Cheatography

Brewing process Cheat Sheet by [deleted] via cheatography.com/87776/cs/20234/

Brewing operation	ons	Milling
Milling of malt -	Mashing (converting the starch)->	Object
Wort separation (filtering the mash) ->	Wort boiling (boiling, adding hops) ->	
Trub separation (whirlpool) ->	finished wort (cooling to fermentation)	
		Milling
Mashing (important	Infusion mashing: one vessel	types
step, time and temp)		
	Decoction mashing: two	From
	vessels, better if you can't control temps	Whirlp ->
Grist load	20% spent grains	wort
	out of the rest, 65% are fermentable sugars, rest are not	aeratic >
	maltose, maltotriose,	
	fructose, glucose, sucrose	Ale or fermer
	unfermentable are	yeast
	dextrins, protiens, gums, pentose, minerals	
Lautering		
		l.

Laute	r tun or mash filter
	First wort - sparging - last runnings -
	spent grain removal
boil	4-10% evaporation, boiling about 60

boil4-10% evaporation, boiling about 60wortmins, hop added

Objectives	crush husks to expose endosperm
	completely disentegrate endosperm to make all consti- tuent available for enzymes
	keep fine powder at minimum
	Prevent extraction of unwanted substances during mashing
Milling types	Hammer mill: fine pieces. used for mash filters
	Roller mill: husk not damaged, must be used for filtering
From wort to	final beer
Whirlpool	cooling wort ->
->	J. J
-> wort aeration - >	yeast pitching
wort aeration -	yeast pitching Pitching: yeast is mixed with wort
wort aeration -	Pitching: yeast is mixed with

Bottling line



Objectives of mashing

Aim to form an extract with a desired profile of sugars and a desired level of proteins, amino acids and other minor chemical constituents

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Objectives of mashing (cont)

Purpose	To dissolve immediately soluble substances. This fraction consti- tutes approximately 15% of the total ingredients.
	To convert substances that are initially insoluble in the mash into soluble substances, through enzymatic action.
	To convert the extracted substances into fermentable extract, through enzymatic action.
alfa amylase	cuts big pieces
beta amylase	cuts in parts of two
iodine test	shows positive test for starch
Heating jacket	Limpet coil
	Dimple jacket
Lauter tun	Principle: filtration through a bed of grains
	Compared to mash filter: • more flexible – variation in brew types and sizes • less expensive • lower yield
Mash filter	Principle: • filtration takes place through a filter cloth

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Malt hope Water and Adjunct

Objectives o	f mashing (cont)
	Compared to lauter tun: • less flexible – variation in brew types and sizes • more expensive • higher yield
Purpose of Wort Boiling and Hopping	Conversion of bitter components in hops from insoluble form to water soluble form – isomerisation of hop α- acids • Extraction of hop aroma • Sterilization of the wort • Adjustment of strength (% Plato) by evaporation • Removal of unwanted aroma components – DMS • Precip- itation of proteins and polyph- enols – trub, break • Inacti- vation of any remaining enzymatic activity
Hopping	Bitter hops: Hops added in beginning of boiling
	Aroma hops: Hops added at end of boiling
Wort cooling	J
Coolship	big shallow trough
Plate heat exchanger	Hot wort runs next to cold water. hot water is recycled, fx in CIP

Barley MaticInvorous barley outpot barley (two-row better)Barley composeEmbro suborBarley composeEndorIIcafIBarlay outpot abarloy (and subor abarloy (and subor abarloy)IIcaf <tr< th=""><th>Malt, hops, W</th><th>ater and Adjuncts</th></tr<>	Malt, hops, W	ater and Adjuncts
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Isomerised Iso-pellets	Hop products	i
	Pellets	Pellets (90 and 45)
IKE Isomerised Kettle Extract	Isomerised	Iso-pellets
		IKE Isomerised Kettle Extract

Malt, hops, Wa	ater and Adjuncts (cont)
	PIKE Potassium Isomerised Kettle Extract
Downstream	ISO extract
	RHO, Tetra, Hexa
	Hop Oils and Fractions
Special produc	ots
Lupulin glands	Alpha and beta acids, xantohumol
	isomeresation of alpha acids increases solubility and bitterness. also makes the light struck flavour
Water	At least same quality as drinking water
	Opimization of minerals (disolved ions) -> Hardness
	ptimization of pH -> Alkalinity
	bottom fermented beers (lagers) are brewed with soft water
	top fermented beers (ales, stouts, etc.) on hard and mineral rich water.
Ground water	very clean, stable low temperature, often very hard but depends on ground composition
Surface water	more particles and microo- rganisms, varies in temper- ature, often very soft
Town water	Really well balanced
Hardness	Temporary end permanent depending on mineral salts

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Malt, hops,	Water and Adjuncts (cont)
Adjuncts	
Types	Peas, Rice, Corn flakes, rye, soya
	"ANY CARBOHYDRATE SOURCE OTHER THAN MALTED BARLEY WHICH CONTRIBUTES SUGARS TO THE WORT"
Quality	Taste and Flavour Stability • Head Retention • Colour • Degree of Fermentation • High Gravity Wort
Economy	Price of the adjunct versus malt • Influence on brewing capacity • Energy savings • Taxation
Gelati- nisation	Some adjucts gelatinise at higher temps than malt, so it has to be boiled seperately

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