

# fes

- Gravity **16.8 BLG**
- ABV ---
- IBU **49**
- SRM **45.4**
- Style **Foreign Extra Stout**

## Batch size

- Expected quantity of finished beer **14 liter(s)**
- Trub loss **5 %**
- Size with trub loss **15.4 liter(s)**
- Boil time **65 min**
- Evaporation rate **10 %/h**
- Boil size **18.6 liter(s)**

## Mash information

- Mash efficiency **80 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **13.1 liter(s)**
- Total mash volume **17.5 liter(s)**

## Steps

- Temp **64 C**, Time **45 min**
- Temp **72 C**, Time **30 min**
- Temp **76 C**, Time **0 min**

## Mash step by step

- Heat up **13.1 liter(s)** of strike water to **71.3C**
- Add grains
- Keep mash **45 min** at **64C**
- Keep mash **30 min** at **72C**
- Keep mash **0 min** at **76C**
- Sparge using **9.9 liter(s)** of **76C** water or to achieve **18.6 liter(s)** of wort

## Fermentables

Type	Name	Amount	Yield	EBC
Grain	Viking Pale Ale malt	3.5 kg (80%)	80 %	5
Grain	Caramel/Crystal Malt - 120L	0.2 kg (4.6%)	72 %	200
Grain	Caraaroma	0.2 kg (4.6%)	78 %	400
Grain	Barley, Flaked	0.2 kg (4.6%)	70 %	4
Grain	Strzegom Czekoladowy ciemny	0.15 kg (3.4%)	68 %	1200
Grain	Jęczmień palony	0.125 kg (2.9%)	55 %	985

## Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Magnum	25 g	60 min	11.5 %
Boil	Fuggles	15 g	30 min	4.2 %
Boil	Fuggles	15 g	10 min	4.2 %

## Yeasts

Name	Type	Form	Amount	Laboratory
Safale S-04	Ale	Dry	10 g	Safale

## Extras

Type	Name	Amount	Use for	Time
Fining	Irish Moss	10 g	Boil	15 min