

# Ingredient Substitutions

## Malt and Grain Substitutions

Malt substitutions are never perfect, but in some cases, either due to freshness or availability, a malt substitute must be made. This section provides a range of options for substituting malt in a recipe.

### Lightly Kilned Base Malt and Malt Extract Substitutions

Lightly kilned base malts, like two-row and wheat malt, are generally hard to substitute due to their unique and subtle character. If you must make these substitutions, it's better to do so in a beer with a large amount of specialty malts or a highly hopped beer, where the substitution will be less apparent. When substituting for light malt extracts, the same rules apply. Additionally, when switching extracts, make sure to check that fermentability, color, and composition are comparable.

It's also helpful to note the maltster and region. Base malts are available from dozens of different maltsters. The different varieties of base malt will typically have the same name regardless of maltster, but there may be minor differences in maximum yield, color, flavor, and quality. When substituting within varietal types, it is best to switch within a growing region to yield the best character.

## Darkly Kilned Base Malt Substitutions

Darkly kilned base malts are very characterful and unique, making them difficult to substitute. If a substitute is required, there are a few rules of thumb. Munich malt can be substituted for the lighter-in-color Vienna malt or darker-in-color dark Munich malt and vice versa. Due to color differences, it may be necessary to include a portion of a lightly kilned pilsner malt or de-bittered black malt to maintain beer color as required.

More characterful darkly kilned varieties like aromatic malt and melanoidin malt don't really have good substitutes due to their unique flavor contributions. Munich malt or dark Munich malt can replace their intense malt character and color, but overall, the character contribution will be different.

## Crystal/Caramel Malt Substitutions

When making substitutions for crystal/caramel malts, it is important to keep in mind color contribution and flavor characteristics. When crystal malt additions form a large part of the grist (5–10 percent), flavor contributions become significant and substitution becomes less feasible. If necessary, substitute between classes for best results. For example, in lieu of Crystal 60°L, use Crystal 40°L or Crystal 80°L instead. Since the crystal malts have color differences, you may feel the need to increase or decrease the addition amount to achieve the same beer color. For example, in lieu of 8 ounces of Crystal 60°L, 12 ounces of Crystal 40°L or 6 ounces of Crystal 80°L will yield the same color, but vary the intensity of the flavors. Depending on the maltster, crystal/caramel malt varieties can go by different names. The following table provides common brand names for each class of crystal malt.

### Brand Names by Crystal Malt Variety

Malt Type	Grain/Malt Brand Names Substitute(s)
Dextrin malt	CaraPils, CaraFoam, Caramel Pils
Crystal 10–20°L	Light Carastan, CaraHell, CaraRed, CaraVienne, Caramel Vienne
Crystal 30–40°L	Carastan, CaraMunich I, Pale Crystal, Cara 45, Crystal Light
Crystal 50–60°L	CaraMunich II and III, Medium Crystal, Caramel Munich
Crystal 70–80°L	CaraBohemian, Dark Crystal
Crystal 90–120°L	CaraAroma, Crystal Dark
Crystal 130–150+°L	Crystal Extra Dark, Special B

## Roasted Malt Substitutions

When making substitutions for roasted malts, it is important to keep in mind color contribution and flavor characteristics. When roasted additions form a large part of the grist (5–10 percent), flavor contributions become significant and substitutions are less feasible. Also, keep in mind that the color of roasted malt (even among the same variety) can vary dramatically between maltsters. Thus, you may have to modify the amount roasted malt to maintain beer color when substituting between brands.

Depending on the maltster, roasted malt varieties can go by different names. The following list provides the roasted malt substitutes by brand.

### Brand Names by Roasted Malt Variety

Malt Type	Grain/Malt Brand Name Substitute(s)
De-bittered black malt	Blackprinz, Midnight Wheat, De-husked Carafa
Black patent	Black Malt
Roasted barley	Black Barley

## Unmalted Grain Substitutions

Unmalted grain substitutions may be needed for many reasons, most commonly when an unmalted adjunct is unavailable or to adapt an all-grain recipe to extract. The following unmalted grain substitutes are good replacements and will maintain either body or fermentability, although the associated flavors may differ slightly. Also, the yield of unmalted grains greatly differs, so grist percentages may need to change in order to create a beer with the equivalent starting gravity.

### Unmalted Grain Substitutions

Grain Name	Grain/Malt Substitute(s)
Flaked rice	Flaked corn, cane sugar, corn sugar
Flaked rye	Malted rye
Flaked oats	Flaked barley, maltodextrin, lactose, dextrin malt
Flaked wheat	Malted wheat, wheat DME, torrified wheat
Torrified wheat	Flaked wheat, walted wheat, wheat DME
Flaked barley	Flaked oats, maltodextrin, lactose, dextrin malt
Flaked corn	Flaked rice, corn grits, corn syrup, corn sugar

## Hop Substitutions

This list provides many good hop substitutions for when your homebrew shop doesn't have a particular hop in stock. Many are very good substitutions, for example, swapping Hallertau Mittelfrüh with Hersbrucker, whereas other substitutions are at best okay, for example switching Citra with Galaxy hops, as both hop varieties are more distinctive in character. However, in a pinch, any beer using these hop substitutions will come close to the spirit of the recipe, and importantly, still have great hoppy character.

For any bittering substitutions, there may be a significant difference in alpha acid content, so you may need to adjust these additions by weight to achieve the same IBU level. If you don't see a hop variety in this list, it's either because the hop variety is new and doesn't yet have a good recommended substitute or the hop is very distinctive and there really isn't a proper substitute. In this case, to make an alternative substitute, it's best to stick within the same growing region. For example, when replacing a noble hop variety, stick with another noble hop or German-grown variety, as this will give you a closer match.

You may notice that American hop farmers grow many popular European varieties, such as Saaz and Fuggle. These U.S. clones are often close in character to their European cousins; however, they are not a perfect match, and often have subtle differences in hop character. In general, American versions are more aggressive than the European versions, which tend to be more subtle. If it's a choice between freshness, stick with the fresher version; nothing is worse than cheesy, stale hops. However, if you are trying to make a world-class example of a European-style beer, such as Czech pilsner or English bitter, it's best to source the imported European variety.

### American Hop Substitutions

Hop Name	Hop Substitute(s)
Ahtanum	Amarillo, Cascade
Amarillo	Cascade, Centennial, Simcoe
Apollo	Columbus
Bravo	Apollo, Columbus, Magnum (U.S. and German), Nugget
Brewer's Gold	Chinook, Galena, Nugget
Bullion	Brewer's Gold, Chinook, Galena, Northern Brewer
Cascade	Ahtanum, Amarillo, Centennial
Centennial	Cascade, Chinook, Columbus
Chelan	Galena, Nugget
Chinook	Columbus, Northern Brewer, Nugget

Hop Name	Hop Substitute(s)
Citra	Galaxy, Sorachi Ace
Cluster	Galena
Columbia	Fuggle (U.S. and UK)
Columbus	Chinook, Galena, Millennium, Nugget
Comet	Galena, Summit
Crystal	Liberty, Mt. Hood, Strisselpalt, Hersbrucker
Eroica	Brewer's Gold, Galena, Glacier, Bullion
U.S. Fuggle	Styrian Golding, UK Fuggle, Willamette
Galena	Brewer's Gold, Columbus, Nugget
Glacier	Fuggle (U.S. and UK), Styrian Golding, Willamette
U.S. Golding	Fuggle (U.S. and UK), Styrian Golding, UK East Kent Goldings, Willamette
U.S. Hallertau	Liberty, Hallertau Mittelfrüh, Tradition
Horizon	Magnum (U.S. and German)
Liberty	Mt. Hood, Tradition, U.S. Hallertau
U.S. Magnum	German Magnum, Horizon, Nugget
Millennium	Columbus, Nugget, Summit
Mosaic	Simcoe
Mt. Hood	Strisselpalt, Hallertau Mittelfrüh, Hersbrucker
Mt. Rainier	Brewer's Gold, Fuggle (U.S. and UK), U.S. Hallertau
Newport	Brewer's Gold, Fuggle (U.S. and UK), Galena
Northern Brewer	Cluster, German Northern Brewer, Galena
Nugget	Columbus, Galena, Magnum (U.S. and German)
Olympic	Chinook
Palisade	Willamette
U.S. Perle	German Perle, Northern Brewer (U.S. and German)
U.S. Saaz	Czech Saaz, Lublin, Sterling
Santiam	Spalt, Select, Tettang (U.S. and German)
Simcoe	Magnum (U.S. and German), Mosaic, Summit
Sorachi Ace	Citra, Galaxy

<b>Hop Name</b>	<b>Hop Substitute(s)</b>
Sterling	Lublin, Saaz (U.S. and Czech)
Summit™	Columbus, Millennium, Simcoe, Warrior
U.S. Tettnang	Fuggie (U.S. and UK), Santiam, Spalt
Ultra	Crystal, Liberty, U.S. Hallertau
Vanguard	Hersbrucker, Liberty, Mt. Hood
Warrior®	Columbus, Magnum (U.S. and German), Nugget
Willamette	Fuggie (U.S. and UK), Glacier, Styrian Golding

### **British Hop Substitutions**

<b>Hop Name</b>	<b>Hop Substitute(s)</b>
Admiral	Challenger, Northdown, Target
Bramling	East Kent Goldings, Progress
Challenger	Northern Brewer (U.S. and German), Perle (U.S. and German)
East Kent Golding	Progress, U.S. Goldings
First Gold	Crystal, East Kent Goldings
UK Fuggie	Styrian Goldings, U.S. Fuggie, Willamette
Northdown	Challenger, Northern Brewer (U.S. and German)
Phoenix	Challenger, Northdown
Pilgrim	Challenger, Target
Pioneer	East Kent Goldings
Progress	East Kent Golding, Fuggie (U.S. and UK)
Target	Fuggie (U.S. and UK), Willamette
Whitbread Goldings	East Kent Goldings, Progress

## German and Czech Hop Substitutions

Hop Name	Hop Substitute(s)
Hallertau Mittelfrüh	Liberty, Tradition, Vanguard
Hersbrucker	Mt. Hood, Strisselpalt
German Magnum	Nugget, U.S. Magnum
Merkur	Magnum (U.S. and German), Taurus, Tradition
German Northern Brewer	U.S. Northern Brewer, Galena, Magnum (U.S. and German)
Opal	East Kent Golding, Styrian Golding, Tettngang (U.S. and German)
German Perle	Northern Brewer(U.S. and German), U.S. Perle
Saaz	Lublin, Sterling, U.S. Saaz
Saphir	U.S. Hallertau
Select	Hersbrucker, Spalt, Saaz (U.S. and Czech), Tettngang (U.S. and German)
Spalt	Saaz (U.S. and Czech), Tettngang (U.S. and German), Spalter Select
Taurus	Magnum (U.S. and German), Tradition
German Tettngang	Select, Spalt, U.S. Tettngang, Saaz (U.S. and Czech)
Tradition	Hallertau Mittelfrüh

## Other European Hop Substitutions

Hop Name	Hop Substitute(s)
Aramis	Centennial, Chinook, Tettngang (U.S. and German)
Lublin	Saaz (U.S. and Czech), Sterling
Strisselpalt	Crystal, Hersbrucker, Liberty, Mt. Hood
Styrian Aurora	Styrian Bobek, Styrian Golding
Styrian Bobek	Styrian Aurora
Styrian Celeia	Saaz (U.S. and Czech), Styrian Bobek, Styrian Golding
Styrian Golding	Fuggle (U.S. and UK), Styrian Bobek
Triskel	Ahtanum, Centennial

## Australian and New Zealand Hop Substitutions

Hop Name	Hop Substitute(s)
Galaxy	Citra, Sorachi Ace
Green Bullet	Fuggie (U.S. and UK), Willamette
Helga	U.S. Hallertau
Motueka	Saaz (U.S. and Czech), Sterling
Pacific Gem	Galena
Pacifica	U.S. Hallertau
Pride of Ringwood	Cluster, Galena
Rakau	Amarillo, Summit
Sticklebract	Northern Brewer (U.S. and German)
Sylva	Saaz (U.S. and Czech)

*(Hop substitutions from Hop Union and BYO)*

## Yeast Substitution

This list provides many good yeast substitutions for when your homebrew shop doesn't have a particular yeast in stock. In many cases, the substitute may be the exact yeast strain, with the only difference being the manufacturer. In other cases, in particular between liquid and dry yeast cultures, yeast strains are different, but yield similar fermentation and yeast character. In a pinch, any beer using these yeast substitutions will come close to the spirit of the recipe, and importantly, close to the character of the recipe.

If none of the listed substitutes are available, it's best to stick within the broader strain type. For example, Wyeast 1098 British Ale isn't the best substitute for Wyeast 1024 London Ale. However, despite some minor character differences, the overall beer will result in a fruity, English-style ale, the common characteristic shared between these two yeast strains.



## Ale Strains

Wyeast (Number/Name)	White Labs (Number/Name)	Dry Yeast (Name)
1007 German Ale	WLP036 Düsseldorf Alt	
1010 American Wheat	WLP320 American Hefeweizen	Danstar BRY-97, Safale US-05
1028 London Ale	WLP013 London Ale	Danstar Nottingham
1056 American Ale	WLP001 California Ale	Danstar BRY-97, Safale US-05
1084 Irish Ale	WLP004 Irish Ale	Danstar BRY-97, Safale US-05
1098 British Ale	WLP007 Dry English Ale	Danstar Nottingham
1099 Whitbred Ale	WLP017 Whitbred Ale	Danstar Nottingham
1187 Ringwood Ale	WLP005 British Ale	Danstar Nottingham
1214 Belgian Abbey	WLP500 Trappist Ale	Danstar Abbaye, Safbrew Abbaye
1272 American Ale II	WLP051 California V Ale	Danstar BRY-97, Safale US-05
1275 Thames Valley Ale	WLP023 Burton Ale	Danstar Nottingham
1332 Northwest Ale	WLP041 Pacific Ale	Danstar Windsor, Safale S-04
1388 Belgian Strong Ale	WLP570 Belgian Golden Ale	Danstar Abbaye, Safbrew Abbaye
1728 Scottish Ale	WLP028 Edinburgh Scottish Ale	Danstar BRY-97, Safale US-05
1762 Belgian Abbey II	WLP540 Abbey IV Ale	Danstar Abbaye, Safbrew Abbaye
1968 London ESB Ale	WLP002 English Ale	Danstar Windsor, Safale S-04
2565 Kölsch	WLP029 German Ale/Kölsch	
3068 Weihenstephan Weizen	WLP300 Hefeweizen Ale	Danstar Munich, Safbrew WB-06
3333 German Wheat	WLP380 Hefeweizen IV Ale	Danstar Munich, Safbrew WB-06
3522 Belgian Ardennes	WLP550 Belgian Ale	
3638 Bavarian Wheat	WLP351 Bavarian Weizen	Danstar Munich, Safbrew WB-06
3711 French Saison	WLP566 Belgian Saison II	Danstar Belle Saison
3724 Belgian Saison	WLP565 Belgian Saison I	Danstar Belle Saison
3787 Trappist High Gravity	WLP530 Abbey Ale	Danstar Abbaye, Safbrew Abbaye
3942 Belgian Wheat	WLP410 Belgian Wit Ale	Safbrew S-33
3944 Belgian Witbier	WLP400 Belgian Wit II Ale	Safbrew S-33

## Lager Strains

<b>Wyeast (Number/Name)</b>	<b>White Labs (Number/Name)</b>	<b>Dry Yeast (Name)</b>
2001 Urquell Lager	WLP800 Pilsner Lager	Danstar Diamond, Saflager S-23
2007 Pilsen Lager	WLP840 American Pilsner Lager	Danstar Diamond, Saflager S-23
2112 California Lager	WLP810 San Francisco Lager	
2124 Bohemian Lager	WLP830 German Lager	Danstar Diamond, Saflager W-34/70
2206 Bavarian Lager	WLP820 Oktoberfest/Märzen	Saflager W-34/70
2278 Czech Pils	WLP802 Czech Budejovice Lager	Saflager W-34/70
2308 Munich Lager	WLP838 Southern German Lager	Saflager W-34/70

*(Yeast strain substitutions from Brewing Classic Styles, Wyeast Laboratories, and White Labs)*