

# czarne kozły

- Gravity **20.7 BLG**
- ABV ---
- IBU **22**
- SRM **31.8**

## Batch size

- Expected quantity of finished beer **20 liter(s)**
- Trub loss **5 %**
- Size with trub loss **21 liter(s)**
- Boil time **90 min**
- Evaporation rate **10 %/h**
- Boil size **26.4 liter(s)**

## Mash information

- Mash efficiency **75 %**
- Liquor-to-grist ratio **2.7 liter(s) / kg**
- Mash size **23 liter(s)**
- Total mash volume **31.5 liter(s)**

## Steps

- Temp **44 C**, Time **20 min**
- Temp **64 C**, Time **60 min**
- Temp **72 C**, Time **20 min**
- Temp **78 C**, Time **10 min**

## Mash step by step

- Heat up **23 liter(s)** of strike water to **48.4C**
- Add grains
- Keep mash **20 min** at **44C**
- Keep mash **60 min** at **64C**
- Keep mash **20 min** at **72C**
- Keep mash **10 min** at **78C**
- Sparge using **11.9 liter(s)** of **76C** water or to achieve **26.4 liter(s)** of wort

## Fermentables

| Type  | Name                        | Amount         | Yield | EBC  |
|-------|-----------------------------|----------------|-------|------|
| Grain | Pilzneński                  | 3 kg (35.3%)   | 81 %  | 4    |
| Grain | Strzegom Pszeniczny         | 2 kg (23.5%)   | 81 %  | 6    |
| Grain | Strzegom Monachijski typ II | 2 kg (23.5%)   | 79 %  | 22   |
| Grain | Viking Pale Ale malt        | 1 kg (11.8%)   | 80 %  | 5    |
| Grain | Strzegom pszenica prażona   | 0.25 kg (2.9%) | 70 %  | 1000 |
| Grain | Strzegom Czekoladowy ciemny | 0.25 kg (2.9%) | 68 %  | 1200 |

## Hops

| Use for | Name    | Amount | Time   | Alpha acid |
|---------|---------|--------|--------|------------|
| Boil    | Marynka | 35 g   | 45 min | 7.7 %      |
| Boil    | Marynka | 15 g   | 5 min  | 7.7 %      |

## Yeasts

| Name         | Type | Form | Amount | Laboratory |
|--------------|------|------|--------|------------|
| Safbrew S-33 | Ale  | Dry  | 11.5 g | Safbrew    |

|               |       |     |        |         |
|---------------|-------|-----|--------|---------|
| Safbrew WB-06 | Wheat | Dry | 11.5 g | Safbrew |
|---------------|-------|-----|--------|---------|