

Apa

- Gravity **12.1 BLG**
- ABV **4.9 %**
- IBU **42**
- SRM **4.7**
- Style **American Pale Ale**

Batch size

- Expected quantity of finished beer **13 liter(s)**
- Trub loss **10 %**
- Size with trub loss **15.6 liter(s)**
- Boil time **60 min**
- Evaporation rate **10 %/h**
- Boil size **18.6 liter(s)**

Mash information

- Mash efficiency **72 %**
- Liquor-to-grist ratio **3.5 liter(s) / kg**
- Mash size **13 liter(s)**
- Total mash volume **16.7 liter(s)**

Steps

- Temp **64 C**, Time **40 min**
- Temp **69 C**, Time **20 min**
- Temp **78 C**, Time **10 min**

Mash step by step

- Heat up **13 liter(s)** of strike water to **70.3C**
- Add grains
- Keep mash **40 min** at **64C**
- Keep mash **20 min** at **69C**
- Keep mash **10 min** at **78C**
- Sparge using **9.3 liter(s)** of **76C** water or to achieve **18.6 liter(s)** of wort

Fermentables

| Type | Name | Amount | Yield | EBC |
|-------|--------------|----------------|-------|-----|
| Grain | Pilzneński | 3.5 kg (94.6%) | 81 % | 4 |
| Grain | Biscuit Malt | 0.2 kg (5.4%) | 79 % | 45 |

Hops

| Use for | Name | Amount | Time | Alpha acid |
|---------------------|------------|--------|----------|------------|
| Boil | Magnum | 15 g | 20 min | 13.5 % |
| Aroma (end of boil) | Rakau (NZ) | 20 g | 10 min | 10.1 % |
| Whirlpool | Dr Rudi | 20 g | 10 min | 11.7 % |
| Whirlpool | Rakau (NZ) | 20 g | 10 min | 10.1 % |
| Dry Hop | Dr Rudi | 30 g | 3 day(s) | 11.7 % |
| Dry Hop | Rakau (NZ) | 60 g | 3 day(s) | 9.5 % |