

FES

- Gravity **17.3 BLG**
- ABV **7.4 %**
- IBU **46**
- SRM **47.8**
- Style **Foreign Extra Stout**

Batch size

- Expected quantity of finished beer **12 liter(s)**
- Trub loss **5 %**
- Size with trub loss **12.6 liter(s)**
- Boil time **60 min**
- Evaporation rate **15 %/h**
- Boil size **15.9 liter(s)**

Mash information

- Mash efficiency **80 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **12.2 liter(s)**
- Total mash volume **16.2 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 **12.2 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 **7.8 liter(s)** of **76C** water or to achieve **15.9 liter(s)** of wort

Fermentables

Type	Name	Amount	Yield	EBC
Grain	Simpsons - Maris Otter	2.9 kg (71.6%)	81 %	6
Grain	Jęczmień niesłodowany	0.4 kg (9.9%)	75 %	2
Grain	Strzegom Czekoladowy ciemny	0.2 kg (4.9%)	68 %	1200
Grain	Fawcett - Pszeniczny Czekoladowy	0.2 kg (4.9%)	73 %	1001
Grain	Caraaroma	0.2 kg (4.9%)	78 %	400
Grain	Jęczmień palony	0.15 kg (3.7%)	55 %	985

Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Magnum	20 g	60 min	11.5 %
Boil	Fuggles	25 g	15 min	5.9 %

Yeasts

Name	Type	Form	Amount	Laboratory
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WLP007 - Dry English Ale Yeast	Ale	Liquid	50 ml	White Labs
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