

Buttery

Minnesota Home Brewers Association: Sean P. Hewitt 1/26/06

Cardboard

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Troubleshooting Off-flavors- Buttery

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Butterscotch - Diacetyl - Aroma - Mouthfeel, a slickness on the palate 	Yes	<ul style="list-style-type: none"> Scotch Ales Bitters Dry Stouts Czech Pils Oktoberfest 	<ul style="list-style-type: none"> Diacetyl: <ul style="list-style-type: none"> - Premature racking - Low fermentation temperature - Mutant yeast - Lactic acid bacteria (Pediococcus) - Long periods of wort cooling 	<ul style="list-style-type: none"> - Allow ferment to complete - Higher temperature primary fermentation - Good pure yeast strain - Practice good sanitation - Quick wort chilling

Troubleshooting Off-flavors- Cardboard

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Papery - Wet cardboard - Rotten fruit - Stale - Sherry-like - in Aroma and Flavor 	No	N/A	<ul style="list-style-type: none"> - Aeration of hot wort - Aeration of beer during bottling - excessive age - High storage temperatures - Adding tap water to finished without boiling 	<ul style="list-style-type: none"> - Quiet transfer of beer when siphoning or transferring - Serve beer in appropriate amount of time -Cool (<55F) storage temps -Add only boiled water

Cloudiness

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Cooked Corn

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Troubleshooting Off-flavors- Cloudiness

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Cloudy - in Appearance 	Yes	<ul style="list-style-type: none"> Wheat Beers Lambics American Wheat 	<ul style="list-style-type: none"> Chill haze: <ul style="list-style-type: none"> - Insufficient conversion time Permanent Haze: <ul style="list-style-type: none"> - High sparge temps Bacterial Haze: <ul style="list-style-type: none"> - Poor sanitation Powdery Yeast 	<ul style="list-style-type: none"> - Longer mash - Use protein rest - Use finings - Use filtration - Reduce sparge temps - Practice good sanitation - Use well-flocculating yeast strain

Troubleshooting Off-flavors- Cooked Corn

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - DMS (dimethyl sulfide) - Vegetal (Sweet cooked corn, celery, cabbage, parsnips) - Shellfish or oyster-like in higher amount - in Aroma and Flavor - Precursor S-methyl-methionine (SMM) occurs naturally in Pale malt, turns into DMS with heat, evaporates 	Yes	<ul style="list-style-type: none"> American Lagers Cream Ales 	<ul style="list-style-type: none"> - Covered boil - not boiling wort for at least an hour - Wild yeast or Zymomonas bacteria (converted from Dimethyl sulfoxide) - High level of adjuncts - Overnight cooling 	<ul style="list-style-type: none"> - Open, rolling boil for an hour - Poor sanitation - Reduce corn or rice in mash - Quick wort cooling

Fruitiness

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Light Body

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Troubleshooting Off-flavors- Fruitness

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Esters - in Aroma and Flavor - Strawberries - Raspberries - Pear - Plums - Grapefruit - Banana - Apricots. etc 	Yes	<ul style="list-style-type: none"> Ales American Dark Lagers (very light) Dopplebock (in dark versions) Eisbock 	<ul style="list-style-type: none"> - Alcohols combining with acids at higher temperature. (Ethyl acetate, Isoamyl acetate, Ethyl Hexanoate) 	<ul style="list-style-type: none"> - lower fermentation temperature - Choose a different yeast

Troubleshooting Off-flavors- Light Body

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Watery - Weak - in Flavor and Mouthfeel - 	Yes	<ul style="list-style-type: none"> American Light lagers Lambics 	<ul style="list-style-type: none"> - Lack of dextrins - Poor quality malt - Large percentage of sugar - Over-long protein rest - High mash temperature 	<ul style="list-style-type: none"> - Use quality malt - Keep percentage of sugars small - Reduce length of protein rest - Lower mash temperature - Use dextrin or wheat malt. Flaked malt

Low Head Retention

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Phenolic

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Troubleshooting Off-flavors- Low Head Retention

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Flat - in Appearance and Mouthfeel 	Yes	<ul style="list-style-type: none"> Lambics High Alcohol Beers 	<ul style="list-style-type: none"> - Insufficient proteins in beer causes high surface tension - Dirty/oily glasses - Low protein grist 	<ul style="list-style-type: none"> - Shorten protein rest - Use clean well-rinsed glasses - Use flaked wheat or barley - Lower alcohol by lowering the grist bill - use hops with high alpha acids

Troubleshooting Off-flavors- Phenolic

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Band-aid - Medicinal - Clove-like - Plastic - Smoky - in Aroma and Flavor 	Yes	<ul style="list-style-type: none"> Some Belgians beers Smoke beers Some Wheat beer 	<ul style="list-style-type: none"> - Wild yeast - Improper sanitation - Some malt types - Some yeast strains - Chlorophenols in water - Improper rinse of chlorine sanitizers 	<ul style="list-style-type: none"> - Use pure yeast strains - Practice good sanitation - Use "clean" malt - Use yeast less prone to phenolic production - filter tap water - Use non- chlorine sanitizers

Sherry-like

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Sourness

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Troubleshooting Off-flavors- Sherry-like

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Sherry - Vinous - Wine-like - Paper-like - Old 	Yes	<ul style="list-style-type: none"> Barleywines English Old Ales 	<ul style="list-style-type: none"> - Oxidative yeasts acting on higher alcohol beers creates aldehydes (ie. trans-2-nonenal) 	<ul style="list-style-type: none"> - Use different yeast strain - Create less alcohol by lowering grist bill - Serve beer younger - Ferment cooler

Troubleshooting Off-flavors- Sourness

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Tart - Sour - in Aroma, Flavor and Mouthfeel -perceived on sides on the tongue 	Yes	<ul style="list-style-type: none"> Witbier Lambics Flanders Ale Berliner Weisse (optional sourness) American Wheat or Rye, Dry Stout, Witbier and Saison 	<ul style="list-style-type: none"> - Lactic acid (from lactic acid bacteria) - Acetobacter (from acetic acid) - excessive acid rest - mashing too long 	<ul style="list-style-type: none"> - Practice good sanitation - Don't employ over-lengthy mash or low temp mash

Acetaldehyde

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Alcoholic

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Troubleshooting Off-flavors- Acetaldehyde

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Green apples - Grassy - can taste and smell acetic/ cidery 	Yes, at low levels	L/S/P American Lagers (from yeast character is optional)	<ul style="list-style-type: none"> - Premature removal from yeast - Bacterial spoilage - Oxidation - Premature flocculation -Oxygen depletion 	<ul style="list-style-type: none"> - Allow ferment to complete - Practice good sanitation and beer handling to avoid O2 contact - Good yeast strain - Aerate wort prepitching - long lagering will reduce

Troubleshooting Off-flavors- Alcoholic

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Hot, Spicy - Vinous aroma - Prickly mouthfeel - warmth 	Yes	Stronger ales and lagers	<ul style="list-style-type: none"> - High amount of fermentables - Underpitching - Low O2 or FAN 	<ul style="list-style-type: none"> - Pitch sufficient yeast quantity - Aerate wort prepitching

Astringent

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Bitterness

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Troubleshooting Off-flavors- Astringent

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Dry, Mouth puckering - in Flavor and Mouthfeel - like grape skins 	No	N/A	<ul style="list-style-type: none"> - Extraction of tannins (overcrushing, oversparging) - Alkaline water - Lengthy Hop immersion times - Polyphenols from acetobacter - Oxidation - Spices 	<ul style="list-style-type: none"> - Don't overcrush - Keep sparge temp low - Use acidified water in sparge - Reduce hop immersion times - Practice good sanitation - Reduce spice additions

Troubleshooting Off-flavors- Bitterness

Describe/Discuss	Ever Appropriate?	If so, what styles?	How is it caused?	How can it avoided/ controlled?
<ul style="list-style-type: none"> - Mouth puckering - Bitter - Flavor - Mouthfeel 	Yes	<ul style="list-style-type: none"> IPA's Pales ales English Bitters 	<ul style="list-style-type: none"> - High AAU hops - Lengthy hops times - 	<ul style="list-style-type: none"> - Use hops with lower alpha acids - Reduce hop boil times