

Tmavy

- Gravity **12.1 BLG**
- ABV **4.9 %**
- IBU **29**
- SRM **27.9**
- Style **Munich Dunkel**

Batch size

- Expected quantity of finished beer **14 liter(s)**
- Trub loss **5 %**
- Size with trub loss **14.7 liter(s)**
- Boil time **60 min**
- Evaporation rate **10 %/h**
- Boil size **17.7 liter(s)**

Mash information

- Mash efficiency **65 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **11.9 liter(s)**
- Total mash volume **15.8 liter(s)**

Steps

- Temp **52 C**, Time **15 min**
- Temp **63 C**, Time **30 min**
- Temp **70 C**, Time **50 min**
- Temp **76 C**, Time **10 min**

Mash step by step

- Heat up **11.9 liter(s)** of strike water to **57.3C**
- Add grains
- Keep mash **15 min** at **52C**
- Keep mash **30 min** at **63C**
- Keep mash **50 min** at **70C**
- Keep mash **10 min** at **76C**
- Sparge using **9.8 liter(s)** of **76C** water or to achieve **17.7 liter(s)** of wort

Fermentables

Type	Name	Amount	Yield	EBC
Grain	Pilzneński	3 kg (75.9%)	81 %	4
Grain	Caraaroma	0.2 kg (5.1%)	78 %	400
Grain	Strzegom Czekoladowy ciemny	0.2 kg (5.1%)	68 %	1200
Grain	Viking Melanoidynowy	0.3 kg (7.6%)	75 %	60
Grain	Abbey Malt Weyermann	0.25 kg (6.3%)	75 %	45

Hops

Use for	Name	Amount	Time	Alpha acid
Boil	Premiant	30 g	30 min	8 %

Yeasts

Name	Type	Form	Amount	Laboratory
Saflager S-189	Lager	Dry	10 g	Fermentis