

## 4A. Munich Helles

- Gravity **11.9 BLG**
- ABV **4.8 %**
- IBU **19**
- SRM **4.1**
- Style **Munich Helles**

### Batch size

- Expected quantity of finished beer **17 liter(s)**
- Trub loss **10 %**
- Size with trub loss **18.7 liter(s)**
- Boil time **90 min**
- Evaporation rate **10 %/h**
- Boil size **23.5 liter(s)**

### Mash information

- Mash efficiency **75 %**
- Liquor-to-grist ratio **4.05 liter(s) / kg**
- Mash size **17 liter(s)**
- Total mash volume **21.2 liter(s)**

### Steps

- Temp **55 C**, Time **10 min**
- Temp **65 C**, Time **60 min**
- Temp **72 C**, Time **15 min**

### Mash step by step

- Heat up **17 liter(s)** of strike water to **59.3C**
- Add grains
- Keep mash **10 min** at **55C**
- Keep mash **60 min** at **65C**
- Keep mash **15 min** at **72C**
- Sparge using **10.7 liter(s)** of **76C** water or to achieve **23.5 liter(s)** of wort

### Fermentables

Type	Name	Amount	Yield	EBC
Grain	Pilzneński	4 kg (95.2%)	81 %	4
Grain	Karmelowy Jasny 30EBC	0.2 kg (4.8%)	75 %	30

### Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Magnum	8 g	60 min	13.5 %
Aroma (end of boil)	Hallertau Mittelfruh	30 g	15 min	3 %

### Yeasts

Name	Type	Form	Amount	Laboratory
Iutra	Ale	Slant	100 ml	---

### Extras

Type	Name	Amount	Use for	Time
Water Agent	CaSO4	1 g	Boil	60 min
Water Agent	CaCL2	2 g	Boil	60 min