

## #149 German PILS

- Gravity **11 BLG**
- ABV **4.4 %**
- IBU **38**
- SRM **2.7**
- Style **German Pilsner (Pils)**

### Batch size

- Expected quantity of finished beer **16 liter(s)**
- Trub loss **15 %**
- Size with trub loss **20 liter(s)**
- Boil time **70 min**
- Evaporation rate **10 %/h**
- Boil size **25 liter(s)**

### Mash information

- Mash efficiency **65 %**
- Liquor-to-grist ratio **3.5 liter(s) / kg**
- Mash size **16.8 liter(s)**
- Total mash volume **21.6 liter(s)**

### Steps

- Temp **64 C**, Time **45 min**
- Temp **67 C**, Time **15 min**
- Temp **78 C**, Time **5 min**

### Mash step by step

- Heat up **16.8 liter(s)** of strike water to **70.3C**
- Add grains
- Keep mash **45 min** at **64C**
- Keep mash **15 min** at **67C**
- Keep mash **5 min** at **78C**
- Sparge using **13 liter(s)** of **76C** water or to achieve **25 liter(s)** of wort

### Fermentables

| Type  | Name                 | Amount        | Yield  | EBC |
|-------|----------------------|---------------|--------|-----|
| Grain | Briess - Pilsen Malt | 4.8 kg (100%) | 80.5 % | 2   |

### Hops

| Use for | Name                 | Amount | Time   | Alpha acid |
|---------|----------------------|--------|--------|------------|
| Boil    | Magnum               | 30 g   | 28 min | 12.7 %     |
| Boil    | Hallertau Mittelfruh | 60 g   | 5 min  | 3 %        |

### Yeasts

| Name   | Type  | Form  | Amount | Laboratory |
|--------|-------|-------|--------|------------|
| W34/70 | Lager | Slant | 200 ml | ---        |

### Notes

- Piwo szykowane na Warszawski KPD23'  
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