

STARTER KITS and BEER KITS by BIRRAMIA: **INSTRUCTIONS**

Once purchased your **Beer Kit**, you have to follow some simple rules in order to exploit the most your **Starter Kit** and brew a very good **home made beer**.

INTRODUCTION – Birramia thanks you for choosing our products, by which you can brew a very good home made beer. We particularly take care in choosing materials, in order to let your kit last long and give you a lot of satisfactions.

MOUNTING THE STARTER KIT – The assembly of the starter kit does not require special knowledge, it is sufficient to tighten the tap at the bottom of the fermenter, where the specific hole is located, being careful with the gasket which has to be put outside (to mount the tap you have to push it inside the hole and then screw the ring nut, placed inside, taking care to screw the ring nut and not the tap, in order to avoid drops). While the air-lock has to be mounted on the hole of the lid with the specific gasket.

CLEANING – A perfect hygiene and cleaning are fundamental to obtain good results in brewing, therefore it is essential to wash well your hands with water and soap before starting to use the equipment, and then also to accurately wash all the equipment with hot water. Soap is not necessary, if you use it, it has to be a neutral one, not particularly foaming and at very small amounts (you find a very good product, 100% biodegradable, in our web store www.birramia.it , with the code STELISC); in this case we recommend a perfect rinse with very hot water.

STERILISATION (SANITISATION) – The term sterilisation, although it gets the idea, is not so appropriate: in this case it's better to use the term sanitisation. The difference is that the real sterilisation happens at about 140°C, while by the sanitisation we remove most of the microorganisms that may grow and frustrate the brewing process. You can proceed with sanitisation by using a potassium metabisulphite solution: approximately 4 tea-spoons dissolved in 1 litre of cold water. Pour the solution inside the fermenter, screw the lid with the air-lock already inserted and shake, in order to wash well the whole inner surface; finally throw away the solution without rinsing. Sanitise also the ladle and all the other equipments following the same procedure (we suggest you to place all the equipments you will use inside a sanitised basin).

PREPARING WORT – If you have the pouch: set aside the yeast sachet and warm the hopped malt pouch in a water bath by immersing it in hot water for 10 minutes in order to make the malt extract more fluid. If you have the tin: remove the plastic lid from the malt tin and set aside the yeast sachet, warm the can still sealed in a water bath by immersing it in hot water for 10 minutes in order to make the malt extract more fluid. Yeast rehydration: prepare a large glass (already sanitised) half-filled with warm water (max 30°C to not kill the yeasts), mix it with yeast and one tea-spoon of sugar. This procedure is not essential, but it has the function to activate yeasts. We will use the yeast, rehydrated or dry in sachet, at the end.

Open the pouch by using scissors (if you have the tin, use a tin opener to open it) and pour malt extract into a large pot containing very hot water (at least 3-5 litres, if the pot is larger is even better, in order to obtain a less dense wort) taking care to recover the remaining product from the package by using hot water. Add the amount of sugar required by the malt used (see the product description of each malt extract in our web site, www.birramia.it) and, with the help of a stainless steel ladle, stir until completely dissolving the compound. **N.B.: usually, the kit includes one 1,8-2,2 kg pouch or tin of malt extract which requires the addition of 1 kg of sugar or dextrose or, better, Beermalt.**

Once this is done, put the pot on the burner until boiling: when it boils, turn off the stove. Boiling wort is not essential, but it ensures a perfect sanitisation of wort. Don't extend the boiling, because, if you are preparing a blonde beer, the colour may become darker. After boiling, cool down rapidly the wort (for example, by immersing the pot inside the sink containing cold water).

FILLING THE FERMENTER – Pour approximately 3-5 litres of cold water into the fermenter, then add the cooled wort (don't pour hot wort because otherwise it would oxygenate and this has not to

happen) and finally finish the filling by adding cold water (for the amount of water to add – in order to reach the final volume – check in our web site, where you will find detailed information for each kind of malt extract). **At this point, measure the wort OG (original gravity): this is an operation that has always to be made!** To measure the wort density, fill in the test cylinder at least for $\frac{3}{4}$ (if you have the kit with cylinder not included, use the hydrometer case), insert the hydrometer inside, making it floating on the wort, with the largest and heaviest part down: read the measure by looking at the hydrometer scale at the wort level, the measure is the notch that remains between the liquid outside and inside. When you use the hydrometer, the wort temperature has to be close to 20°C, because the hydrometer is calibrated for this temperature. **The wort sample used for measuring OG must be thrown away and never put back into the fermenter, in order to avoid any possible wort infection.**

YEAST INOCULUM – Check the temperature on the adhesive thermometer placed on the fermenter. When it is around 20/22°C, add the yeast (earlier rehydrated or directly from the sachet/vial) and stir vigorously for approximately 30 seconds. Be careful: at temperatures higher than 28°C, you may have bad fermentations, while at temperatures lower than 18°C fermentation may not start. For temperatures lower than 18°C, specific yeasts are available, or you can purchase the **Heating Cable Brew Belt**.

CLOSING THE FERMENTER – Screw the lid on the fermenter (if you have a large-mouth starter kit, just push well the airtight lid), take the air-lock and pour inside the same water/metabisulphite solution you have used for sanitisation. Just a small amount of this solution is sufficient for this procedure; alternatively, instead of the sanitising solution, you can also use some grappa or ethanol for liquors with the same results. Finally, insert the air-lock on the fermenter lid by using the specific gasket, so as to remove carbon dioxide without let air. You can either leave the red stopper or take it off. It is important that the fermenter is tightly closed and placed in a fixed place until the phase of bottling. To ensure that the closure is perfect, press lightly on the lid of the fermenter: the solution inside the air-lock should move to one side; if this does not happen, tighten the lid and/or check the gasket.

FERMENTATION – After some hours (24-36) the air-lock should start to bubble, confirming that fermentation is active; if it does not bubble, check if there is foam at the top of the wort, if yes the fermentation has started and it's just the fermenter that is not perfectly tightened, but this is irrelevant. Fermentation will be completed in about 7-10 days in the case you have maintained the temperature around 20-22°C. **At higher temperatures, fermentation will be more rapid.** Sometimes the fermentation can also be shorter or take a few days longer, however we suggest to never bottle before 7-10 days even if the fermentation is over before.

FERMENTATION END – After about 7 days slightly loosen the fermenter lid, open the tap slowly and pour the beer into the test cylinder filling it more than $\frac{2}{3}$; then immerse the hydrometer and read the measure. **The beer is ready for bottling when the final value (FG = Final Gravity) is about $\frac{1}{4}$, or less, of the OG** (example: if the OG was 1.040 (40), the FG must be at least 1.010 (10) or less, because $40/4=10$). If the value is higher, wait a few more days so that the fermentation is complete, making sure to close the lid of the fermenter. For higher alcohol beers the final density will be higher than the value previously indicated. **The sample taken must be discarded and not returned to the fermenter to avoid any possible wort infection.** Never bottle before 7-10 days, even if the fermentation is over earlier. The best solution would be to have two fermenters and let the wort ferments for one week in the first one, then decant it into the second fermenter (after having sanitised it), taking care to not transfer also the sediments, let even pass a few days and finally bottle, after having poured again into the clean and sanitised fermenter. During these operations, try not to oxygenate the wort: avoid to “*splash*” the beer, by using a plastic hose from the tap of the first fermenter is touching the bottom of the receiver fermenter. By using 2 fermenters you will have much less sediments in the bottle. If you have not a second fermenter, you can temporarily transfer the wort into a large bin (sanitised, too) and after rinsing and sanitising the fermenter you can put the wort back into the same fermenter (for more details, see the 2-step fermentation below). **Never be in a hurry to bottle!**

PREPARING THE BOTTLES – The bottles, previously washed, have to be sanitised with water/metabisulphite solution by using the specific sterilising bottle-vinator. Drain then the bottles without rinsing, leaving them to drip for 5-10 minutes. We recommend to use bottles for beer or for spumante with screw-cap; bottles with ceramic “clip-on” mechanical stopper are also excellent for this purpose.

BOTTLING – The typical krausen of home made beer forms because during the secondary fermentation in bottle carbon dioxide is generated, and by mixing with the beer it produces a sparkling drink, totally natural. To allow the secondary fermentation it is necessary to replenish the sugar in the bottles: a very little amount is sufficient to reinvigorate yeasts and get them working again. **At this step sugar has to be always added, independently on what kind of malt extract you use**, in order to activate the secondary fermentation. Put one measuring cup of sugar into each bottle (measuring cups are for 33-50-75 cl bottles). Alternatively, but only if you have two fermenters and you have performed the three decanting, after making the last one, put a 5/6 g/L dose of sugar inside the fermenter, after dissolving it in few hot water. You can slightly increase the amount of sugar if you want to obtain a more sparkly beer. Do not exaggerate with sugar, because the bottles may explode during ageing; this may also happen if you bottle a not yet completely fermented wort, because the not completely “digested” sugars present in the wort would add together to those inserted for secondary fermentation in the bottle.

CAPPING – When filling in the bottles, you have always to leave about 3 cm gap between the beer and the bottle mouth. It is important to plug well with good quality caps. Instead of pocket-sized capper we recommend a column capper provided with bushings for 26 and 29 mm caps, in order to easily plug also spumante bottles.

AGEING – Shake the just corked bottles in order to help the sugar to dissolve. Place the bottles vertically for some days (at least 15) at a temperature between 18°C and 24°C, in order to facilitate the secondary fermentation; store them in a fresh place. After 10-15 days the beer should be ready to be drunk, even if a further ageing period of 1-2 months will considerably improve its taste. You can drink the obtained beer up to 24 months after bottling on condition that you store it in a cool place and away from sunlight. The sediments you will find on the bottom are due to the natural fermentation and are completely harmless, they are present in all unfiltered craft beers.

NOTES AND TIPS – We recommend to take note about the ingredients used, the amounts and the time spent for each phase of brewing. Indeed, the brewer has to be able to repeat good quality batches and to learn from those less good.

ALCOHOL CONTENT – In order to obtain the desired alcohol content in your home made beer, it will be sufficient to modify the amount of sugar to dissolve into malt extract: you have just to add more sugar if you want a more alcoholic beer and less sugar to obtain a less alcoholic beer. In any case, we recommend not to exaggerate with sugar (max 30% more), since you may obtain a not balanced beer, too much dry, because all the sugar is transformed into alcohol; so we recommend to add 1 kg of Beermalt Dry and ½ kg of sugar if you want to increase the alcohol content of your home made beer. To determine the alcohol content, you can use the following empirical formula, by measuring the wort density before fermentation and the beer one before bottling: **(OG-FG) / 7,45** where OG=Original Gravity is the initial density and FG=Final Gravity is the final density. Example: if OG=1051 (51) and FG=1010 (10), then $(51-10) / 7,45 = 41 / 7,45 = 5,5$, therefore you will have a beer with about 5,5% vol.

TEMPERATURE – Temperature is an important factor during all steps of brewing and beer fermentation. When you add yeast, it is essential to ensure that the temperature is around 20°C: never lower than 18°C or higher than 24°C. In the case of too high temperatures, it is worthwhile to immerse the fermenter in cold water (otherwise, you can follow our **recommendations for brewing beer during summer**). When you reach the appropriate temperature, you can proceed with the yeast inoculum. During winter, to avoid that temperature is lower than 18°C (that is essential for a correct fermentation), place your fermenter in a warm room, otherwise you can purchase the **Brew-Belt Heating Cable**.

YEASTS – You will usually find a top-fermenting yeast provided with your tin of hopped malt, this kind of yeast requires a temperature around 18-22°C. For brewing Lager, Pilsner and Bock, some specific bottom-fermenting yeasts, which work at temperatures lower than 18°C, are also available on demand, and they allow to obtain a beer with a dry and clean taste. The yeast inoculum has to be always done at a temperature around 20-24°C, in any case.

FERMENTATION – Fermentation starts within few hours after the yeast inoculum. If it has not started within 24-36 hours, then proceed as it follows:

a) check if the fermenter is properly closed – sometimes the lid is not hermetically closed – try to tighten it better, just a small loss is sufficient to let carbon dioxide vent from the lid instead of inside the air-lock, but this is irrelevant, the air-lock is just a vent so as not to inflate the fermenter, therefore if carbon dioxide vents from another side, that is not a problem and you have not to worry about;

b) if the fermenter is perfectly closed, try to open it and check if on the wort surface there is foam: if the foam is present, carefully close everything again and let your beer quite to finish to ferment;

c) check the temperature indicated by the adhesive thermometer: if it is lower than 18°C, it is important to increase the temperature, by placing the fermenter in a warm room, otherwise by covering it with a blanket, or by using a Brew-Belt Heating Cable.

d) if the temperature is around 20°C, but fermentation does not start, it may be a problem due to yeasts, yet before proceeding as it follows it is important to remind you that it's almost impossible that fermentation does not start, unless you have cooked the yeasts or you have too low temperatures. It almost never happens that fermentation does not start, it is often just a brewer's anxiety, waiting for bubbling. While if you are sure (but really, very sure) that fermentation has not started, then inoculate another sachet of yeast, stirring everything with a previously sanitised ladle. For further details or information, read our **F.A.Q.** .

2-STEP FERMENTATION – It makes your beer more limpid and helps to prevent any yeast scent. When the beer density will be close to ¼ of the original gravity (or after 7 days), the first turbulent phase of fermentation will be attenuated, so you can decant the beer into a second fermenter, clean and sanitised (do not transfer the sediments!). Some days later, you can decant again into another clean and sanitised fermenter, and then you will be ready to bottle. During these operations take care not to oxygenate the wort by “splashing” it, but use instead a plastic hose which, from the tap of the first fermenter, arrives on the bottom of the receiving fermenter (you have to make three steps!). Thanks to this technique you will obtain a more limpid beer with less yeasts on the bottom. **N.B.:** to avoid any possible misunderstanding, we remind you that **the 2-step fermentation is anyway a primary fermentation, and it remains primary fermentation** until the wort is inside a fermenter, even if you transfer it twice, three, one thousand times... **The secondary fermentation is that one which occurs inside bottles, kegs, etc.,** and generates CO₂ for beer carbonation.

SECONDARY FERMENTATION (FERMENTATION INSIDE BOTTLE) – The sugar added inside bottles will be attacked by the remained yeast residuals and the generated carbon dioxide will dissolve into the liquid forming, at the time of consumption, the typical beer head. The amount of sugar to add inside the bottles will be proportional to their capacity. Another method to add sugar inside bottles is the following: equip with a second well washed, sterilised and drained fermenter; place it under the first fermenter and apply to the tap of the first one a food plastic hose (previously washed and sanitised), transfer the wort in order to separate it from the sediments settled on the bottom during fermentation. The tube has to touch the bottom of the container, to avoid the formation of foam and the wort oxygenation. Dissolve the required amount of sugar (**5-6 g/L**) into ¼ of boiling water and finally add it to the wort. Stir gently and proceed with bottling, taking care to occasionally stir the wort inside the fermenter.

SUGAR REPLACEMENT – During wort preparation, in addition to sugar you can use small amounts of Acacia's honey (200-300 g in addition to sugar), that will make the obtained beer smoother and rich of scents. The honey has to be diluted in hot water and added inside the fermenter, but not boiled with the wort. The 1 kg packs of **Beermalt Dry** are perfect for this

purpose, too: they replace just fine the normal sugar, considerably improving the final result.

MALT EXTRACT – Malt extract is obtained by concentrating the wort, obtained from malted cereals (mainly barley and wheat). It is available both liquid or in powder, pale, amber, and dark. The liquid extract (or syrup) contains about 20% of water. The powder one (dry) is easy to dose and the part not used has a long shelf life. A recommended use of this kind of malt extract is to replace the required sugar with **Beermalt Dry** powder malt extract, in order to increase the taste of malt and make the krausen more persistent. If you add 1 kg of dry malt extract Beermalt Dry and 50% of the recommended sugar to the hopped malt extract can for 23 L, you will obtain a more full-bodied beer, without modifying the balance of the original recipe.

THE WATER – You can use the simple tap water as long as it does not taste of chlorine. In the case of hard water or with a strong taste of chlorine, you can simply boil all the necessary water and let it cool down; then use it leaving the calcium sediments on the bottom of the pot. Otherwise, water in bottle or spring water are excellent for brewing.

THE SANITISING SOLUTION – If used at the recommended doses – 3-4 tea-spoons of **potassium metabisulphite** (red pouch) dissolved into 1 L of cold water – it acts as inhibitor of bacteria and undesirable yeasts, for a good fermentation. **It is important not to rinse with water after sanitisation, because otherwise the sanitisation itself would be cancelled;** it is sufficient just to drain well the equipments and the bottles. Potassium metabisulphite is also used by winemakers, who add it to wine, especially white wine. **Respect the recommended doses and do not inhale potassium metabisulphite powder.**

THE AIR-LOCK – The **air-lock** allows the carbon dioxide to vent outside the fermenter, and at the same time it avoids that air takes contact with the wort. It will allow you to well follow the fermentation process, helping you to understand which is the proper moment for bottling. At the end of fermentation, indeed, the bubbling will significantly attenuate and finally stop permanently: at this point, check the final gravity by using the hydrometer. In the case of a not perfect sealing of the fermenter lid, what will indicate the beginning and the end of fermentation will be the formation of foam on the wort surface and its decrease up to its complete disappearance at the end of the fermentation process. **N.B.:** the air-lock is not an instrument but only a vent, therefore in order to know if the fermentation ended you have to use the hydrometer. **So, always remember to measure the Original Gravity of the wort, otherwise you will not be able to determine the Final Gravity and to calculate the alcohol content of your home made beer.**

THE HYDROMETER – The **hydrometer** is an instrument for measuring the wort density and it gives you an indication about the proceeding of fermentation. In order to read the measure on the hydrometer you will have to immerse it, holding its thickest and heaviest part down, into the cylinder filled with the liquid for $\frac{3}{4}$ of its capacity, and letting it float on the surface of the liquid you will be able to read the wort density value on the graduated scale. Generally, the initial density of a classic malt extract that you find in beer kits is around 1.040, while the final gravity is lower than 1.010, but these values are just approximate, and for many other kinds of malt, especially those for high alcohol beer, they can vary a lot. **So remember to always measure the Original Gravity: fermentation is over when the Final Gravity is at least $\frac{1}{4}$ of the initial density.**

THE TAP – For bottling, insert the tap spout into the bottle slightly inclined in order to let the beer glide on the bottle wall. In this way, you will avoid the excessive foam formation, which may delay the execution time, and at the same time you will reduce the risk to oxygenate too much the beer. In our catalogue you can find **a special tap endowed with a pole** which arrives on the bottom of the bottle: pushing it on the bottle the liquid pours out, if you move it from the bottom, the flow stops. In this way, you avoid the formation of foam and the bottle filling is facilitated. **Remember to remove the tap after each fermentation and to wash it inside, where organic sediments settle, indeed without removing the tap from the fermenter you can not remove these sediments just by rinsing. These sediments may cause bad fermentations or even some infections to the beer during the next use.**

THE BOTTLES – The **bottles** recommended for bottling are those with screw cap, with a capacity of ½ L, or even the typical beer bottles, 33 cl and 66 cl. We advise against 1 L bottles for mineral water, since their glass is too thin to keep the carbon dioxide and there would be the risk that they crack. 75 cl spumante bottles are also perfect for this purpose. In order to facilitate their cleaning, we recommend to wash them with hot water immediately after you have consumed the beer, to avoid that sediments stick on to the bottom of the bottle. A good solution are the bottles with “clip” ceramic mechanical stopper: they can be used many times, they are solid and perfect for storing your home made beer.