

# Fes

- Gravity **13.8 BLG**
- ABV **5.7 %**
- IBU **49**
- SRM **23.3**
- Style **Foreign Extra Stout**

## Batch size

- Expected quantity of finished beer **20 liter(s)**
- Trub loss **5 %**
- Size with trub loss **21 liter(s)**
- Boil time **65 min**
- Evaporation rate **10 %/h**
- Boil size **25.5 liter(s)**

## Mash information

- Mash efficiency **75 %**
- Liquor-to-grist ratio **2.9 liter(s) / kg**
- Mash size **16.2 liter(s)**
- Total mash volume **21.8 liter(s)**

## Steps

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

## Mash step by step

- Heat up **16.2 liter(s)** of strike water to **71.6C**
- Add grains
- Keep mash **45 min** at **64C**
- Keep mash **30 min** at **72C**
- Sparge using **14.9 liter(s)** of **76C** water or to achieve **25.5 liter(s)** of wort

## Fermentables

Type	Name	Amount	Yield	EBC
Grain	Briess - Pilsen Malt	5 kg (89.3%)	80.5 %	2
Grain	Caraaroma	0.3 kg (5.4%)	78 %	400
Grain	Weyermann - Carafa I	0.1 kg (1.8%)	70 %	690
Grain	Jęczmień palony	0.2 kg (3.6%)	55 %	985

## Hops

Use for	Name	Amount	Time	Alpha acid
Boil	lunga	40 g	50 min	11 %
Boil	Styrian Golding	40 g	10 min	3.6 %

## Yeasts

Name	Type	Form	Amount	Laboratory
Safale S-04	Ale	Dry	15 g	Safale