

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 |
|-------|------|-------|--------|------------|
| lutra | 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 |