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 %