

## bitter twoj browar

- Gravity **10.7 BLG**
- ABV **4.3 %**
- IBU **47**
- SRM **7.4**
- Style **Standard/Ordinary Bitter**

### Batch size

- Expected quantity of finished beer **20 liter(s)**
- Trub loss **5 %**
- Size with trub loss **21 liter(s)**
- Boil time **60 min**
- Evaporation rate **10 %/h**
- Boil size **25.3 liter(s)**

### Mash information

- Mash efficiency **80 %**
- Liquor-to-grist ratio **3.5 liter(s) / kg**
- Mash size **14 liter(s)**
- Total mash volume **18 liter(s)**

### Steps

- Temp **68 C**, Time **70 min**
- Temp **78 C**, Time **10 min**

### Mash step by step

- Heat up **14 liter(s)** of strike water to **74.9C**
- Add grains
- Keep mash **70 min** at **68C**
- Keep mash **10 min** at **78C**
- Sparge using **15.3 liter(s)** of **76C** water or to achieve **25.3 liter(s)** of wort

### Fermentables

| Type  | Name            | Amount       | Yield | EBC |
|-------|-----------------|--------------|-------|-----|
| Grain | Crystal II 200  | 0.2 kg (5%)  | 71 %  | 200 |
| Grain | Castle Pale Ale | 3.8 kg (95%) | 80 %  | 8   |

### Hops

| Use for             | Name    | Amount | Time   | Alpha acid |
|---------------------|---------|--------|--------|------------|
| Boil                | Apollo  | 15 g   | 60 min | 17 %       |
| Aroma (end of boil) | Cascade | 20 g   | 10 min | 6 %        |
| Aroma (end of boil) | Citra   | 20 g   | 5 min  | 12 %       |
| Aroma (end of boil) | Summit  | 25 g   | 3 min  | 17 %       |

### Yeasts

| Name | Type | Form | Amount | Laboratory |
|------|------|------|--------|------------|
| safa | Ale  | Dry  | 11 g   | ---        |