

## 05 SMaSH Centennial - 5.4%

### American Pale Ale

Brewer: The Thirsty Otter

Type: All Grain

IBU : 37 (Tinseth)  
 BU/GU : 0.72  
 Colour : 9 EBC  
 Carbonation : 2.5 CO2-vol

Pre-Boil Gravity : 1.038  
 Post-Boil Gravity : 1.049  
 Original Gravity : 1.051  
 Final Gravity : 1.010

### Fermentables (1.2 kg)

1.2 kg - Maris Otter Pale Ale Malt 5.9 EBC (1...  
 ^ Lot # 67-200827-161058-155815-1/1  
 ^ The Malt Miller (UK) MAL-00-036  
 33 g - Bottling - Sugar, Table (Sucrose) 2 EBC  
 ^ Albert Heijn (NL)

### Hops (20 g)

20 min - 5 g - Centennial - 9% (15 IBU)  
 ^ Worchester Hop Shop (UK)  
 10 min - 5 g - Centennial - 9% (11 IBU)  
 ^ Worchester Hop Shop (UK)  
 5 min - 5 g - Centennial - 9% (8 IBU)  
 ^ Worchester Hop Shop (UK)

### Hop Stand

30 min hopstand @ 80 °C  
 30 min - 5 g - Centennial - 9% (4 IBU)

### Miscellaneous

Mash - 0.82 g - Epsom Salt (MgSO4)  
 ^ Lot # /2119000091  
 ^ Brouwstore (NL) 055.027.7  
 Mash - 1.4 ml - Lactic Acid 80% 80%  
 ^ Lot # 20200213  
 ^ Brouwstore (NL) 003.002.3  
 Mash - 2 items - pH paper strips 5.2 - 6.8  
 ^ Lot # 20200422/1  
 ^ Brouwstore (NL) 013.075.7  
 60 min - Boil - 0.17 g - Lipohop K  
 ^ Lot # LPK110  
 ^ The Malt Miller (UK) CH-03-013  
 10 min - Boil - 1 g - Irish Moss  
 ^ Lot # 4348  
 ^ Brouwstore (NL) 125.249.1  
 10 min - Boil - 0.1 g - Lallemand Servomyces  
 ^ Lot # 154001112904ABV  
 ^ Brouwstore (NL) 050.620.4  
 10 min - Boil - 1 items - Wort Chiller  
 ^ Brouwstore (NL) 057.020.20  
 Bottling - 14 items - 33 cl Steinie bottle (s...  
 ^ Brouwstore (NL) 017.500.0

### Yeast

0.5 pkg - Lallemand (LalBrew) New England  
 ^ Lot # 41305910897711V  
 ^ The Malt Miller (UK) YEA-02-044

### 01 Brouwpunt 5L (60min) (rev 4)

Batch Size : 5.6 L  
 Boil Size : 7.76 L  
 Post-Boil Vol : 5.96 L

Mash Water : 3.6 L  
 Sparge Water : 5.43 L  
 Boil Time : 60 min  
 Total Water : 9.03 L



9 EBC

Brewhouse Efficiency: 71.8%  
 Mash Efficiency: 73.3%

### Mash Profile

01 One Step Mash (60 min)  
 68.7 °C - Strike Temp  
 63 °C - 60 min - Temperature

### Fermentation Profile

Ale  
 20 °C - 14 days - Primary  
 20 °C - 45 days - Conditioning

### Water Profile

NL Hoofddorp Rein Tap Water (2020-Q1 WQR) (Pa...  
 Ca 41 Mg 18 Na 67 Cl 71 SO 79

SO/Cl ratio: 1.1  
 Mash pH: 5.4

### Measurements

Mash pH: 5.5

Boil Volume: 8

Pre-Boil Gravity: 1.030

Post-Boil Gravity: 1.051

Post-Boil Kettle Volume: 5.75

Original Gravity: 1.042

Fermenter Top-Up:

Fermenter Volume: 5.6

Final Gravity: 1.002

Bottling Volume: 4.62

# Batch #5 - 21 Nov 2020

## Recipe Notes

Malt is ordered with standard crush @ The Malt Miller (<https://www.themaltmiller.co.uk/>).

## Batch Notes

Brewday

3.6 L tap water

1.4 mL Lactic acid

0.82 grams Epsom salt

pH of mash water < 5.2

heated to mash in temperature

21-11-2020 10:10 Mash in @ 68.9 C

Lump hunting.

21-11-2020 10:26 Mash ph = 5.5 @ 62.7 C.

21-11-2020 11:10 End of mashing.

Collected first wort.

21-11-2020 11:24 First Wort SG = 1.068 @ 44.5 C --> SG 1.076 @ 20C.

Added 3.6 L sparge water @ 65 C.

Batch sparged for 45 minutes @ 63 C.

Wort SG = 1.023 @ 43.2 C --> SG = 1.030 @ 20 C.

Liquid level in pot = 16 cm --> pre boil volume = 8.0 L.

21-11-2020 12:45 Start boil.

21-11-2020 13:45 Flame out.

21-11-2020 14:01 Started hopstand @ 80.2 C.

21-11-2020 14:31 End of hopstand @ 65.9 C.

Liquid level in pot = 11.5 cm --> post boil volume = 5.75 L (Cold).

Post boil SG = 1.048 @ 31.8 C --> SG 1.051 @ 20C.

Added 1 L top up water (Note to self: this was not necessary as there was almost enough wort).

Real Trub Loss = 1.18 L

Fermenter Volume = 5.6 L.

Day 0 in fermentation

21-11-2020 20:50 pitched 5 grams yeast

21-11-2020 20:51 @ 21.7 C, dp = 0 mm H2O, OG = 1.042, no bubbles.

Day 1 in fermentation

22-11-2020 00:19 @ 20.0 C, dp = 0 mm H2O, no bubbles.

22-11-2020 01:02 @ 20.6 C, dp = 50 mm H2O, few bubbles.

22-11-2020 09:25 @ 18.3 C, dp = 50 mm H2O, no bubbles.

22-11-2020 12:36 @ 18.4 C, dp = 50 mm H2O, few bubbles.

22-11-2020 15:50 @ 18.6 C, dp = 50 mm H2O, more bubbles.

22-11-2020 19:34 @ 18.8 C, dp = 50 mm H2O, more bubbles.

22-11-2020 23:57 @ 18.3 C, dp = 50 mm H2O, many bubbles.

Day 2 in fermentation

23-11-2020 07:24 @ 18.5 C, dp = 50 mm H2O, many bubbles.

23-11-2020 11:56 @ 18.5 C, dp = 50 mm H2O, many bubbles.

23-11-2020 17:07 @ 18.8 C, dp = 50 mm H2O, many bubbles.

23-11-2020 23:37 @ 19.1 C, dp = 50 mm H2O, many bubbles.

Day 3 in fermentation.

24-11-2020 06:58 @ 18.7 C, dp = 50 mm H2O, many bubbles.

24-11-2020 11:59 @ 18.8 C, dp = 50 mm H2O, many bubbles.

24-11-2020 18:01 @ 18.5 C, dp = 50 mm H2O, many bubbles.

24-11-2020 23:26 @ 18.8 C, dp = 50 mm H2O, many bubbles.

Day 4 in fermentation

25-11-2020 08:10 @ 17.4 C, dp = 45 mm H2O, no bubbles.

25-11-2020 12:44 @ 17.4 C, dp = 50 mm H2O, one bubble (newly charged battery).

25-11-2020 18:04 @ 17.5 C, dp = 50 mm H2O, two bubbles.

25-11-2020 23:38 @ 17.5 C, dp = 50 mm H2O, one bubble.

Day 5 in fermentation

26-11-2020 08:41 @ 17.9 C, dp = 50 mm H2O, two bubbles.

26-11-2020 18:15 @ 17.2 C, dp = 50 mm H2O, one bubble.

26-11-2020 23:59 @ 17.4 C, dp = 50 mm H2O, one bubble.

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## Batch Notes

### Day 6 in fermentation

27-11-2020 08:12 @ 17.0 C, dp = 45 mm H2O, no bubbles.  
27-11-2020 12:36 @ 17.6 C, dp = 50 mm H2O, one bubble.  
27-11-2020 20:23 @ 17.0 C, dp = 50 mm H2O, one bubble.  
27-11-2020 23:48 @ 17.9 C, dp = 50 mm H2O, one bubble.

### Day 7 in fermentation

28-11-2020 09:17 @ 17.2 C, dp = 45 mm H2O, no bubbles.  
28-11-2020 12:36 @ 17.0 C, dp = 45 mm H2O, no bubbles.  
28-11-2020 16:25 @ 17.7 C, dp = 50 mm H2O, one bubble.  
28-11-2020 20:32 @ 17.5 C, dp = 50 mm H2O, one bubble.  
28-11-2020 23:57 @ 17.5 C, dp = 45 mm H2O, no bubbles.

### Day 8 in fermentation

29-11-2020 09:36 @ 17.4 C, dp = 45 mm H2O, no bubbles.  
29-11-2020 13:00 @ 17.2 C, dp = 45 mm H2O, no bubbles.  
29-11-2020 18:02 @ 17.4 C, dp = 45 mm H2O, no bubbles.  
29-11-2020 23:57 @ 17.1 C, dp = 45 mm H2O, no bubbles.

### Day 9 in fermentation

30-11-2020 08:45 @ 17.3 C, dp = 45 mm H2O, no bubbles.  
30-11-2020 13:03 @ 17.0 C, dp = 45 mm H2O, no bubbles.  
30-11-2020 19:02 @ 16.6 C, dp = 45 mm H2O, no bubbles.  
30-11-2020 22:44 @ 17.1 C, dp = 45 mm H2O, no bubbles.

### Day 10 in fermentation

01-12-2020 08:24 @ 17.6 C, dp = 45 mm H2O, no bubbles.  
01-12-2020 10:47 @ 17.9 C, dp = 50 mm H2O, one bubble.  
01-12-2020 13:46 @ 17.4 C, dp = 45 mm H2O, no bubbles.  
01-12-2020 17:07 @ 17.7 C, dp = 45 mm H2O, no bubbles.  
01-12-2020 22:48 @ 17.8 C, dp = 50 mm H2O, one bubble.

### Day 11 in fermentation

02-12-2020 08:46 @ 17.9 C, dp = 45 mm H2O, no bubbles.  
02-12-2020 13:01 @ 17.6 C, dp = 50 mm H2O, one bubble.  
02-12-2020 18:12 @ 17.2 C, dp = 50 mm H2O, one bubble.  
02-12-2020 23:09 @ 17.6 C, dp = 45 mm H2O, no bubbles.

### Day 12 in fermentation

03-12-2020 08:55 @ 17.2 C, dp = 50 mm H2O, one bubble.  
03-12-2020 13:31 @ 17.2 C, dp = 45 mm H2O, no bubbles.  
03-12-2020 18:31 @ 17.2 C, dp = 45 mm H2O, no bubbles.  
03-12-2020 23:53 @ 17.7 C, dp = 50 mm H2O, one bubble.

### Day 13 in fermentation

04-12-2020 08:28 @ 17.2 C, dp = 45 mm H2O, no bubbles.  
04-12-2020 12:36 @ 17.5 C, dp = 45 mm H2O, no bubbles.  
04-12-2020 18:21 @ 17.2 C, dp = 45 mm H2O, no bubbles.  
04-12-2020 22:39 @ 17.4 C, dp = 45 mm H2O, no bubbles.

### Day 14 in fermentation

05-12-2020 10:46 @ 16.4 C, dp = 40 mm H2O, no bubbles.  
05-12-2020 13:30 @ 16.4 C, dp = 40 mm H2O, no bubbles.

### Bottling day

05-12-2020 14:00 33 grams sugar in 300 ml water, brought to the boil, and cooled down.  
05-12-2020 14:45 Final Gravity = 1.002.  
05-12-2020 14:45 very pale yellow colour.  
05-12-2020 15:01 filled 14 Steinie bottles (33 cl swing-top).

### Day 0 in conditioning

05-12-2020 15:15 @ 17.8 C.  
05-12-2020 17:12 @ 17.9 C.  
05-12-2020 22:53 @ 17.7 C.

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## Batch Notes

### Day 1 in conditioning

06-12-2020 09:12 @ 16.0 C.  
06-12-2020 15:45 @ 16.7 C.  
06-12-2020 20:18 @ 17.9 C.  
06-12-2020 23:10 @ 17.2 C.

### Day 2 in conditioning

07-12-2020 08:24 @ 17.4 C.  
07-12-2020 12:51 @ 17.1 C.  
07-12-2020 17:21 @ 17.4 C.  
07-12-2020 22:20 @ 17.5 C.

### Day 3 in conditioning

08-12-2020 07:50 @ 17.0 C.  
08-12-2020 13:10 @ 17.8 C.  
08-12-2020 18:46 @ 17.7 C.  
08-12-2020 23:34 @ 17.6 C.

### Day 4 in conditioning

09-12-2020 08:21 @ 17.2 C.  
09-12-2020 13:18 @ 17.8 C.  
09-12-2020 19:54 @ 17.1 C.  
09-12-2020 23:18 @ 17.2 C.

### Day 5 in conditioning

10-12-2020 07:56 @ 17.0 C.  
10-12-2020 11:36 @ 17.0 C.  
10-12-2020 18:53 @ 17.2 C.  
10-12-2020 23:07 @ 17.2 C.

### Day 6 in conditioning

11-12-2020 08:07 @ 16.3 C.  
11-12-2020 12:52 @ 17.7 C.  
11-12-2020 19:21 @ 17.7 C.  
11-12-2020 22:25 @ 17.9 C.

### Day 7 in conditioning

12-12-2020 09:34 @ 16.5 C.  
12-12-2020 15:06 @ 17.5 C.  
12-12-2020 23:35 @ 17.4 C.

### Day 8 in conditioning

13-12-2020 08:22 @ 17.2 C.  
13-12-2020 14:03 @ 17.3 C.  
13-12-2020 20:27 @ 17.6 C.

### Day 9 in conditioning

14-12-2020 08:22 @ 17.7 C.  
14-12-2020 12:53 @ 17.2 C.  
14-12-2020 21:09 @ 17.5 C.  
14-12-2020 23:18 @ 17.5 C.

### Day 10 in conditioning

15-12-2020 08:30 @ 17.9 C.  
15-12-2020 12:56 @ 17.9 C.  
15-12-2020 20:10 @ 17.0 C.

### Day 11 in conditioning

16-12-2020 00:08 @ 18.5 C.  
16-12-2020 08:30 @ 17.4 C.  
16-12-2020 12:51 @ 17.8 C.  
16-12-2020 20:12 @ 17.1 C.

### Day 12 in conditioning

17-12-2020 00:06 @ 17.7 C.  
17-12-2020 08:29 @ 17.7 C.

# Batch #5 - 21 Nov 2020

## Batch Notes

17-12-2020 12:47 @ 17.2 C.  
17-12-2020 19:52 @ 17.1 C.  
17-12-2020 23:27 @ 17.2 C.

Day 13 in conditioning  
18-12-2020 09:16 @ 17.0 C.  
18-12-2020 15:19 @ 17.6 C.  
18-12-2020 22:07 @ 17.7 C.

Day 14 in conditioning  
19-12-2020 11:11 @ 17.3 C.  
19-12-2020 18:59 @ 17.9 C.  
19-12-2020 23:57 @ 17.2 C.

Day 15 in conditioning  
20-12-2020 09:22 @ 17.5 C.  
20-12-2020 12:17 @ 17.5 C.  
20-12-2020 15:38 @ 17.8 C.  
20-12-2020 18:42 @ 17.2 C.  
20-12-2020 23:51 @ 17.1 C.

Day 16 in conditioning  
21-12-2020 08:59 @ 17.1 C.  
21-12-2020 15:47 @ 17.5 C.  
21-12-2020 23:20 @ 17.8 C.

Day 17 in conditioning  
22-12-2020 08:59 @ 17.6 C.  
22-12-2020 15:17 @ 17.5 C.  
22-12-2020 23:10 @ 18.5 C.

Day 18 in conditioning  
23-12-2020 08:42 @ 18.8 C.  
23-12-2020 19:58 @ 17.6 C.

Day 19 in conditioning  
24-12-2020 10:07 @ 17.5 C.  
24-12-2020 15:52 @ 17.4 C.  
24-12-2020 23:07 @ 17.4 C.

Day 20 in conditioning  
25-12-2020 08:47 @ 16.5 C.  
25-12-2020 19:39 @ 16.7 C.  
25-12-2020 23:55 @ 16.5 C.

Day 21 in conditioning  
26-12-2020 11:41 @ 16.5 C.  
26-12-2020 17:05 @ 16.5 C.  
26-12-2020 22:56 @ 16.7 C.

Day 22 in conditioning  
27-12-2020 10:27 @ 16.4 C.  
27-12-2020 17:09 @ 16.6 C.  
27-12-2020 23:51 @ 16.2 C.

Day 23 in conditioning  
28-12-2020 09:36 @ 16.4 C.  
28-12-2020 16:32 @ 16.4 C.  
28-12-2020 22:56 @ 16.4 C.

Day 24 in conditioning  
29-12-2020 09:01 @ 16.4 C.  
29-12-2020 18:18 @ 16.5 C.  
29-12-2020 23:55 @ 16.8 C.

Day 25 in conditioning

# Batch #5 - 21 Nov 2020

## Batch Notes

30-12-2020 14:56 @ 16.4 C.  
30-12-2020 23:46 @ 16.9 C.

Day 26 in conditioning  
31-12-2020 23:48 @ 16.6 C.

Day 27 in conditioning  
01-01-2021 10:54 @ 16.1 C.  
01-01-2021 18:31 @ 16.1 C.  
01-01-2021 23:58 @ 16.4 C.

Day 28 in conditioning  
02-01-2021 11:14 @ 16.4 C.  
02-01-2021 18:44 @ 16.9 C.

Day 29 in conditioning  
03-01-2021 00:28 @ 16.0 C.  
03-01-2021 09:57 @ 16.6 C.  
03-01-2021 16:44 @ 16.4 C.  
03-01-2021 00:28 @ 16.0 C.

Day 30 in conditioning  
04-01-2021 07:22 @ 16.7 C.  
04-01-2021 17:47 @ 16.9 C.  
04-01-2021 23:50 @ 16.9 C.

Day 31 in conditioning  
05-01-2021 07:19 @ 16.5 C.  
05-01-2021 14:22 @ 16.5 C.  
05-01-2021 23:37 @ 16.7 C.

Day 32 in conditioning  
06-01-2021 09:05 @ 16.0 C.  
06-01-2021 20:33 @ 16.3 C.  
06-01-2021 23:56 @ 16.4 C.

Day 33 in conditioning  
07-01-2021 08:34 @ 16.6 C.  
07-01-2021 14:23 @ 16.8 C.  
07-01-2021 23:54 @ 16.2 C.

Day 34 in conditioning  
08-01-2021 08:40 @ 16.7 C.  
08-01-2021 23:57 @ 16.2 C.

Day 35 in conditioning  
09-01-2021 10:39 @ 16.7 C.  
09-01-2021 20:33 @ 16.6 C.  
09-01-2021 23:59 @ 16.0 C.

Day 36 in conditioning  
10-01-2021 12:02 @ 15.9 C.  
10-01-2021 17:03 @ 16.0 C.  
10-01-2021 23:53 @ 16.2 C.

Day 37 in conditioning  
11-01-2021 08:54 @ 15.1 C.  
11-01-2021 17:22 @ 15.3 C.  
11-01-2021 23:58 @ 15.5 C.

Day 38 in conditioning  
12-01-2021 08:55 @ 15.7 C.  
12-01-2021 14:17 @ 16.5 C.  
12-01-2021 23:09 @ 16.3 C.

Day 39 in conditioning

# Batch #5 - 21 Nov 2020

## Batch Notes

13-01-2021 08:44 @ 16.4 C.  
13-01-2021 14:26 @ 16.7 C.  
13-01-2021 23:27 @ 16.1 C.

### Day 40 in conditioning

14-01-2021 08:19 @ 16.1 C.  
14-01-2021 11:49 @ 16.4 C.  
14-01-2021 21:53 @ 16.4 C.

### Day 41 in conditioning

15-01-2021 08:54 @ 16.7 C.  
15-01-2021 16:49 @ 16.9 C.  
15-01-2021 23:53 @ 16.9 C.

### Day 42 in conditioning

16-01-2021 09:05 @ 16.0 C.  
16-01-2021 17:36 @ 15.9 C.  
16-01-2021 23:55 @ 15.9 C.

### Day 43 in conditioning

17-01-2021 10:44 @ 15.2 C.  
17-01-2021 19:15 @ 15.9 C.  
17-01-2021 23:40 @ 15.6 C.

### Day 44 in conditioning

18-01-2021 08:18 @ 15.6 C.  
18-01-2021 12:55 @ 15.5 C.  
18-01-2021 23:52 @ 15.8 C.

### Day 45 in conditioning

19-01-2021 08:45 @ 15.1 C.  
19-01-2021 12:54 @ 15.2 C.  
19-01-2021 23:20 @ 15.6 C.

## Extra Measured Values

Strike Temperature 68.9

Strike Water pH 5.2

## Batch Log

21 November 2020	Brew Date
21 November 2020	Fermentation Start
21 November 2020 10:10	Status: Brewing
21 November 2020 20:50	Status: Fermenting
5 December 2020	Bottling Date
5 December 2020 15:01	Filled 14 Steinie bottles (33 cl).
19 January 2021 23:22	Status: Completed

## Taste

3.0 / 5.0