

## FES

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- Gravity **18 BLG**
- ABV **7.7 %**
- IBU **33**
- SRM **35.4**
- Style **Foreign Extra Stout**

### Batch size

- Expected quantity of finished beer **13 liter(s)**
- Trub loss **5 %**
- Size with trub loss **13.7 liter(s)**
- Boil time **60 min**
- Evaporation rate **10 %/h**
- Boil size **16.4 liter(s)**

### Mash information

- Mash efficiency **75 %**
- Liquor-to-grist ratio **2.75 liter(s) / kg**
- Mash size **13.5 liter(s)**
- Total mash volume **18.4 liter(s)**

### Steps

- Temp **64 C**, Time **45 min**
- Temp **72 C**, Time **30 min**
- Temp **76 C**, Time **10 min**

### Mash step by step

- Heat up **13.5 liter(s)** of strike water to **72C**
- Add grains
- Keep mash **45 min** at **64C**
- Keep mash **30 min** at **72C**
- Keep mash **10 min** at **76C**
- Sparge using **7.8 liter(s)** of **76C** water or to achieve **16.4 liter(s)** of wort

### Fermentables

Type	Name	Amount	Yield	EBC
Grain	Viking Pale Ale malt	3 kg (61.2%)	80 %	5
Grain	Płatki jęczmienne	0.3 kg (6.1%)	70 %	5
Grain	Caraaroma	0.2 kg (4.1%)	78 %	400
Grain	Jęczmień palony	0.3 kg (6.1%)	55 %	985
Grain	Carafa	0.1 kg (2%)	70 %	664
Grain	Strzegom Monachijski typ I	1 kg (20.4%)	79 %	16

### Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Challenger	30 g	60 min	7 %
Aroma (end of boil)	East Kent Goldings	30 g	5 min	5.1 %

### Yeasts

Name	Type	Form	Amount	Laboratory
Danstar - Nottingham	Ale	Slant	20 ml	Danstar