

## zwykły fes

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- Gravity **15.4 BLG**
- ABV **6.5 %**
- IBU **34**
- 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 **65 min**
- Evaporation rate **10 %/h**
- Boil size **25.5 liter(s)**

### Mash information

- Mash efficiency **80 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **18 liter(s)**
- Total mash volume **24 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 **18 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 **13.5 liter(s)** of **76C** water or to achieve **25.5 liter(s)** of wort

### Fermentables

Type	Name	Amount	Yield	EBC
Grain	Strzegom Pilzneński	5 kg (83.3%)	80 %	4
Grain	Caraaroma	0.3 kg (5%)	78 %	400
Grain	Carafa	0.1 kg (1.7%)	70 %	664
Grain	Jęczmień palony	0.2 kg (3.3%)	55 %	985
Grain	płatki jęczmienne	0.4 kg (6.7%)	60 %	4

### Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Aurora	35 g	55 min	8.5 %
Boil	Styrian Golding	45 g	10 min	3.6 %

### Yeasts

Name	Type	Form	Amount	Laboratory
Safale S-04	Ale	Dry	11.5 g	Safale