. If there are further rests, these are run through one after the other. During stirring takes place continuously during each heat-up. For longer rests stirring takes place every 15 minutes, the temperature is checked and, if reheated briefly if necessary. Finally, heat up to 78 °C and then switch off the flame.

2. Lautering

When the mash is lautered, the solid components are separated from liquid components. The beer wort, or wort for short, is the result.

The mash is put into the lauter tun for mashing, e.g. with a large measuring cup. It is left to rest there for 20 minutes, the so-called lautering rest. The solid malt components, the spent grains, can settle and form a filter bed. In the meantime, the sparge water is heated up to 78 °C. After the lauter rest, a few cups of still cloudy wort are slowly drained from the lauter tun and again carefully added to the mash from above. When the wort becomes clearer, it can be drained directly into the wort boiling pot. Just before the spent grains run dry in the lauter tun, the hot sparge water is gradually added to the spent grains. So that the spent grains are not stirred up so much, the sparge water should be poured carefully over a strainer spoon or something similar. You can regulate the lautering speed via the tap. You should avoid lautering too quickly, otherwise not enough sugar will be washed out. The spent grains can also become compacted and even clogged. If the spent grains are clogged, you can cut them crosswise. The reward of lautering, which can take 1-2 hours, is a pot filled with wort. Time-saving tip: The finished lauter wort can already be heated during lautering!

3. Boiling

The wort is boiled and hops are added.

This gives flavour and bitterness to the beer.

The wort is boiled for the prescribed boiling time (at 100 °C). No longer and no shorter. The hop additions **2** etc. are labelled with their addition times. For each hop addition during wort boiling, the number of minutes before the end of boiling is indicated. Depending on the brewing mixture, there may be special hop additions that are used before or after the boil. For example: First wort = adding hops to the lukewarm wort in the lauter tun; Whirlpool 80 °C = adding hops after the end of the boil to the wort that has cooled below 80 °C; Dryhop = adding hops to the fermentation or storage vessel.

Details of this type are also listed in the green box on the front. When the boiling time is finished, the flame is switched off. Now one can measure the specific gravity with some of the wort and possibly dilute with water if necessary.

4. Hop Straining / Whirlpool

Hop and protein particles should be largely removed before fermentation. Filtering and the „whirlpool“ are helpful here.

A few minutes after the end of the boil, when the flocculent wort has calmed down somewhat, the so-called whirlpool is turned on. A strong whirlpool is created in the pot with a brewing paddle or a rod and the pot is left to its own devices for 15 minutes. This causes hop residues and protein flakes to settle as heaps, so-called trub cones, at the bottom of the pot. From this point on, it is very, very important to pay attention to cleanliness. Everything that comes into contact with the wort should be well rinsed, disinfected or boiled!

After the whirlpool, you can drain the wort via the tap or with a

hose. Through a fine hop filter or filter cloth, the hot wort goes directly into the fermentation tank. The trub cone and a few last drops of wort remain in the pot.

Optional: A wort cooler should only be used 15 min after the end of the boil in order to comply with the post-isomerisation time. Then proceed in the same way with the whirlpool and filters.

5. Fermentation and Bottling

During the main fermentation, the yeast produces the necessary alcohol. In the secondary fermentation, the sparkling carbonic acid is produced.

In the fermentation tank, the wort must cool down to the optimal fermentation temperature of the respective yeast. The yeast, if stored in the refrigerator, must now also reach room temperature. (In the case of liquid yeast, please follow the manufacturer's instructions and omit the following paragraph).

Procedure for adding yeast with dry yeast: First rehydrate the dry yeast. To do this, take a disinfected glass with boiled water, cool it to 20-30 °C and add the yeast. For every 10 g of dry yeast, 100 ml of water is needed. After 30 minutes, pitch the yeast, put it into the fermentation barrel and stir or pitch it well again. Now the yeast can start the so-called main fermentation at as constant a fermentation temperature as possible.

Important to know: Never bottle before the fermentation is really finished! There are no fixed times or measurements for the end of fermentation. Every fermentation is different. The fermentation will start within one or two days. The first so-called residual extract measurement with a spindle/refractometer (follow the instructions for use) can be taken 5 days after yeast has been added. After that, every three days. The measured value will usually be somewhere between 2 and 6 % (1.008 - 1.024). As soon as this value has not changed for three days, the main fermentation is considered to be finished. (If hops are to be added for dry hopping, this is moment to add them).

The next step is bottling and secondary fermentation. For this purpose, the amount of sugar for secondary fermentation is added to empty bottles as normal household sugar. The quantity applies per litre and must be converted to the bottles used. Fill up to approx. 3-4 cm below the rim via the tap (preferably with a filling tube) and close the bottle. The yeast sediment in the fermentation barrel should not be filled. The young beer with sugar is then given about 14 days at room temperature to ferment and form carbon dioxide. It is advisable to check the pressure in the bottles and thus the development of carbon dioxide at random towards the end of secondary fermentation.

Once secondary fermentation is complete, the beer should be matured further to round off the flavour. To do this, you can use our specified maturation time as a guide. However, it can happen that a beer tastes really good earlier or only later. That is also a matter of taste. For maturing, low temperatures such as in the cellar or refrigerator are optimal, but not absolutely necessary. Cheers!

***Notes:** The sparge water quantity is more of a guideline than a fixed quantity. For example, if a lot of liquid evaporates on the brewing equipment, more top-up can be added. If the brewing system is not quite as efficient, less top-up should be added. The post-isomerisation is calculated with 15-20 min.

2 Dryhopping Tutorial:

<https://braumischung.de/hopfenstopfen>

