

## FES #3 - Browar na Wyżynie

- Gravity **14.7 BLG**
- ABV **6.1 %**
- IBU **47**
- SRM **40.4**
- Style **Foreign Extra Stout**

### Batch size

- Expected quantity of finished beer **21 liter(s)**
- Trub loss **6 %**
- Size with trub loss **22.3 liter(s)**
- Boil time **60 min**
- Evaporation rate **15 %/h**
- Boil size **25.9 liter(s)**

### Mash information

- Mash efficiency **70 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **19.5 liter(s)**
- Total mash volume **26 liter(s)**

### Steps

- Temp **66 C**, Time **45 min**
- Temp **72 C**, Time **15 min**
- Temp **78 C**, Time **10 min**

### Mash step by step

- Heat up **19.5 liter(s)** of strike water to **73.7C**
- Add grains
- Keep mash **45 min** at **66C**
- Keep mash **15 min** at **72C**
- Keep mash **10 min** at **78C**
- Sparge using **12.9 liter(s)** of **76C** water or to achieve **25.9 liter(s)** of wort

### Fermentables

Type	Name	Amount	Yield	EBC
Grain	pale ale Viking Malt	4 kg (61.5%)	80 %	6
Grain	cookie (bursztynowy) Viking Malt	1 kg (15.4%)	72 %	70
Grain	caramel sweet - Viking Malt	0.5 kg (7.7%)	75 %	75
Grain	Carafa® Special I Malt Weyermann®	0.2 kg (3.1%)	65 %	900
Grain	Carafa® Special III Malt Weyermann®	0.4 kg (6.2%)	65 %	1400
Grain	płatki jęczmienne	0.4 kg (6.2%)	70 %	3

### Hops

Use for	Name	Amount	Time	Alpha acid
First Wort	lunga (PL) - granulát	40 g	100 min	9.5 %

### Yeasts

Name	Type	Form	Amount	Laboratory
FM13 Irlandzkie Ciemności	Ale	Slant	300 ml	Fermentum Mobile

## Extras

Type	Name	Amount	Use for	Time
Water Agent	gips	6 g	Mash	70 min
Water Agent	chlerek wapnia	4 g	Mash	70 min
Water Agent	kreda	2 g	Mash	70 min
Fining	Mech irlandzki	2 g	Boil	15 min
Other	roztwór siarczanu cynku	2 g	Boil	0 min

## Notes

- <https://www.brewersfriend.com/mash-chemistry-and-brewing-water-calculator/?id=C0R5XQN>  
Ca+2 Mg+2 Na+ Cl- SO4-2 HCO  
77.2 0.0 131.0 70.6 116.5 78.773  
Mash pH \*: 5.46  
SO42-/Cl- ratio: 1.7 Little Bitter  
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