

## Próba w Ciemno

- Gravity **17.1 BLG**
- ABV **7.3 %**
- IBU **69**
- SRM **31.8**
- Style **Black IPA**

### Batch size

- Expected quantity of finished beer **20 liter(s)**
- Trub loss **7 %**
- Size with trub loss **22 liter(s)**
- Boil time **60 min**
- Evaporation rate **10 %/h**
- Boil size **26.4 liter(s)**

### Mash information

- Mash efficiency **70 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **21 liter(s)**
- Total mash volume **28 liter(s)**

### Steps

- Temp **66 C**, Time **45 min**
- Temp **72 C**, Time **15 min**
- Temp **78 C**, Time **0 min**

### Mash step by step

- Heat up **21 liter(s)** of strike water to **73.7C**
- Add grains
- Keep mash **45 min** at **66C**
- Keep mash **15 min** at **72C**
- Keep mash **0 min** at **78C**
- Sparge using **12.4 liter(s)** of **76C** water or to achieve **26.4 liter(s)** of wort

### Fermentables

| Type   | Name                            | Amount         | Yield | EBC  |
|--|---------------------------------|----------------|-------|------|
| Grain  | Strzegom Pilzneński             | 6 kg (81.1%)   | 80 %  | 4    |
| Grain  | Strzegom Carmel Pale            | 0.5 kg (6.8%)  | 75 %  | 8    |
| Grain  | Carafa III specjal              | 0.25 kg (3.4%) | 70 %  | 1350 |
| Zalane na kilka godzin zimną wodą do wyciągnięcia ekstraktu. |                                 |                |       |      |
| Grain  | WeWyer mann - Carafa Specjal II | 0.25 kg (3.4%) | 70 %  | 1150 |
| Sugar  | cukier                          | 0.4 kg (5.4%)  | 98 %  | 1    |
| dodane 10 min przed końcem gotowania.                        |                                 |                |       |      |

### Hops

| Use for    | Name                   | Amount | Time   | Alpha acid |
|------------|------------------------|--------|--------|------------|
| Boil       | Columbus/Tomahawk/Zeus | 50 g   | 60 min | 15.5 %     |
| Whirlpool  | Waimea                 | 25 g   | 0 min  | 17 %       |
| 30min 80°C |                        |        |        |            |
| Whirlpool  | Denali                 | 25 g   | 0 min  | 14 %       |
| 30min 80°C |                        |        |        |            |
| Whirlpool  | Chinook                | 25 g   | 0 min  | 13 %       |

|            |              |      |          |      |
|------------|--------------|------|----------|------|
| 30min 80°C |              |      |          |      |
| Whirlpool  | Apollo       | 25 g | 0 min    | 17 % |
| 30min 80°C |              |      |          |      |
| Dry Hop    | Waimea       | 25 g | 5 day(s) | 17 % |
| Dry Hop    | Denali       | 25 g | 5 day(s) | 14 % |
| Dry Hop    | Chinook      | 25 g | 5 day(s) | 13 % |
| Dry Hop    | Apollo       | 25 g | 5 day(s) | 17 % |
| Dry Hop    | Pacific Jade | 40 g | 5 day(s) | 13 % |

## Yeasts

| Name         | Type | Form  | Amount | Laboratory |
|--------------|------|-------|--------|------------|
| Safale US-05 | Ale  | Slant | 200 ml | ---        |

## Extras

| Type                     | Name            | Amount | Use for   | Time     |
|--------------------------|-----------------|--------|-----------|----------|
| Fining                   | whirlfloc t     | 5 g    | Boil      | 10 min   |
| Other                    | cukier          | 400 g  | Boil      | 10 min   |
| Water Agent              | Witamina C      | 2 g    | Secondary | 5 day(s) |
| dodatek razem z chmielem |                 |        |           |          |
| Water Agent              | gips piwowarski | 4 g    | Mash      | 0 min    |