

# NE APA - Michigan Copper

- Gravity **12.4 BLG**
- ABV ---
- IBU **20**
- SRM **3.7**
- Style **American Pale Ale**

## Batch size

- Expected quantity of finished beer **12 liter(s)**
- Trub loss **4 %**
- Size with trub loss **13 liter(s)**
- Boil time **70 min**
- Evaporation rate **15 %/h**
- Boil size **15.6 liter(s)**

## Mash information

- Mash efficiency **78 %**
- Liquor-to-grist ratio **3.6 liter(s) / kg**
- Mash size **9.9 liter(s)**
- Total mash volume **12.7 liter(s)**

## Steps

- Temp **64 C**, Time **40 min**
- Temp **72 C**, Time **40 min**
- Temp **76 C**, Time **10 min**

## Mash step by step

- Heat up **9.9 liter(s)** of strike water to **70.1C**
- Add grains
- Keep mash **40 min** at **64C**
- Keep mash **40 min** at **72C**
- Keep mash **10 min** at **76C**
- Sparge using **8.5 liter(s)** of **76C** water or to achieve **15.6 liter(s)** of wort

## Fermentables

| Type  | Name                 | Amount         | Yield  | EBC |
|-------|----------------------|----------------|--------|-----|
| Grain | Strzegom Pilzneński  | 1 kg (36.4%)   | 80 %   | 4   |
| Grain | Viking Pale Ale malt | 0.7 kg (25.5%) | 80 %   | 5   |
| Grain | Strzegom Pszeniczny  | 0.5 kg (18.2%) | 81 %   | 6   |
| Grain | Oats, Flaked         | 0.5 kg (18.2%) | 80 %   | 2   |
| Grain | Acid Malt            | 0.05 kg (1.8%) | 58.7 % | 6   |

## Hops

| Use for             | Name            | Amount | Time     | Alpha acid |
|---------------------|-----------------|--------|----------|------------|
| Boil                | Michigan Copper | 20 g   | 15 min   | 10.5 %     |
| Aroma (end of boil) | Michigan Copper | 20 g   | 0 min    | 10.5 %     |
| Dry Hop             | Michigan Copper | 60 g   | 5 day(s) | 10.5 %     |

## Yeasts

| Name                            | Type | Form | Amount | Laboratory |
|---------------------------------|------|------|--------|------------|
| Lallemand - LalBrew Verdant IPA | Ale  | Dry  | 5 g    | Lallemand  |

## Extras

| Type        | Name            | Amount | Use for  | Time   |
|-------------|-----------------|--------|----------|--------|
| Water Agent | gips piwowarski | 2 g    | Boil     | 60 min |
| Other       | Witamina C      | 2 g    | Bottling | ---    |