

## Cooperatio (Robust Porter)

- Gravity **15.7 BLG**
- ABV **6.6 %**
- IBU **48**
- SRM **30.7**
- Style **Robust Porter**

### 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 **20 %/h**
- Boil size **27.6 liter(s)**

### Mash information

- Mash efficiency **75 %**
- Liquor-to-grist ratio **2.5 liter(s) / kg**
- Mash size **16.5 liter(s)**
- Total mash volume **23.1 liter(s)**

### Steps

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

### Mash step by step

- Heat up **16.5 liter(s)** of strike water to **75.2C**
- Add grains
- Keep mash **45 min** at **66C**
- Keep mash **15 min** at **72C**
- Sparge using **17.7 liter(s)** of **76C** water or to achieve **27.6 liter(s)** of wort

### Fermentables

Type	Name	Amount	Yield	EBC
Grain	Grodziski pszeniczny wędzony dębem	3 kg (45.5%)	80 %	3
Grain	Briess - Pale Ale Malt	2 kg (30.3%)	80 %	7
Grain	Strzegom Monachijski typ II	0.5 kg (7.6%)	79 %	22
Grain	Melanoiden Malt	0.25 kg (3.8%)	80 %	39
Grain	Weyermann Specjal W	0.25 kg (3.8%)	68 %	300
Grain	Fawcett - Pszeniczny Czekoladowy	0.25 kg (3.8%)	73 %	1001
Grain	Weyermann - Chocolate Rye	0.25 kg (3.8%)	20 %	493
Grain	Carafa II	0.1 kg (1.5%)	70 %	1034

### Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Styrian Cardinal	30 g	60 min	8.8 %
Boil	East Kent Goldings	50 g	5 min	6.3 %
Boil	lunga	10 g	60 min	11 %

Aroma (end of boil)	Sorachi Ace	27 g	5 min	10 %
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## Yeasts

Name	Type	Form	Amount	Laboratory
US-05	Ale	Slant	100 ml	Fermentum mobile