

## QAPA #3 45

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- Gravity **10.5 BLG**
- ABV **4.2 %**
- IBU **53**
- SRM **4.4**
- Style **American Pale Ale**

### Batch size

- Expected quantity of finished beer **14 liter(s)**
- Trub loss **0 %**
- Size with trub loss **14.4 liter(s)**
- Boil time **45 min**
- Evaporation rate **12 %/h**
- Boil size **18 liter(s)**

### Mash information

- Mash efficiency **75 %**
- Liquor-to-grist ratio **3 liter(s) / kg**
- Mash size **9 liter(s)**
- Total mash volume **12 liter(s)**

### Steps

- Temp **66 C**, Time **75 min**
- Temp **75 C**, Time **10 min**

### Mash step by step

- Heat up **9 liter(s)** of strike water to **73.7C**
- Add grains
- Keep mash **75 min** at **66C**
- Keep mash **10 min** at **75C**
- Sparge using **12 liter(s)** of **76C** water or to achieve **18 liter(s)** of wort

### Fermentables

| Type  | Name                 | Amount      | Yield | EBC |
|-------|----------------------|-------------|-------|-----|
| Grain | Viking Pale Ale Malt | 3 kg (100%) | 80 %  | 7   |

### Hops

| Use for | Name                | Amount | Time   | Alpha acid |
|---------|---------------------|--------|--------|------------|
| Boil    | Columbus (Tomahawk) | 15 g   | 45 min | 13.9 %     |
| Boil    | Citra               | 15 g   | 20 min | 12 %       |
| Boil    | Citra               | 5 g    | 10 min | 12 %       |
| Boil    | Amarillo            | 15 g   | 0 min  | 9.2 %      |

### Extras

| Type        | Name                     | Amount | Use for | Time   |
|-------------|--------------------------|--------|---------|--------|
| Water Agent | Siarczan Magnezu (MgSO4) | 5.11 g | Mash    | 60 min |
| Water Agent | Gypsum (Calcium Sulfate) | 5 g    | Mash    | 60 min |
| Water Agent | Phosphoric Acid 85%      | 2.5 g  | Mash    | 60 min |
| Water Agent | Chlorek Wapnia           | 1.04 g | Mash    | 60 min |
| Water Agent | Soda Oczyszczona         | 0.65 g | Mash    | 60 min |
| Water Agent | Sól                      | 0.59 g | Mash    | 60 min |