

# FES

- Gravity **11.4 BLG**
- ABV **4.6 %**
- IBU **45**
- SRM **23.7**
- 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 **60 min**
- Evaporation rate **10 %/h**
- Boil size **25.3 liter(s)**

## Mash information

- Mash efficiency **64 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **16.2 liter(s)**
- Total mash volume **21.6 liter(s)**

## Steps

- Temp **64 C**, Time **40 min**
- Temp **72 C**, Time **30 min**

## Mash step by step

- Heat up **16.2 liter(s)** of strike water to **71.3C**
- Add grains
- Keep mash **40 min** at **64C**
- Keep mash **30 min** at **72C**
- Sparge using **14.5 liter(s)** of **76C** water or to achieve **25.3 liter(s)** of wort

## Fermentables

Type	Name	Amount	Yield	EBC
Grain	Weyermann - Pilsner Malt	4.4 kg (81.5%)	81 %	5
Grain	Caraaroma	0.3 kg (5.6%)	78 %	400
Grain	Carafa	0.1 kg (1.9%)	70 %	664
Grain	płatki jęczmienne błyskawiczne	0.4 kg (7.4%)	75 %	2
Grain	Jęczmień palony	0.2 kg (3.7%)	55 %	985

## Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Marynka	40 g	50 min	9 %
Boil	Lublin (Lubelski)	15 g	10 min	4 %
Boil	Styrian Golding	25 g	10 min	3.6 %

## Yeasts

Name	Type	Form	Amount	Laboratory
FM13 Irlandzkie Ciemności	Ale	Liquid	800 ml	Fermentum Mobile