FOWLER'S ALES [PRESTOUNGRANGE]

THE PRESTOUNGRANGE GOTHENBURG, PRESTONPANS, EAST LOTHIAN, SCOTLAND EH32 9BE

FERMENTATION CONTROL SHEET

BREW DATE ....

BREW Nº. ....

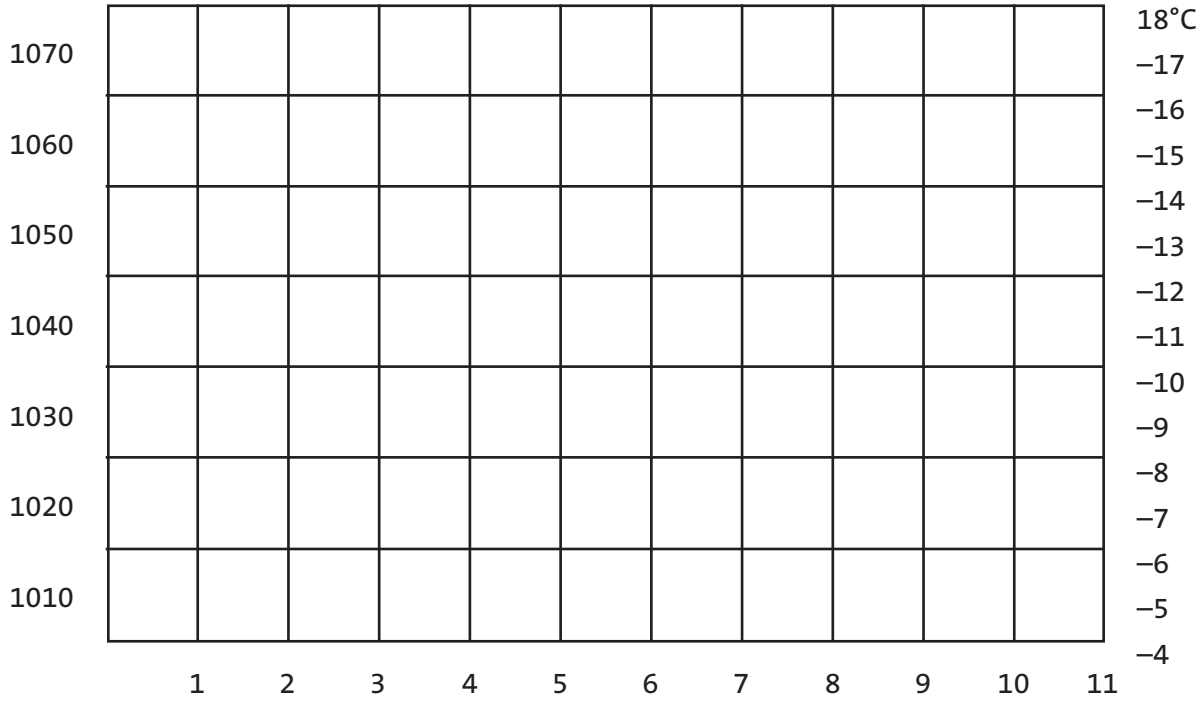
QUALITY ....

FV Nº. ....

DATE	TIME	GRAVITY	TEMP°C	OBSERVATIONS	INITIAL

Fermentation Charts

BREW L.V



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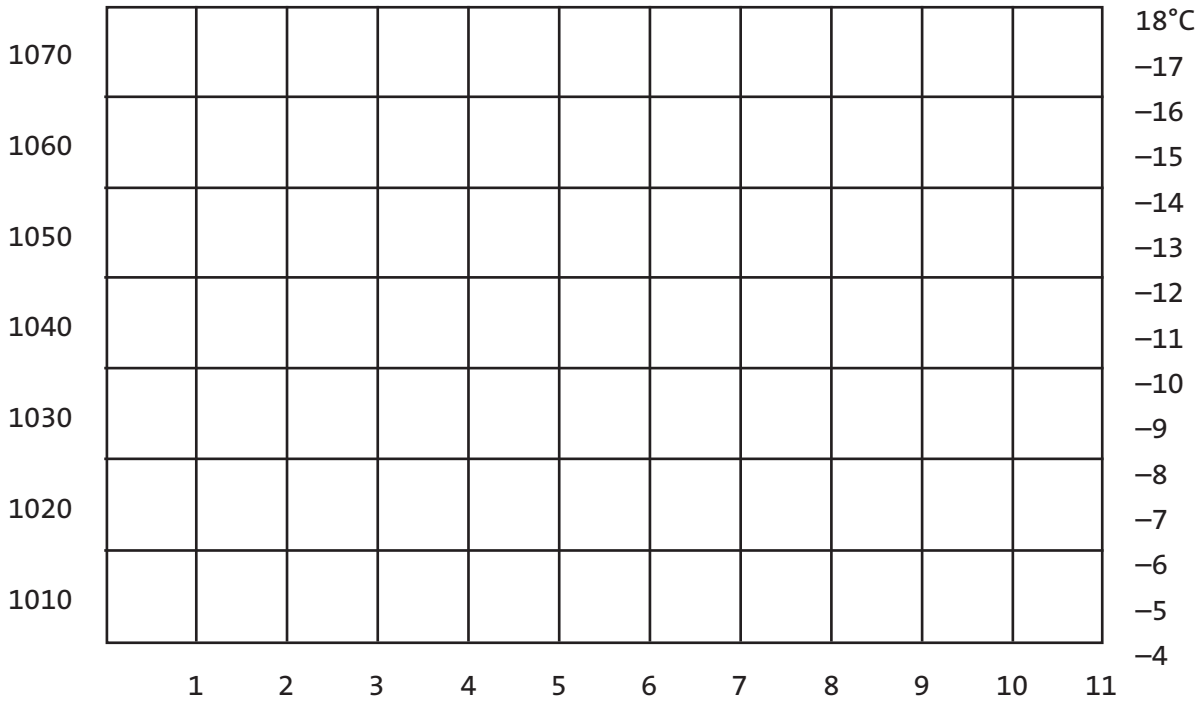

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Fermentation Charts

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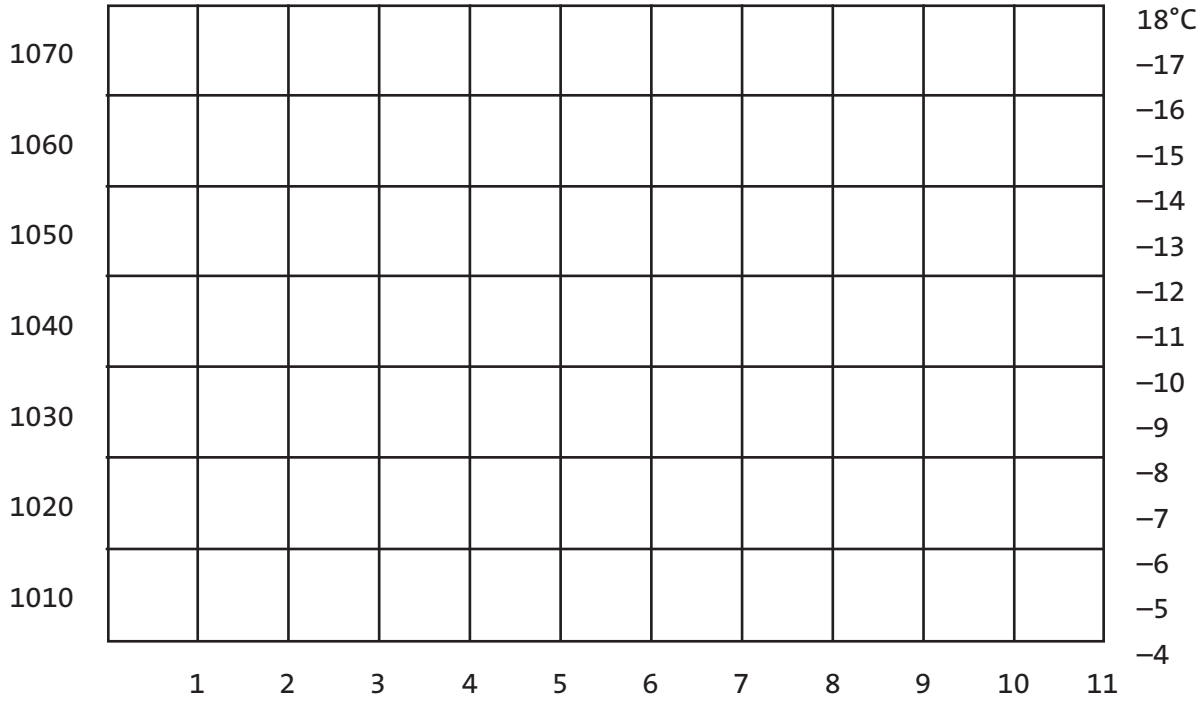

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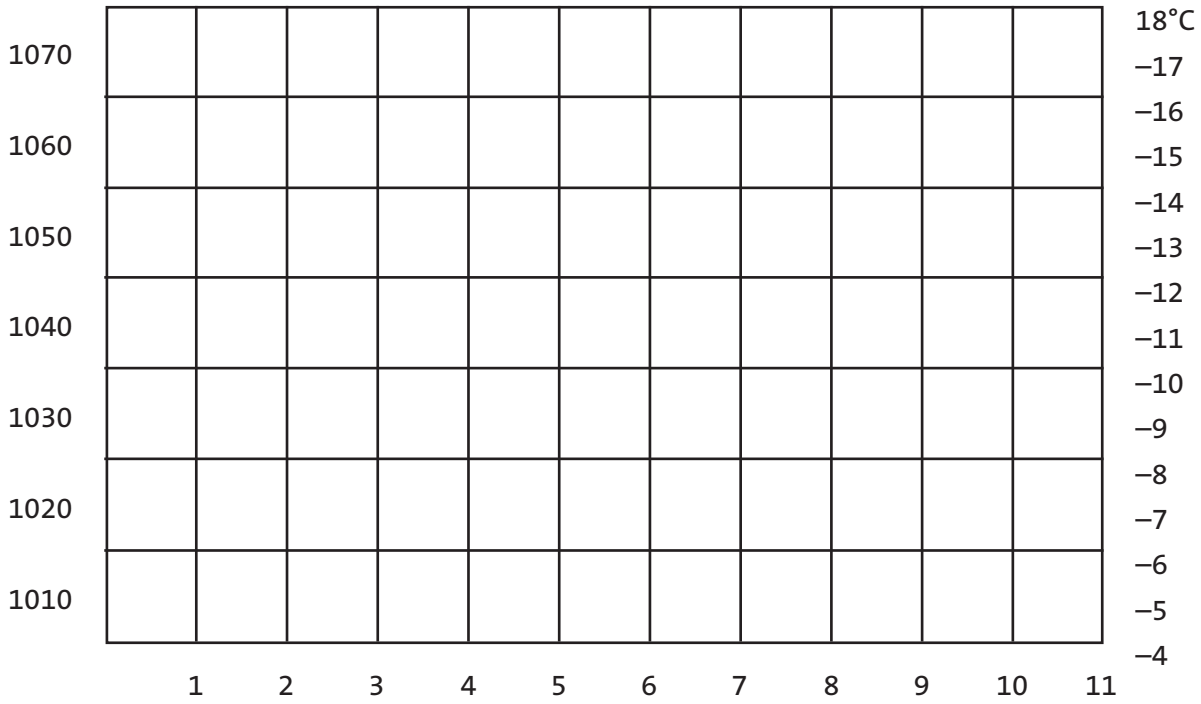

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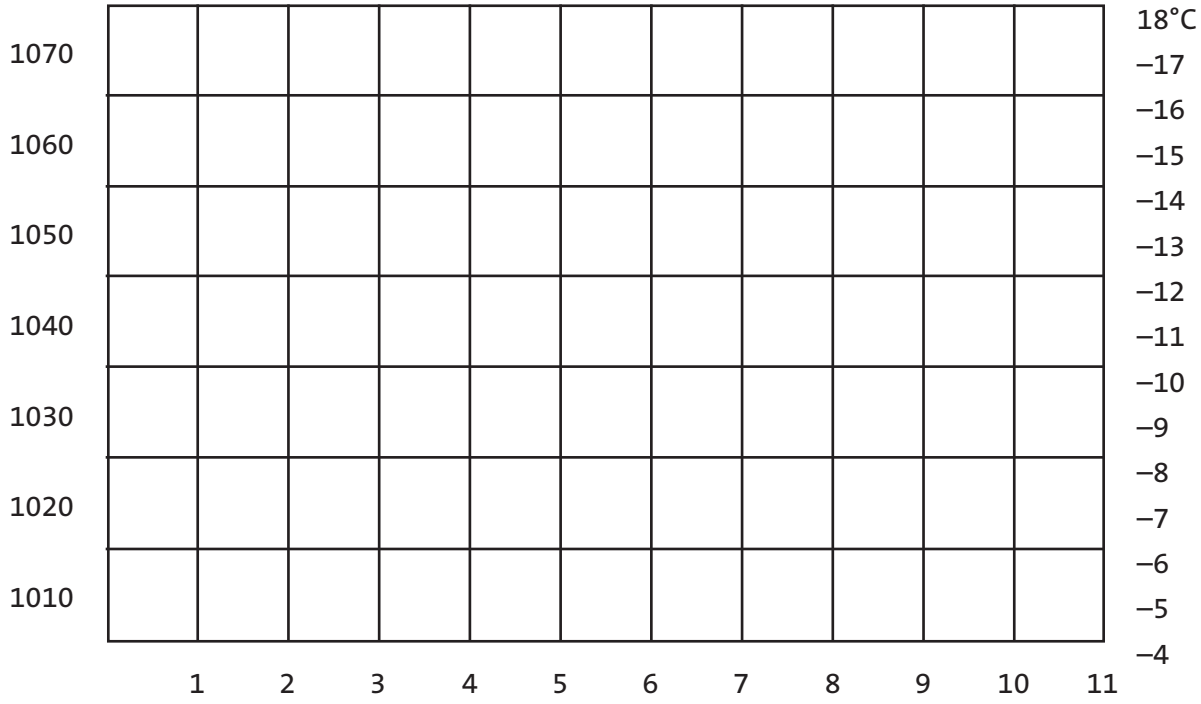

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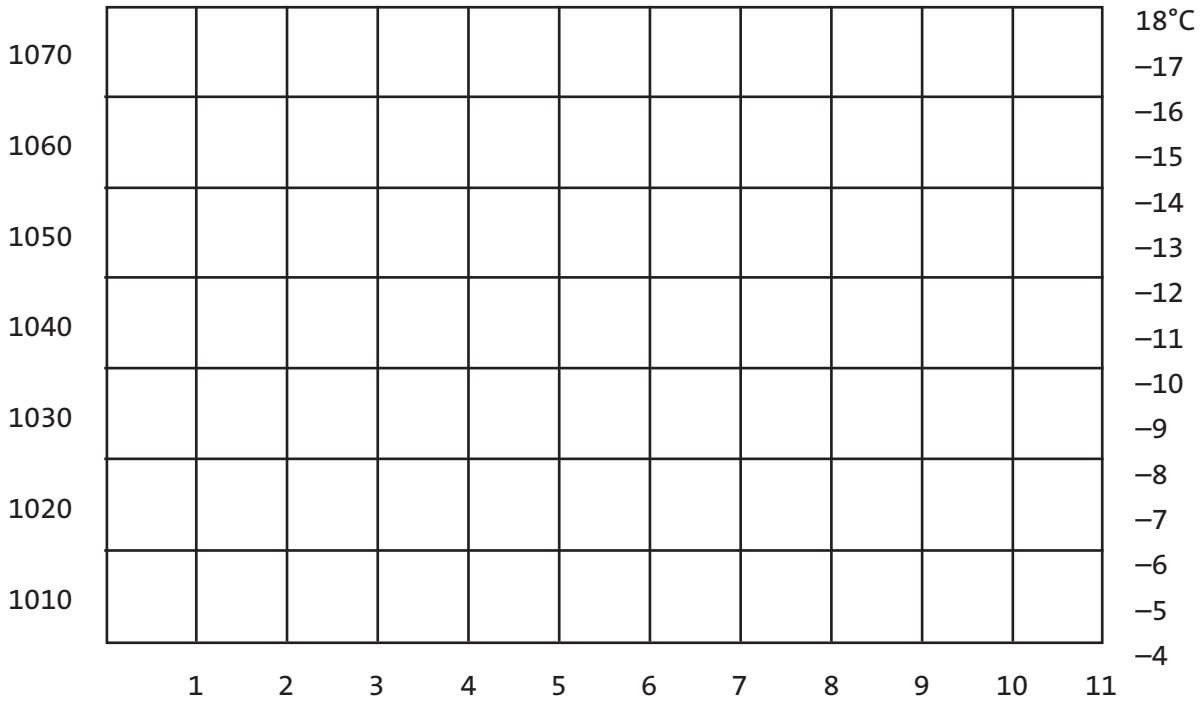

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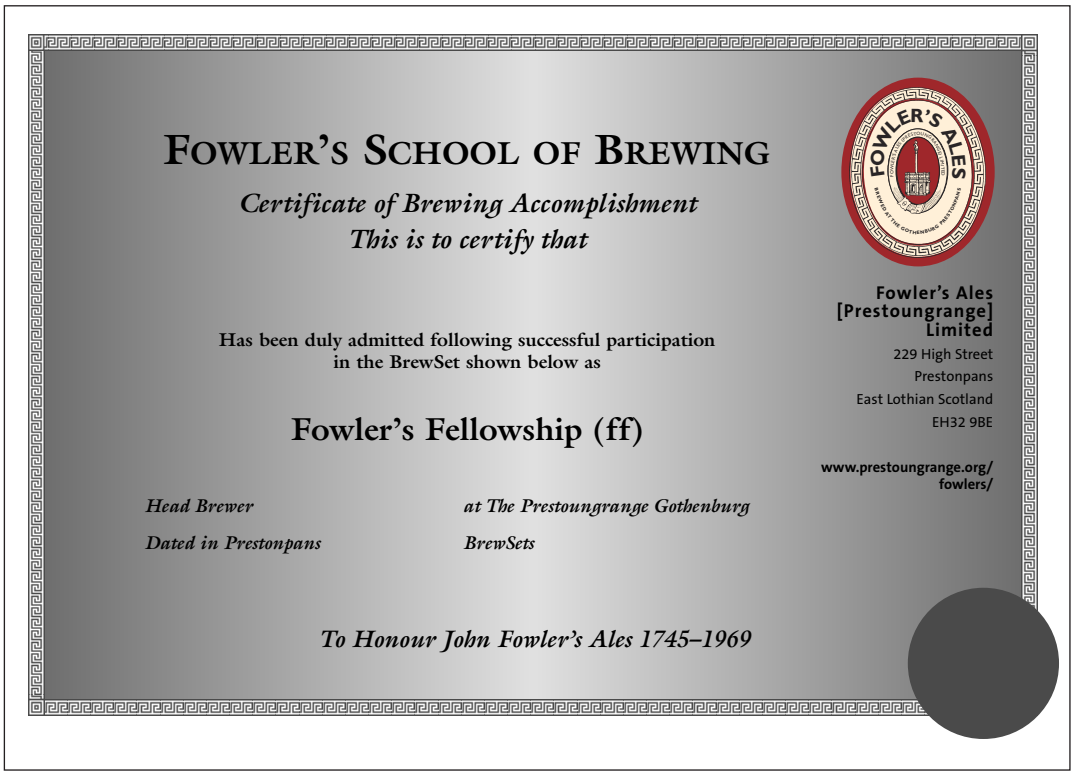
A.3 Your Fowler's Fellowship Certificate (& Companion's Diploma)



FOWLER'S SCHOOL OF BREWING

Certificate of Brewing Accomplishment
This is to certify that

Has been duly admitted following successful participation
in the BrewSet shown below as

Fowler's Fellowship (ff)

Head Brewer *at The Prestoungrange Gothenburg*

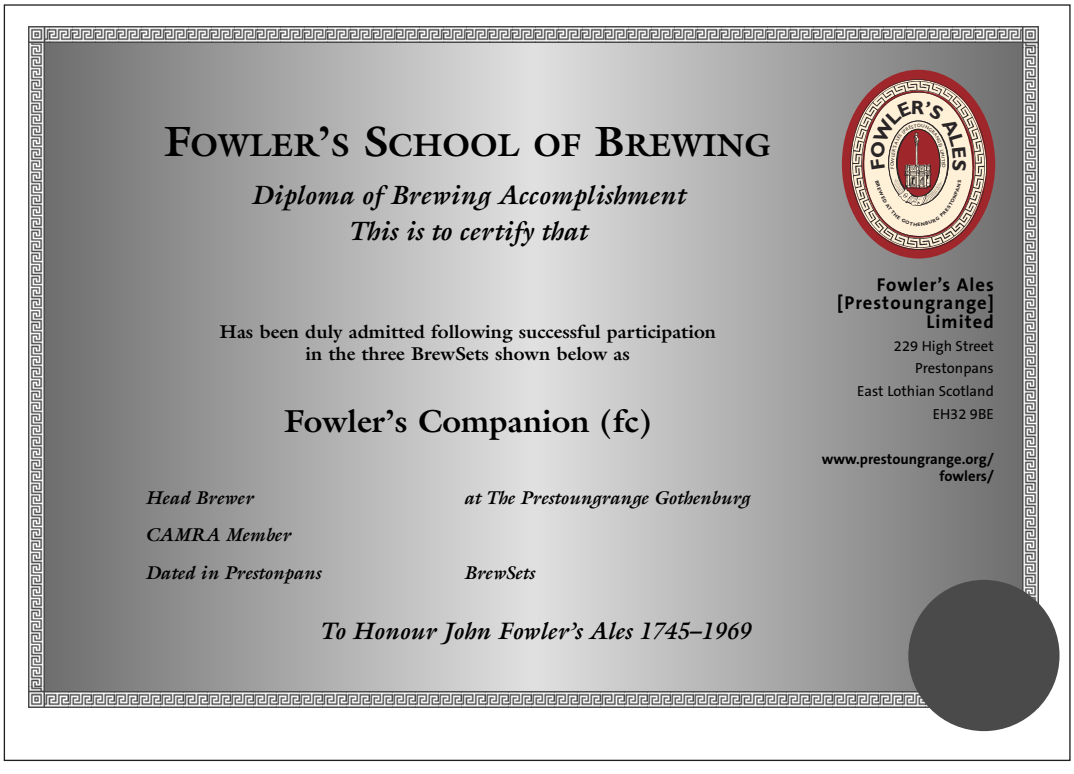
Dated in Prestonpans *BrewSets*

To Honour John Fowler's Ales 1745–1969

FOWLER'S ALES
BREWED AT THE GOTHENBURG PRESTONPANS

Fowler's Ales
[Prestoungrange]
Limited
229 High Street
Prestonpans
East Lothian Scotland
EH32 9BE

www.prestoungrange.org/
fowlers/



FOWLER'S SCHOOL OF BREWING

Diploma of Brewing Accomplishment
This is to certify that

Has been duly admitted following successful participation
in the three BrewSets shown below as

Fowler's Companion (fc)

Head Brewer *at The Prestoungrange Gothenburg*

CAMRA Member

Dated in Prestonpans *BrewSets*

To Honour John Fowler's Ales 1745–1969

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A.4 Your Fellowship Benefits

- Now that you are a registered Brew Set member, you will have received the following
- Your personal copy of Fowler's Brewers Manual
- Your personal copy of Fowler's Brewery- Famous since the '45
- On arrival at the Flower's School of Brewing, you will receive the following:
- Loan of Fowler's overalls for the duration – to be returned
- Lessons in the practice in the secrets of brewing real ales – this you can take with you!
- On completion of your first BrewSet you will be entitled to the following benefits
- Certificate of Brewing Accomplishment with its formal designation of you as a "Fowler's Fellow" placing "ff" after your name on business cards
- Your framed BrewSet fellowship photograph – at cost
- Your own bottle label of you decide to bottle a cask – at cost
- 5 Taster Pints on the house from your own brew
- Fowler's Fellows' Ale Deals of 10% savings on all bulk purchases *for life*

A.5 Become a Fowler's Companion to run your own BrewSet

If you persevere through 3 successful Fowler's Fellow BrewSets and hold their Certificates of Brewing Accomplishment, you will then earn the accolade as a "Fowler's Companion". Your Companion Diploma will be presented to you by a local CAMRA member and will provide you with the authority to act a resident Head Brewer from time to time, as and when one is required. You will receive further benefits as follows:

- The Fowler's Companions badge attached to your personal BrewSet apron
- Exclusive invitations to all first tastings of Fowler's Special Brews
- Guest ale tastings and sampling at the Prestoungrange Gothenburg
- Visit programmes to other microbrewers and real ale pubs locally
- Companion Nights – extraordinary Fowler's brews and competitions
- Complimentary bottle label design
- Your own picture in Fowler's Companions' *Hall of Fame*
- 10% discount on all Arts Festival artefacts
- Fowler's Companions' Ale Deals of 15% savings on all bulk purchases *for life*

A.6 Glossary of Terms Used at Fowler's School of Brewing

ABV Alcohol by Volume

Adjunct(s) Brewing Ingredients which are starch sources other than those which are Malted. Often used for Financial Savings & sometimes for flavour.

Ale Term used to describe Fermented Malt Beverages. Initially (prior to the introduction of Hops) the word was used to define unflavoured Beverages (with Beer being used for those flavoured with Herbs) But there was a total about face and Ale now refers to more heavily Hopped Beverages than Beer in which the flavour is less dependant on the Hops being more derived from the Malt.

α Amylase One of the enzymes present in suspended animation in Kilned Malt. It breaks down Starch into Sugar and is temperature dependant i.e. there is an optimum temperature band (64–68°C) at which it performs fastest which, if exceeded will denature it.

ß Amylase The second of the enzymes present in suspended animation in Kilned Malt. It also breaks down Starch into Sugar and is temperature dependant i.e. there is also an optimum temperature band (60–65°C) at which is performs fastest again which, if exceeded will denature it.

Amber Malt One of the original Malts of the 18th Century. It has harshness if used as 100% of the Grist but in quantities up to 20% provided a "Biscuity" flavour. Its name implies the colour of the wort produced.

Arms & Legs Beer A term describing beer that is "thin" with no "body" hence arms and legs only.

Aroma The element of the chemical content of Hops & Malt which can be detected by smell. In the former these elements are volatile and for this reason Aroma Hops are added late in the Boiling Process.

Attemporators Coils immersed in or panels on the sides of fermenting vessels through which cold water or glycol are passed. Used to control the temperature of the fermentation.

Auxilliary Finings There are two distinct types both of which have the same function (to assist in precipitation of yeast from suspension). One is a stabilised silica sol in acidic aqueous solution with Potassium Metabisulphite as a preservative. The other is derived from Carragheenan (Irish Moss – Chondrus Crispus seaweed) or other approved natural polysaccharides also with Potassium Metabisulphite as a preservative. They word by electrostatic attraction of the yeast cells (like magnets) and have complex long chain molecular structures which trap the yeast cells and make for even heavier molecular "conglomerations" which sink due to their weight. Because of the opposite electrostatic charges, mixing Auxiliary Finings with Isinglass Finings will negate the properties of both thus they have to be added in the green beer separately.

Back General name for vessels used to contain Wort temporarily during various parts of the brewing process.

Barrel A 36 Gallon Cask or unit of volume equivalent to 36 gallons.

Bitterness The Element of the overall effect of beer on the mouth derived from a Humulonic Acid and Iso a Humulonic Acid (constituents of Hops) amongst others.

Body The term given to the effect on the mouth of the nonfermentable element of the product of mashing. The nonfermentable sugars are not necessarily as sweet as their fermentable counterparts. "Thin" Beer has no body.

Boiling The process after sparging the mash whence the wort is sterilised, the proteins are coagulated and precipitated and required elements of the added Hops are extracted. It should be remember that sugar solutions such as wort boil at a higher temperature than water.

Bottling The process of filling relatively small quantities of beer into glass (or ceramic) containers. Bottled beers may be either pasteurised (filtered and "Dead" which necessitates artificial carbonation) or Bottle Conditioned qv.

Bottle Conditioned True "Draught Beer in a Bottle" is unpasteurised and contains yeast which acts on the remaining sugars in the beer to produce natural carbonisation.

Bottoms The undrinkable sediment in a cask precipitated by the finings.

Break (Cold) The precipitation of trub (primarily proteins soluble at relatively low temperatures ± 30°C) when cooled after the boil.

Break (Hot) The precipitation of trub (primarily proteins soluble at relatively high temperatures ± 85°C) after the boil.

Brewer's Flour Wheat flour added to the mash as an adjunct @ 10% and also to promote head retention.

Brewer's Pounds An ancient way of determining and quantifying the Specific Gravity of wort prior to the invention and acceptance of the Hydrometer. Viz. A barrel of water weighs 360lb. A barrel of sugar solution containing one pound of sugar weighs 361lb or 1 Brewers Pound. The extract of Malt used to be quoted in Brewers Pounds per Quarter (3cwt) but since metrication now is now quoted in Litre degrees per Kilo.

BrewSet A group of ± 3 persons who are learning how to Brew at the Prestonpans Gothenburg Microbrewery with the objective of becoming Fowler's Fellows or Fowler's Companions.

Burtonising The practice of treating water so that it has the same chemical composition as that of Burton upon Trent.

Butt A cask usually of equivalent volume to three barrels (108 gallons).

Caramel Sugar originally darkened by boiling until burnt (now effected chemically). Used to colour and flavour Beers, Ales, Porters and Stouts.

Carapils Malt The lightest of the coloured malts giving the flavour attributes of Crystal malt without appreciable darkening of the wort.

Casking The practice of running beer into wooden, metal (or now plastic) bulk containers for "draught" dispense.

Cauliflower Head A description of the appearance of the yeast head at the third stage of fermentation.

Chill Haze The phenomenon of haziness caused by the differential solubility of proteins at various temperatures at or around 1-2°C. Some of the proteins re-dissolve on warming, others remain permanently out of solutions as an insoluble haze. Neither are harmful except aesthetically to the eye.

Chilling The process within the Brewery whereby yeast is precipitated and chill hazes are induced and removed. This also assists in preserving the beer as refrigeration does with food.

Chimb(e) The angled ends outwith the cask. On metal casks these often incorporate handles and the owners name formed into the Chimb(e).

CIP Cleaning in Place (detergent washing by means of pumping detergent through a sprayball or rotating sprayhead as against cleaning by hand).

CLT Cold Liquor Tank.

° of Colour Unit of Colour expressed in ° EBC (European Brewing Committee).

Conditioning The process of allowing beer to mature and develop a low level of natural carbonation by secondary fermentation's.

Copper A vessel used for boiling the wort now often made of stainless steel.

Copper Cast The process of emptying the copper after the appropriate length of boil.

Copper Finings Raw or Processed Irish Moss added to electrostatically precipitate the Trub towards the end of the boil (see Auxiliary Finings above).

Copper Up The time when the Copper contains the required volume of wort for boiling.

Cranning The Scottish name for the process of preparing a cask of beer for its last fining action ready for serving. Usually reserved for beers served via an extractor qv.

Crystal Malt A specially prepared malt in which the moist centre is heated quickly so that it "Crystallises" – (solidifies). The resultant centre is treacle toffee coloured and flavoured. It is used in varying quantities in Mild Ales, Bitter Ales, Brown Ales, Old Ales, Porters and Stouts for both its colour and flavour.

Dead Cell Count A means of determining the health or otherwise of yeast.

Degrees Balling A Unit of measurement of specific gravity. Directly equivalent to % sucrose.

Degrees Brix A Unit of measurement of specific gravity. Directly equivalent to % sucrose.

Degrees of Gravity A means of quantifying the actual and potential alcoholic strength of a sugar solution. 4° of Gravity = 1° Balling, Brix or Plato, or 1% sucrose.

Degrees of Plato A Unit of measurement of specific gravity. Directly equivalent to % sucrose.

Dip The means of ascertaining the volume of liquid in a vessel (from tables having previously been either physically measured or mathematically calculated). These are either "Wet" referring to the actual volume present or "Dry" which by deduction of the volume of vacant dry space from the total volume gives the actual volume present.

Dirty Head The initial stage of fermentation in which the trub that was not removed in the Copper is expelled by the yeast. This is removed by skimming qv and thrown away.

Draff The insoluble elements of the mash (Grain "Bran") remaining after mashing and sparging which is disposed of as animal feed.

Dray A Brewery delivery vehicle (originally horse drawn).

Drayman A driver or "Mate" on a Brewery delivery vehicle.

Drusophila Fly A minute fruit fly which carries Acetobacter – one of the Bacteria which causes beer to go sour. Best disposed of by an Ultra Violet Insectocutor.

Duty The Tax on Beer, Cider, Wine and Spirits imposed by the Government and overseen by H.M. Customs and Excise. Currently £12.59 per Hectolitre percent.

EBC The European Brewing Committee (an organisation who aims to standardise methods of analysis and methods of expression of units of measurement).

EBU's European Bitterness Units (one of the products of the EBC above).

Excise A division of H.M. Customs and Excise which collect various Duties and Taxes including VAT.

Extract The theoretical quantity of sugar available in a given material or grist. Or the percentage efficiency of the Brewing process in obtaining the theoretical figure as against the actual theoretical figure.

Extractor A means of serving the contents of a cask. The cask is set on end and the Extractor (a tube within a tube which each tube valved independently – one to admit air, the other to control the egress of the contents) is inserted airtight through the Keystone. The longer of the tubes is set just above the bottoms (sediment) and is connected to the dispense mechanism (Beer Engine, Electric or Air Pump). The advantage of the extractor over stillage qv is that it maximises use of floor space.

Fermentation The controlled process of permitting the yeast to metabolise the fermentable sugars in the wort into Alcohol and Carbon Dioxide.

Fermentation (Bottom) Fermentation (usually of Lager) by Saccharomyces Carlsbergensis (Saccharomyces Uvarum). The differences between bottom fermentation and top fermentation (apart from the obvious ones denoted by nomenclature) are functions of temperature and time. Bottom fermentations are under undertaken at 10–13°C and thus take 10–14 days with another equal period of maturation (Lagering).

Fermentation (Top) Usually of Ales and Stout by Saccharomyces Cerevisiae at 18–21°C over 2–5 days with 7–10 days maturation.

Fermentation (Secondary) The process (usually of Ale and Stout) of permitting the slowly fermentable sugars to be metabolised in the containers from which the beer is to be served to provide a low level of "Natural Carbonation" (condition).

Fermenting Vessel A tank with an integrated cooling system (attemporators) either open or enclosed made from a variety of materials- originally Coopered Memel Oak, thence Slate, Copper Lined Timber, Black or Glass like Epoxy Lined Concrete, Aluminium and currently Stainless Steel. The geometry affects the flavour of the Beer (particularly the height diameter ratio of Conical Tanks and depth/area ratio of open vessels).

Fining The process of adding finings to beer.

Fining Isinglass Piscine Finings. The shredded/macerated dried swim bladders of tropical fish (originally the Sturgeon but now from fish indigenous to the Phillipines) dissolving in Citric and Sulphurous acids used to clarify beer by precipitation of the suspended yeast. Also derived from Bovine Collagen which has slightly poorer fining efficiency.

Firkin A cask containing nine gallons.

First Runnings The Wort obtained at setting taps qv.

Flag (ging) Dried reed. The process of inserting dried reed into the Groove (Croze) in the staves of wooden casks into which the Head fits as a sealant.

Flavours Those elements other than bitterness derived from Malt and Hops which are identified in the mouth.

Flooding The effect of sparging too fast and covering the surface of the "Goods" with excess liquor.

Flour and Salt A 50–50 mixture scattered sparingly over the surface of a fermentation to "Raise the Head". The Salt acts as a weight and causes the flour to sink initially until the salt dissolves when the flour acts as a focal point for the yeast to ferment the additional material and as it does so the Carbon Dioxide produced carries the yeast to the surface of the Wort.

Germination The name of the process of allowing the grain which is to be malted to produce a shoot and rootlets.

Goods The contents of the Mash Tun after Mashing in.

Gothenburg/Goteborg The second city of Sweden where the 'Gothenburg' Principle was first enunciated. All the city's public houses were required to adher to this principle were knows as Gothenburgs/Goths. Fuller information is set out in the Prestoungrange Historical Series, Volume #13.

Gravity The term describing the strength of the sugar solution which is being fermented. It is measured using either a Saccharometer or a Refractometer.

Gravity Present/Final The specific gravity of the Beer as it is fermenting or when fermentation is complete. Because alcohol has a density less than that of water the Specific Gravity drops as the fermentation proceeds.

Grist The blend of ground malt(s) and adjuncts (if any) to be mashed. The blend of Hops to be used is called the Hop Grist although Hops are not "Ground" (Grist) being the noun derived from the past tense of the verb grind.

Grits Dehusked unmalted grain used as additional starch sources (adjuncts).

Gyle Number The unique reference number of each Brew.

Haemoctyometer A special microscope slide for accurately counting numbers of objects (originally blood cells) within the field of view. Used to determine the viability of Yeast and the level of infection (if any).

Head (Cask) The flat end which has the Keystone bush in it (and if wooden the owners name).

Head (Yeast) That portion of the yeast which floats at the start of the fermentation.

Heat Exchanger Either Shell and Tube (concentric Tubes) as in external Calandria attached to a Wort Kettle or a parallel plate arrangement (Paraflow). Used to either warm or cool the production liquid.

Hectolitre 100 litres or 22 Gallons – the basis in volume terms for calculation of Duty.

Hectolitre % 100 litres x the ABV (x £12.59 gives the Duty payable for Hectolitre sold).

Hogshead A cask which originally contained 54 gallons.

Hoop The Metal Bands which hold the wooden Staves of Casks together.

Hop A green climbing Perennial flower Humulus Lupulus (a member of the Cannabinacae – related to Cannabis and Stinging Nettles). Grown on Strings or nets either as Dwarf Varieties (10′) or traditional (15–18). Contribute Aroma, Bitterness and Flavour.

Hopback Vessel used to filter the Hops from the wort via a slotted false bottom.

Hop Extract Hops processed with either CO_2 or Alcohol to extract the a acids and resins in concentrated form.

Hop Oil Hops processed by distillation to extract the aromatic oils.

Hop Pellets Hops processed by mincing/grinding to reduce the volume and increase utilisation in the copper (by ± 30%). Also refers to compressed whole hops used for addition to the cask.

Hop Pocket The traditional hopsack.

Hop Utilisation A measure of the efficiency of extraction of the relevant elements from the Hops.

HLT Hot Liquor Tank.

Infection Bacteriological ingress into beer causing off flavours. Cloudiness and change of texture.

Infusion The act of soaking Malt in hot water to produce the wort.

Initial Heat The temperature of the Mash when all of it is in the Mash tun.

Jackback A small vessel used to dissolve solid sugar in the wort prior to pumping to the Copper or adding to the cask as primings.

Keg A sealed container into which sterile beer is filled. The contents require dispensing with gas to provide the condition that would naturally occur in Live Real Ale. Often used to distinguish "Pasteurised Draught Beer" from "Real Ale".

Keystone Small part-drilled plug fitted into the head of the cask into which the Tap is inserted.

Keystone Bush Metal reinforcement into which Keystones were driven. Used in the heads of wooden casks to protect the timber from damage by the continual mallet blows.

Kettle Alternative name of Copper.

Kilderkin 18 gallon cask.

Krausening The act of mixing fermenting beer with wort instead of pitching with yeast. Also the act of mixing fermenting beer with fermented beer prior to bottle conditioning.

Lager Malt A pale malt of higher Nitrogen content than Ale malt (originally of poorer quality which is why the decoction mash was necessary).

Liquor Water.

Liquor Treatment Chemicals added to harden or soften water to a similarity with that of say Burton.

Low Colour Malt Ale Malt gently kilned to produce Lager Coloured Ale.

Malt Grain that has been germinated and then Kilned to suspend the activity of the enzymes on the starch. Usually refers to Barley Malt.

Malting The process of producing Malt.

Maltings The factory where Malt is produced.

Maltose One of the sugars derived from Malt.

Mash The mixture of Grist and Water.

To Mash/Mashing In The process of producing Mash.

Mash Tun The vessel (with a slotted false bottom) in which Mash is produced.

Methlyene Blue A stain that colours dead cells blue. Used for detecting the proportion of Dead yeast cells.

Microbrewery A small Brewery which produces less than 60,000 Hectolitres per year.

Mild Ale Malt Malt of slightly lower quality and higher colour used to produce Mild Ales rather than Bitters.

Mill Machine with two, four or six rollers designed to crush malt and other grains.

Nose The smell of beer. To smell a cask to see if it is taint free.

Oobesumbacterium A little fat round bacterium, which causes beer to have a strange and unpleasant smell and taste.

Organolepsis Analysis of beer by observation, smell and taste.

Pale Ale Malt Medium/high quality malt used to produce Pale Ales and Bitters.

Paraflow Parallel Plate Heat Exchanger Trade name: by De Laval (as Hoover is to Vacuum Cleaners).

Partigyle The act of producing two beers of differing strengths from one mash.

Phenolphthalein Indicator which turns blood red in the presence of alkali. An almost instantaneous vicious laxative. Used to ensure complete rinsing away of detergent.

Pilsner Malt German (style) Lager Malt.

Pin 4.5 gallon cask.

Pipe 144 gallon cask.

Pipkin 4 pint wooden cask taken to the fields by farmworkers as their daily drink ration.

Pitching The act of adding yeast to a Fermenting Vessel.

Plato One of the scales of Specific Gravity.

Potassium Iodide Indicator used to test for complete saccharification/residual starch. If the latter is present it turns blue black.

Pottle Modern plastic equivalent of the Pipkin.

Priming The act of adding fermentable liquid at racking promoting secondary fermentation or non fermentable liquid to sweeten.

Primings The Sugar solution used to prime.

Puncheon Cask of 132 gallons.

Racking The process of filling casks.

Raking The act of mixing the mash with a rake. In large Breweries, motorised rakes are fitted as standard.

Rocky Peaks Second stage of fermentation by yeast.

Saccharification Completion of the metabolism of Starch to sugar by the enzymes.

Saccharification Test Test to ensure complete saccharification – see Potassium Iodide above.

Set Mash Accident in the run off of wort from the Mash tun element of the process when wort is removed too quickly and the goods are drawn down hard onto the false bottom in an impervious layer with consequent loss of extract. The only cure is underletting and remashing which involves at last an hours settling time.

Setting Taps The act of starting to run the wort from the mash tun.

Shive Wooden or plastic bung fitted to the belly of the cask. Contains a part-drilled "Tut" into which the Spile is driven.

Shive Bush Similar to Keystone bush but for the Shive and in the belly of the cask not the head.

Skimming Removing the dirty head or excess yeast for repitching.

Sparging Spraying the goods with a device not dissimilar to an inverted garden spray to wash off the sugars from the surface of the grain. Brewers slang for urinating.

Spent Grain Alternative term for Draff.

Spent Hops Used Hops. Good as fertiliser especially for roses.

Spile Conical peg used to vent a stillaged cask via the Tut in the Shive. Two types – Porous bamboo which allows excess condition to "work out" and "Hard" where the grain is a right angles to the diameter which prevents loss of Condition once the correct level has been reached.

Starch The energy store within the grain which is used to provide the energy to grow and which we use as the basis for production of fermentable sugars.

Stave The shaped wooden strips from which casks are made.

Sticking Fermentation One that stops prior to completion due to low temperature or lack of yeast viability.

Striking Heat The temperature of the Mash liquor when it hits the malt.

Sugars The sweet compounds are produced by the action of enzymes on the starch. These are either fermentable producing alcohol or non fermentable providing body.

Tap(ping) The utensil with which beer is removed from the cask – the act of inserting the Tap.

Thin Beer Beer which has been produced at too low a temperature resulting in an incorrect balance between Fermentable and unfermentable sugars. See Arms and Legs above.

Trub Protein precipitated during the boil.

Tundish Funnel.

Tun see 'Mash Tun'.

Tun(ning) To fill a container using a tundish – being a funnel.

Underback The balance vessel into which the wort is run prior to being pumped to the Copper.

Underlet To allow hot liquor in to the Mash Tun from the bottom, thus lifting the goods from the false bottom. A cure for set mash and a means of raising the temperature of the Mash.

Wort The product of the Mash – The sweet dilute Malt extract solution which (after boiling with the hops) is eventually fermented into Beer.

Yeast The plant which metabolises sugars producing Alcohol and Carbon Dioxide as waste products.

Yeastbite The acrid flavour produced when beer is left too long in contact with the yeast after the fermentation is over.

Yeast Count The number of yeast cells present in fermenting beer and in draught beer for sale.

Yeast Food Trace elements necessary for trouble free and quick fermentation.

Yeast Pressings In large Breweries where yeast is compressed into a cake prior to refrigeration. The beer which is retrieved from the process.

Personal notes


FOWLER'S ALE
FOWLER'S ALES (PRESTOUNGRANGE) LIMITED
BREWED AT THE GOTHENBURG PRESTONPANS

£15 or €25