

# 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 |
|-------------|-------------|-----|------|-------|