

Czarny Las

- Gravity **18 BLG**
- ABV **7.7 %**
- IBU **31**
- SRM **78.8**
- Style **Foreign Extra Stout**

Batch size

- Expected quantity of finished beer **23 liter(s)**
- Trub loss **5 %**
- Size with trub loss **24.1 liter(s)**
- Boil time **60 min**
- Evaporation rate **10 %/h**
- Boil size **29 liter(s)**

Mash information

- Mash efficiency **87 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **22.5 liter(s)**
- Total mash volume **30 liter(s)**

Steps

- Temp **62 C**, Time **60 min**
- Temp **72 C**, Time **20 min**
- Temp **78 C**, Time **5 min**

Mash step by step

- Heat up **22.5 liter(s)** of strike water to **69C**
- Add grains
- Keep mash **60 min** at **62C**
- Keep mash **20 min** at **72C**
- Keep mash **5 min** at **78C**
- Sparge using **14 liter(s)** of **76C** water or to achieve **29 liter(s)** of wort

Fermentables

| Type | Name | Amount | Yield | EBC |
|-------|--------------------------|---------------|-------|------|
| Grain | Mariss Otter Pale Ale | 4 kg (53.3%) | 80 % | 7 |
| Grain | Fawcett - Pale Chocolate | 1.5 kg (20%) | 71 % | 600 |
| Grain | Fawcett Chocolate | 1.5 kg (20%) | 72 % | 1200 |
| Grain | Fawcett Żytni palony | 0.5 kg (6.7%) | 85 % | 8 |

Hops

| Use for | Name | Amount | Time | Alpha acid |
|---------|------------|--------|--------|------------|
| Boil | Willamette | 40 g | 60 min | 6.1 % |
| Boil | Willamette | 25 g | 30 min | 6.1 % |
| Boil | Willamette | 35 g | 5 min | 6.1 % |

Yeasts

| Name | Type | Form | Amount | Laboratory |
|-------------|------|-------|--------|------------|
| Safale S-04 | Ale | Slant | 200 ml | Safale |