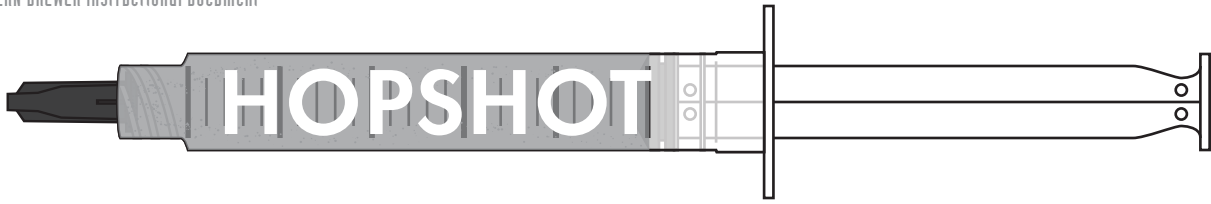


HOPSHOT

Official NORTHERN BREWER Instructional Document



INSTRUCTIONS:

Treat the HopShottm as you would hops. One milliliter (1ml) of HopShottm correlates to approximately 10IBUs in 5 gallons of 1.050 wort boiled for 60min. As wort increases in gravity, the isomerization decreases and length of boil increases hop utilization.

***Note - The HopShottm may be used for both flavor and aroma additions of hops and should be treated as regular hops.

HOW TO CALCULATE:

ASSUME:

- +1.080 decreases hop utilization by ~10%
- +1.100 decreases hop utilization by ~20%
- +1.150 decreases hop utilization by ~30%
- 90 min boil increases IBU by 10% (decreases HopShot need by 10%)

| Gravity | 10 _{IBU} | 20 _{IBU} | 30 _{IBU} | 40 _{IBU} | 50 _{IBU} | 60 _{IBU} | 70 _{IBU} | 80 _{IBU} | 90 _{IBU} | 100 _{IBU} |
|---------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| 1.030 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1.040 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1.050 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1.060 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1.070 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1.080 | 1.1 | 2.2 | 3.3 | 4.4 | 5.5 | 6.6 | 7.7 | 8.8 | 9.9 | 11 |
| 1.090 | 1.1 | 2.2 | 3.3 | 4.4 | 5.5 | 6.6 | 7.7 | 8.8 | 9.9 | 11 |
| 1.100 | 1.1 | 2.2 | 3.3 | 4.4 | 5.5 | 6.6 | 7.7 | 8.8 | 9.9 | 11 |
| 1.110 | 1.2 | 2.4 | 3.6 | 4.8 | 6 | 7.2 | 8.4 | 9.6 | 11 | 12 |
| 1.120 | 1.2 | 2.4 | 3.6 | 4.8 | 6 | 7.2 | 8.4 | 9.6 | 11 | 12 |
| 1.130 | 1.2 | 2.4 | 3.6 | 4.8 | 6 | 7.2 | 8.4 | 9.6 | 11 | 12 |
| 1.140 | 1.2 | 2.4 | 3.6 | 4.8 | 6 | 7.2 | 8.4 | 9.6 | 11 | 12 |
| 1.150 | 1.2 | 2.4 | 3.6 | 4.8 | 6 | 7.2 | 8.4 | 9.6 | 11 | 12 |
| 1.175 | 1.3 | 2.6 | 3.9 | 5.2 | 6.5 | 7.8 | 9.1 | 10 | 12 | 13 |
| 1.200 | 1.3 | 2.6 | 3.9 | 5.2 | 6.5 | 7.8 | 9.1 | 10 | 12 | 13 |

Volume of HopShottm (ml)

EXAMPLE 1:

35 IBUs are needed for 60min boiling addition for FIVE (5) gallons of beer at 1.045.

$$35\text{IBU} / 10\text{IBU/ml} = 3.5\text{ml needed of HopShot}$$

EXAMPLE 2:

80 IBUs are needed for 60 min boiling addition for TEN (10) gallons of beer at 1.085.

$$80\text{IBU} / 10\text{IBU/ml} = 8\text{ml} \times 2 \text{ (for 10 gal)} = 16\text{ml} + 10\% = 17.6\text{ml needed of HopShot}$$

EXAMPLE 3:

60 IBU are needed for a 90 min boiling addition for FIVE (5)gallons of beer at 1.150.

$$60\text{IBU} / 10\text{IBU/ml} = 6\text{ml} + 30\% (+1.150) - 10\% (90\text{min boil}) = 7.2\text{ml need of HopShot}$$