

## Full aroma hops

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- Gravity **12.1 BLG**
- ABV ---
- IBU **42**
- SRM **3.3**

### Batch size

- Expected quantity of finished beer **25.5 liter(s)**
- Trub loss **5 %**
- Size with trub loss **26.8 liter(s)**
- Boil time **60 min**
- Evaporation rate **10 %/h**
- Boil size **32.2 liter(s)**

### Mash information

- Mash efficiency **85 %**
- Liquor-to-grist ratio **2.7 liter(s) / kg**
- Mash size **13.5 liter(s)**
- Total mash volume **18.5 liter(s)**

### Steps

- Temp **61 C**, Time **12 min**
- Temp **71 C**, Time **45 min**
- Temp **75 C**, Time **10 min**

### Mash step by step

- Heat up **13.5 liter(s)** of strike water to **68.6C**
- Add grains
- Keep mash **12 min** at **61C**
- Keep mash **45 min** at **71C**
- Keep mash **10 min** at **75C**
- Sparge using **23.7 liter(s)** of **76C** water or to achieve **32.2 liter(s)** of wort

### Fermentables

Type	Name	Amount	Yield	EBC
Grain	Pilzneński	5 kg (100%)	80 %	4

### Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Magnum	38 g	90 min	6.4 %
Boil	Lublin (Lubelski)	40 g	45 min	4.3 %
Aroma (end of boil)	Marynka	13 g	10 min	4.3 %

### Yeasts

Name	Type	Form	Amount	Laboratory
Safale S-04	Ale	Dry	11.5 g	Safale