

49 FES

- Gravity **17.5 BLG**
- ABV **7.5 %**
- IBU **30**
- SRM **43.3**

Batch size

- Expected quantity of finished beer **18.5 liter(s)**
- Trub loss **5 %**
- Size with trub loss **19.4 liter(s)**
- Boil time **70 min**
- Evaporation rate **10 %/h**
- Boil size **23.8 liter(s)**

Mash information

- Mash efficiency **80 %**
- Liquor-to-grist ratio **3.31 liter(s) / kg**
- Mash size **21 liter(s)**
- Total mash volume **27.4 liter(s)**

Steps

- Temp **66 C**, Time **30 min**
- Temp **72 C**, Time **30 min**
- Temp **78 C**, Time **10 min**

Mash step by step

- Heat up **21 liter(s)** of strike water to **73C**
- Add grains
- Keep mash **30 min** at **66C**
- Keep mash **30 min** at **72C**
- Keep mash **10 min** at **78C**
- Sparge using **9.2 liter(s)** of **76C** water or to achieve **23.8 liter(s)** of wort

Fermentables

Type	Name	Amount	Yield	EBC
Grain	Strzegom Pale Ale	4.3 kg (67.7%)	79 %	6
Grain	Monachijski	1.4 kg (22%)	80 %	16
Grain	Jęczmień palony	0.3 kg (4.7%)	55 %	1500
Grain	Czekoladowy	0.25 kg (3.9%)	60 %	1500
Grain	Strzegom Czekoladowy jasny	0.1 kg (1.6%)	68 %	400

Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Warrior	20 g	60 min	15.5 %

Yeasts

Name	Type	Form	Amount	Laboratory
FM54 Gorączka kalifornijska	Ale	Liquid	30 ml	Fermentum Mobile