

FES

- Gravity **18 BLG**
- ABV **7.7 %**
- IBU **54**
- SRM **38.4**
- Style **Foreign Extra Stout**

Batch size

- Expected quantity of finished beer **20 liter(s)**
- Trub loss **10 %**
- Size with trub loss **22 liter(s)**
- Boil time **120 min**
- Evaporation rate **10 %/h**
- Boil size **27.6 liter(s)**

Mash information

- Mash efficiency **72 %**
- Liquor-to-grist ratio **2.6 liter(s) / kg**
- Mash size **20.8 liter(s)**
- Total mash volume **28.8 liter(s)**

Steps

- Temp **65 C**, Time **50 min**
- Temp **99 C**, Time **1 min**
- Temp **72 C**, Time **10 min**

Mash step by step

- Heat up **20.8 liter(s)** of strike water to **73.7C**
- Add grains
- Keep mash **50 min** at **65C**
- Keep mash **10 min** at **72C**
- Keep mash **1 min** at **99C**
- Sparge using **14.8 liter(s)** of **76C** water or to achieve **27.6 liter(s)** of wort

Fermentables

Type	Name	Amount	Yield	EBC
Grain	Viking Pale Ale malt	6 kg (75%)	80 %	5
Grain	Caraaroma	0.4 kg (5%)	78 %	400
Grain	Jęczmień palony	0.4 kg (5%)	55 %	985
Grain	płatki jęczmienne	0.6 kg (7.5%)	60 %	4
Grain	Strzegom Czekoladowy 400	0.6 kg (7.5%)	68 %	400

Hops

Use for	Name	Amount	Time	Alpha acid
Boil	lunga	55 g	60 min	9.7 %
Boil	East Kent Goldings	45 g	10 min	4.6 %

Yeasts

Name	Type	Form	Amount	Laboratory
Saflager W 34/70	Lager	Slant	400 ml	Fermentis