

Bitter

- Gravity **10.2 BLG**
- ABV **4.1 %**
- IBU **51**
- SRM **8.5**
- Style **Extra Special/Strong Bitter (English Pale Ale)**

Batch size

- Expected quantity of finished beer **20 liter(s)**
- Trub loss **0 %**
- Size with trub loss **20 liter(s)**
- Boil time **30 min**
- Evaporation rate **22 %/h**
- Boil size **22.2 liter(s)**

Mash information

- Mash efficiency **69 %**
- Liquor-to-grist ratio **6.95 liter(s) / kg**
- Mash size **25 liter(s)**
- Total mash volume **28.6 liter(s)**

Steps

- Temp **68 C**, Time **60 min**
- Temp **76 C**, Time **0 min**

Mash step by step

- Heat up **25 liter(s)** of strike water to **71.5C**
- Add grains
- Keep mash **60 min** at **68C**
- Keep mash **0 min** at **76C**
- Sparge using **0.8 liter(s)** of **76C** water or to achieve **22.2 liter(s)** of wort

Fermentables

Type	Name	Amount	Yield	EBC
Grain	Pale Ale	3.2 kg (88.9%)	84.78 %	5
Grain	Munich Type I	0.25 kg (6.9%)	82.61 %	15
Grain	CaraAroma	0.15 kg (4.2%)	78.26 %	372

Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Comet	20 g	30 min	11 %
Boil	Comet	10 g	15 min	11 %
Boil	Warrior	10 g	15 min	16 %
Boil	Warrior	20 g	5 min	16 %

Yeasts

Name	Type	Form	Amount	Laboratory
Safale - English Ale Yeast S-04	Ale	Dry	11.5 g	Fermentis / Safale

Extras

Type	Name	Amount	Use for	Time
Water Agent	Gypsum	5 g	Mash	0 min

Water Agent	Citric acid	2 g	Mash	0 min
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