

Keller

- Gravity **12.9 BLG**
- ABV **5.2 %**
- IBU **22**
- SRM **7.1**
- Style **Munich Helles**

Batch size

- Expected quantity of finished beer **15 liter(s)**
- Trub loss **5 %**
- Size with trub loss **15.8 liter(s)**
- Boil time **60 min**
- Evaporation rate **10 %/h**
- Boil size **19 liter(s)**

Mash information

- Mash efficiency **75 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **11.7 liter(s)**
- Total mash volume **15.6 liter(s)**

Steps

- Temp **67 C**, Time **40 min**
- Temp **72 C**, Time **30 min**
- Temp **78 C**, Time **5 min**

Mash step by step

- Heat up **11.7 liter(s)** of strike water to **74.8C**
- Add grains
- Keep mash **40 min** at **67C**
- Keep mash **30 min** at **72C**
- Keep mash **5 min** at **78C**
- Sparge using **11.2 liter(s)** of **76C** water or to achieve **19 liter(s)** of wort

Fermentables

Type	Name	Amount	Yield	EBC
Grain	Viking Pilsner malt	1 kg (25.6%)	82 %	4
Grain	Viking Munich Malt	1.7 kg (43.6%)	78 %	18
Grain	Viking Vienna Malt	1 kg (25.6%)	79 %	7
Grain	Strzegom Karmel 30	0.2 kg (5.1%)	75 %	30

Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Magnum	7 g	50 min	13.5 %
Boil	Magnum	13 g	10 min	13.5 %
Aroma (end of boil)	Magnum	30 g	0 min	13.5 %

Yeasts

Name	Type	Form	Amount	Laboratory
Safale S-04	Ale	Dry	8 g	Fermentis

Extras

Type	Name	Amount	Use for	Time
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Fining	Mech irlandzki	5 g	Boil	10 min
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