

HOME BREWED BEER KITS – COMMON PROBLEMS

PROBLEM	SYMPTOMS	CAUSES	REASONS and SOLUTIONS
Fermentation fails to start	<p>No frothing on the surface of the wort</p> <p>No characteristic fermentation odour</p> <p>No activity through the airlock</p>	<p>Wort too cold (yeast dormant)</p> <p>Wort too hot (yeast stunned/killed)</p> <p>Old yeast (expired BBE date)</p> <p>The lid and/or the airlock grommet of the fermenter are not adequately sealing or not screwed down tight enough</p> <p>Forgot to add the yeast</p>	<p>Pitching the yeast into wort that is too cold or allowed to become too cold may prevent fermentation or significantly slow down fermentation. Move the fermenter to a warmer place (18-23°C) and rouse the yeast by stirring the wort with a sterilised spoon.</p> <p>Pitching yeast into wort that is too hot (>35°C) or allowed to become too hot may kill or stun the yeast resulting in slow or no fermentation. Move the fermenter to a cooler place. When the wort has cooled to (18-24°C) stir in another sachet of yeast.</p> <p>Dried yeast has a finite life and can lose its viability with time and if exposed to the air or moisture. Always ensure the sachet of yeast is within the BBE date and not damaged (i.e. not punctured). Always store yeast sachets in a cool, dry place. Stir in a new sachet of yeast.</p> <p>If the airlock grommet and/or fermenter lid is not sealed then there will be no active bubbling through the airlock. The wort may actually be fermenting, but the CO₂ gas will be escaping through the faulty seal. Fermentation can be verified by removing the fermenter lid and examining the wort. Indicators of fermentation are: condensation inside the lid, frothing/bubbling of the surface of the wort and a ring of scum on the fermenter wall above the wort. Rectify the faulty seal. Ensure fermenter lid is screwed down tightly.</p> <p>Are you sure you added the yeast?</p>
Frothing through the Airlock	<p>Froth rising out of the fermenter airlock</p>	<p>A vigorous fermentation</p> <p>Overfilling of fermenter</p>	<p>There is no need for concern (apart from a bit of a mess!). This is actually a good sign and indicates that the yeast is strong and fermenting vigorously.</p> <p>If overfilling is the cause, drain off some of the wort.</p> <p>Clean and refill the airlock with water and allow the yeast to continue fermenting the brew. Frothing over can be avoided by using a larger fermenter.</p>

PROBLEM	SYMPTOMS	CAUSES	REASONS and SOLUTIONS
<p>Stuck Fermentation</p>	<p>The beer has not reached the expected final gravity (i.e. the gravity reading has not changed over a period of 3-4 days but is still too high for bottling or barrelling). This might be accompanied by no visible signs of continuing fermentation and no bubbles rising through the airlock.</p>	<p>Poor ingredients (poorly fermentable wort)</p> <p>Insufficient yeast nutrients</p> <p>Old yeast</p> <p>Temperature shock</p> <p>Fluctuating temperatures</p> <p>High alcohol levels</p> <p>Wrong strain of yeast</p>	<p>Poor ingredients may result in a high proportion of complex carbohydrates relative to the proportion of simple carbohydrates (sugars) in the wort. It is much easier for yeast to ferment simple sugars. High levels of complex carbohydrates will cause the fermentation to slow down considerably once the simple sugars have been used up. It may be possible for the yeast to ferment these but it can take a long time (several weeks). Hence, the fermentation may appear to become stuck.</p> <p>Insufficient nitrogen nutrients can cause yeast to stop working. This can occur with poor ingredients and with beers that are made using very high percentages of refined sugars (e.g. ordinary household sugar). These sugars won't contain sufficient nutrients and will have a dilution effect on the nutrients provided by the other ingredients. For kits that require additional sugar, do not use more than is stated in the kit instructions. Stirring a yeast nutrient (available from home brew suppliers) into the brew may help to rectify the problem. Alternatively, use an all malt extract kit.</p> <p>Temperature shock can cause yeast to stop working. If the temperature is allowed to become too hot during the fermentation, it can kill the yeast. If it is allowed to become too cold it will result in a very slow fermentation or no fermentation at all.</p> <p>The ideal fermentation temperature is 18-23°C. Yeast doesn't like rapid fluctuations in temperature. Even fluctuations within this range can cause yeast to slow down or stop working. The temperature should be kept as constant as possible throughout the fermentation period.</p> <p>High alcohol levels inhibit and eventually kill yeast. Alcohol is a by product of fermentation and the level gradually increases in the wort during fermentation. Different yeast strains can survive different levels of alcohol. If the brew is a high gravity brew, then conventional ale yeasts will be inhibited by the increasing alcohol level before all of the sugars have been fermented. This will result in a high final gravity reading and a very sweet tasting beer. It is important that an appropriate strain of high alcohol tolerant yeast is used for such brews. Whilst it may be tempting to ignore kit instructions and add extra sugar in an attempt to increase alcohol levels it is unwise because this may result in a high final gravity and also compromise the quality of the final beer. It is important that kit instructions are followed as intended.</p>

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<p>Stuck Fermentation <i>Continued</i></p>			<p>It might not always be possible to re-start a stuck fermentation, but the following actions are often successful:</p> <p>Ensure the temperature of the brew is 18-23°C. Gently stir the brew to rouse the yeast, using a sterilised stirrer/spoon. This action alone will often start the yeast working again.</p> <p>Add a new sachet yeast to the brew. This should first be rehydrated and activated by mixing the dried yeast into a glass of pre-boiled, lukewarm water together with a teaspoon of sugar. This should be covered and left in a warm place until seen to be actively fermenting, before stirring into the main brew.</p> <p>Use a good quality brewing yeast designed for all malt recipe brews which is capable of fermenting out higher or complex sugars.</p>
<p>High Final Gravity</p>	<p>Hydrometer reading is high after the fermentation has finished</p>	<p>Stuck fermentation</p> <p>High original gravity (a high gravity brew)</p> <p>Inaccurate hydrometer</p> <p>Incorrect use of hydrometer</p>	<p>A stuck fermentation will result in a high gravity reading (see section: Stuck Fermentation)</p> <p>High gravity brews will usually have a higher final gravity than lower gravity brews. A high gravity brew may be intentional (which will be indicated on the kit instructions) or may be a result of adding extra sugar to the brew (either accidentally or deliberately).</p> <p>Is the hydrometer accurate? This can be checked using water – the reading should be 1.000 at 20°C.</p> <p>Be sure to read the hydrometer correctly (at the bottom of the meniscus) and at the correct temperature (20°C) – refer to your <i>hydrometer instructions</i>.</p>

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<p>Beer Won't Clear</p>	<p>Beer looks cloudy, hazy or foggy</p>	<p>Insufficient clearing time allowed</p> <p>The nature of the yeast strain</p> <p>Type of beer</p> <p>Excess complex carbohydrates in beer (poor ingredients)</p> <p>Contamination by wild yeasts or bacteria</p> <p>Chill Haze (see section: Chill Haze)</p>	<p>When beer is bottled or barrelled it will always display a degree of cloudiness caused by the millions of yeast cells in suspension. This is a good thing because the yeast is required for fermenting the priming sugar. Normally, the brew will clear once the yeast has performed the secondary fermentation (adding fizz to the beer) and has been allowed to stand undisturbed. Clearing usually takes around two weeks, but can vary significantly – so be patient!</p> <p>A brew that doesn't clear is still likely to be drinkable in many cases. Taste it and see.</p> <p>Some strains of yeast, don't settle as completely as others. The 'serious' brewer might wish to experiment with different strains.</p> <p>Some types of beer, by their nature aren't meant to clear or won't clear completely. Wheat beers are an example of this.</p> <p>If the beer contains excessive amounts of complex carbohydrates and proteins it may not clear completely. This is usually a result of poor quality ingredients, but may still be perfectly drinkable.</p> <p>The use of a fining agent (available from home brew suppliers) can be used to aid clearing in many cases. Follow the instructions supplied.</p> <p>If the brew is contaminated by wild yeasts or bacteria it is unlikely to clear. It may also be undrinkable (see section: Spoiled / Infected Beer)</p>
<p>Poor head retention</p>	<p>Poor head - beer has a flat appearance</p> <p>Head does not last and fades very quickly</p> <p>Head does not form</p>	<p>Polluted glassware</p> <p>Under carbonation</p> <p>Residual sterilant or detergent in the bottles or barrel</p> <p>High alcohol content</p> <p>Too little protein & complex carbohydrates in the wort</p>	<p>Polluted glassware is by far the most common cause. Grease, salt, soap residue and detergent etc will kill the head on the beer. The beer glass may be dirty, or may not have been rinsed thoroughly after washing. Ensure glassware is spotlessly clean.</p> <p>Also, if the beer is being drunk with greasy or salty food or snacks (chips, crisps, peanuts etc), the grease or salt will make its way from the food to your lips to the beer, and the head will suffer its effects.</p> <p>The beer may not be fully carbonated (see section: Under Carbonation)</p> <p>Residual sterilant or detergent in the bottles/barrel will have the same effect as polluted glassware (above). Ensure these are thoroughly rinsed with cold tap water prior to filling.</p>

PROBLEM	SYMPTOMS	CAUSES	REASONS and SOLUTIONS
<p>Poor head retention <i>Continued</i></p>			<p>Beer with a high alcohol content is usually the result of adding an excess (more than 1kg) of ordinary sugar to the wort. This has the effect of ‘thinning down’ the ‘body’ of the final beer by diluting the proteins and complex carbohydrates that are responsible for head retention (<i>ordinary sugar is too pure and doesn’t contain these</i>). If a high alcohol beer is required it is best to use a malt extract powder instead of ordinary sugar. Malt extract will give more body and aid head retention.</p> <p>To increase the head when pouring, raise the bottle away from the glass and pour ‘high’.</p>
<p>Spoiled / Infected Beer</p>	<p>Unusual taste and smell (<i>e.g. vinegar, sour, wet cardboard, mouldy, musty, TCP, etc</i>)</p> <p>Beer cloudy - although this isn’t always a sign of infection (see section: Beer Won’t Clear)</p> <p>A ring of scum on the inside neck of beer bottles, near the ‘beer line’.</p> <p>Mould on surface of brew</p>	<p>Contamination by bacteria or wild yeasts from inadequately cleaned and sterilised brewing equipment.</p> <p>Contamination by bacteria, wild yeasts or mould spores from the air.</p>	<p>Cleanliness is essential!!!</p> <p>It is the home brewer’s challenge to prevent contamination by spoilage organisms. A comprehensive cleaning and sanitising regime will reduce the number of potential spoilage organisms to a minimum <i>but never eradicate them completely</i>.</p> <p>It is essential that all brewing equipment that comes into contact with the beer is thoroughly cleaned and sterilised before use (<i>fermenter, barrel, bottles, lids, caps, siphon tube, stirrer, thermometer, hydrometer etc</i>). Various sterilising and cleaning agents are available from home brew suppliers and the instructions should be carefully followed.</p> <p>Scouring pads, stiff brushes etc should <u>not</u> be used to clean brewing equipment, particularly the fermenter. This is because such items will leave minute scratches on the walls which create an ideal place for bacteria to harbour, thereby increasing the chances of the brew becoming infected. The inside of the fermenter should only be cleaned with a soft cloth, and any caked on residues soaked off rather than scrubbed.</p> <p>Once the brew has been mixed (i.e. concentrate/sugar/water) there should not be any delay in adding the yeast. The faster the yeast starts to work, the less chance of contamination (<i>because the yeast will compete against potential spoilage organisms</i>). Often brewers use too much hot water and then wait for the wort temperature to fall before pitching the yeast. This is a critical time for potential spoilage organisms to get a foothold - the longer the delay; the more likely the brew will become infected. It is far better to get the temperature correct to start with, which should be around 18-23°C. Follow the beer kit instructions carefully.</p>

PROBLEM	SYMPTOMS	CAUSES	REASONS and SOLUTIONS
<p>Spoiled / Infected Beer <i>Continued</i></p>			<p>Avoid exposing the brew to the air. Ensure the lid is put on to the fermenter as soon as the ingredients have been dissolved and the yeast has been added. It should only be necessary to remove the lid and expose the brew when taking hydrometer readings and during bottling or barrelling. Keep windows closed when brewing. Do not leave the beer for overly extended periods in the fermenter.</p> <p>Despite a high standard of hygiene it is still possible to experience a 'bad brew'. This is because there will always be airborne bacteria and wild yeasts present when preparing, fermenting and bottling/barrelling a brew. This is just bad luck!</p> <p>It isn't possible to save a bad brew so discard it. Clean and sterilise the brewing equipment thoroughly and start again!</p>
<p>Over Carbonation</p>	<p>Very gassy and foaming beer</p> <p>Beer gushing when bottles are opened</p> <p>Very frothy or too much head</p> <p>Exploding beer bottles!</p>	<p>Too much priming sugar</p> <p>Beer bottled or barrelled too early</p> <p>Poor sterilisation of bottles or barrel</p> <p>Over filling of bottles</p>	<p>Over carbonation is usually associated with bottled beer. It is a lesser problem with barrelled beer because barrels usually have a pressure relief valve.</p> <p>The use of too much priming sugar will result in over carbonation. Measure and dispense the priming sugar carefully. For bottles use ½ level teaspoon in each bottle. For barrels use 80g (3oz).</p> <p>It is important not to bottle or barrel the beer too early before the initial fermentation has finished. In this situation unfermented sugars are carried over into the bottle and when combined with the priming sugar (already in the bottle), excess gas is produced. If the gas pressure is high enough glass bottles will explode (a dangerous situation which can cause injury). Always check the brew with a hydrometer to ensure fermentation is complete prior to bottling.</p> <p>Poor sterilisation of the bottles or barrel may allow the beer to come into contact with wild yeast, which can result in over carbonation and possibly off flavours. Ensure the bottles or barrel are thoroughly sterilised. Then thoroughly rinse with cold tap water before filling with beer.</p> <p>Bottles should be filled to allow ½ inch (15mm) of head space.</p>

PROBLEM	SYMPTOMS	CAUSES	REASONS and SOLUTIONS
Under Carbonation	Flat Beer Poor head	<p>Forgotten to add priming sugar!</p> <p>Not enough priming sugar added</p> <p>Faulty bottle or barrel seals. Bottle caps not tight enough. Barrel lid not screwed down tight enough.</p> <p>Sterilising solution remaining in bottles or barrel</p> <p>Bottles or barrel being stored at low temperature during secondary fermentation stage.</p>	<p>Remember to add the priming sugar. Use the correct amount in the barrel or each bottle to ensure sufficient secondary fermentation. For bottles use ½ level teaspoon in each bottle. For barrels use 80g (3oz).</p> <p>Ensure bottle caps and barrel seals are not faulty (clean, undamaged, fully sealed). Ensure bottle caps are screwed or crimped down tightly. Ensure barrel lid is screwed down tightly.</p> <p>Traces of sterilising solution can kill the yeast resulting in no secondary fermentation. Ensure the barrel or bottles are thoroughly rinsed with cold tap water after sterilisation.</p> <p>Store the bottles or barrel in a warm place (18-23°C) for 7 days to ensure secondary fermentation. After this time they may be moved to a cooler place to settle and clear.</p>
Chill Haze	Bottled beer develops a haze or cloudiness if chilled or stored in the fridge	<p>Cold Temperatures (< 7°C) <i>(resulting in the interaction of proteins and polyphenols in the beer)</i></p>	<p>Most beers will be clear at room temperature but some will develop a haze when refrigerated. This is due to haze-producing proteins and polyphenols (<i>primarily from the malt</i>) suspended in the beer. When the beer is chilled, these react and clump into tiny particles which reflect light. These particles remain in suspension and make the beer appear hazy.</p> <p>Chill haze doesn't affect the taste of beer – only the appearance. It is a common 'problem' with home brewers and some beer kits.</p> <p>Allowing the bottles to warm back to room temperature may reduce the haze. Alternatively, leaving the bottles upright and undisturbed in the refrigerator for a few weeks will allow time for the protein to settle to the bottom of the bottles, and the beer may eventually clear. Other than that, there isn't anything practical that can be done to avoid it. Commercial breweries and serious home brewers who produce fully mashed beers can eliminate this problem using various techniques. For home brewers who use beer kits the technicalities would become impractical for the hobby.</p> <p>Just enjoy the beer for what it is or drink it out of a pewter or ceramic stein if the appearance bothers you!</p>

PROBLEM	SYMPTOMS	CAUSES	REASONS and SOLUTIONS
<p>Sediment</p>	<p>A narrow layer of sediment at the bottom of the bottles.</p>	<p>Yeast sediment</p>	<p>This is perfectly normal for bottle conditioned beer which relies on the yeast to ferment the priming sugar and produce gas. The sediment is the result of the yeast settling out of suspension after the secondary fermentation has finished.</p> <p>The layer of sediment is typically 1/8 inch (3 mm).</p> <p>A thick layer of sediment may indicate that the beer was bottled too early (i.e. before the primary fermentation was finished). It may also be the result of accidentally siphoning over some of the sediment from the bottom of the fermenter. Care should be taken to avoid siphoning any of the sediment from the fermenter during the bottling / barrelling stage. Leaving beer on a thick layer of sediment can result in off flavours developing during storage (see section: Unusual Taste).</p>
<p>Unusual Taste</p>	<p>The beer has an unusual taste and/or smell.</p> <p>There are a wide range of unusual flavours that can occur in beer.</p> <p><i>e.g. vinegary, cheesy, sweaty, rancid, earthy, musty, rusty, 'skunky', rotten eggs, rotten vegetables, sour, medicinal, etc.</i></p>	<p>Spoilage / Infected Beer</p> <p>Exposure to light</p> <p>High fermentation temperature</p> <p>Fluctuations in fermentation temperature</p> <p>Yeast and yeast breakdown</p> <p>Old / over aged beer</p>	<p>A very wide range of unusual (<i>and unpleasant</i>) flavours can be caused by spoilage from bacteria, moulds and wild yeasts (see section: Spoiled / Infected Beer).</p> <p>Exposure of beer to light can cause a 'skunky' flavour. Light has a very adverse effect on the bittering components of hops, which can produce this off-flavour. If the beer is bottled, it should always be in brown bottles, never those which are clear or green. It is most common among light-coloured beers which are heavily hopped (because light penetrates the beer more easily). Direct sunlight and fluorescent tubes are the worst offenders. Store the beer in a cool dark place to prevent this.</p> <p>High fermentation temperatures and fluctuations in temperature can cause off-flavours to be produced (<i>e.g. fruity, solvent</i>). Ensure fermentation is carried out at the correct temperature (18-23°C) and avoid fluctuations.</p> <p>When pouring home bottled beer into a glass, do this slowly and avoid disturbing the natural yeast sediment (which can give a yeasty or tangy flavour). It is best to leave ½ inch or so of beer in the bottle to prevent this from being poured into the glass.</p> <p>Yeast breakdown can result in off-flavours (<i>e.g. rotten vegetables, meaty, marmite</i>). This is a common result of leaving the beer in the fermenter for too long, sitting on that layer of dead yeast. Barrelled beer, if kept for too long can also be affected in this way. Don't keep the beer in the fermenter after the fermentation has finished. Similarly, don't keep barrelled beer for a long period.</p>

PROBLEM	SYMPTOMS	CAUSES	REASONS and SOLUTIONS
<p>Unusual Taste <i>Continued</i></p>			<p>The flavour of beer will also naturally change with age. This may be beneficial for some high gravity beers and 'barley wine' which may improve with age, but for ordinary beers it is best to drink them within a reasonable time (<i>not usually a problem for home brewers!</i>).</p> <p>In general, bottled beer will keep for longer periods than barrelled beer.</p>