

## cooper pale ale

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- Gravity **12.1 BLG**
- ABV **4.9 %**
- IBU **39**
- SRM **4.5**
- Style **Extra Special/Strong Bitter (English Pale Ale)**

### Batch size

- Expected quantity of finished beer **7.5 liter(s)**
- Trub loss **5 %**
- Size with trub loss **8.3 liter(s)**
- Boil time **60 min**
- Evaporation rate **10 %/h**
- Boil size **9.9 liter(s)**

### Mash information

- Mash efficiency **75 %**
- Liquor-to-grist ratio **3.5 liter(s) / kg**
- Mash size **6 liter(s)**
- Total mash volume **7.7 liter(s)**

### Steps

- Temp **52 C**, Time **10 min**
- Temp **65 C**, Time **45 min**
- Temp **72 C**, Time **20 min**
- Temp **76 C**, Time **5 min**

### Mash step by step

- Heat up **6 liter(s)** of strike water to **56.5C**
- Add grains
- Keep mash **10 min** at **52C**
- Keep mash **45 min** at **65C**
- Keep mash **20 min** at **72C**
- Keep mash **5 min** at **76C**
- Sparge using **5.6 liter(s)** of **76C** water or to achieve **9.9 liter(s)** of wort

### Fermentables

Type	Name	Amount	Yield	EBC
Grain	Briess - Pale Ale Malt	1.5 kg (88.2%)	90 %	7
Grain	Rye Malt	0.2 kg (11.8%)	90 %	6

### Hops

Use for	Name	Amount	Time	Alpha acid
Boil	East Kent Goldings	15 g	55 min	5.1 %
Aroma (end of boil)	East Kent Goldings	20 g	20 min	5.1 %

### Yeasts

Name	Type	Form	Amount	Laboratory
Danstar - Windsor Ale	Ale	Dry	11 g	Danstar