

# Full Aroma Hops BRUNO

- Gravity **11.9 BLG**
- ABV ---
- IBU **49**
- SRM **3.8**

## 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 **40 C**, Time **1 min**
- Temp **62 C**, Time **10 min**
- Temp **72 C**, Time **45 min**
- Temp **76 C**, Time **10 min**

## Mash step by step

- Heat up **14 liter(s)** of strike water to **42.9C**
- Add grains
- Keep mash **1 min** at **40C**
- Keep mash **10 min** at **62C**
- Keep mash **45 min** at **72C**
- Keep mash **10 min** at **76C**
- 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	Pilzneński	4 kg (100%)	81 %	4

## Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Magnum	10 g	90 min	13.5 %
Boil	Perle	10 g	60 min	7 %
Boil	Tradition	10 g	45 min	5.5 %
Boil	Saaz (Czech Republic)	10 g	30 min	4.5 %
Boil	Perle	15 g	20 min	7 %
Boil	Saaz (Czech Republic)	20 g	10 min	4.5 %
Dry Hop	Perle	25 g	7 day(s)	7 %
Dry Hop	Saaz (Czech Republic)	25 g	7 day(s)	4.5 %

## Yeasts

Name	Type	Form	Amount	Laboratory
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Safale S-04	Ale	Dry	11 g	Safale
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