

# COMPARING OUR HOP PRODUCTS

**CLAYTON HOPS**



| FEATURE                                                        | AMPLIFIRE™ FRESH HOP OIL                                                                                                                   | AMPLIFIRE™ CONCENTRATED LUPULIN PELLETS                                                                                                                                        | T90 HOP PELLETS                                                                                                                                               |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Form</b>                                                    | Flowable liquid                                                                                                                            | Pellet. More lupulin (acids and oils) than T90s                                                                                                                                | Pellet. Less lupulin (acids and oils) than Amplifire™ Pellets                                                                                                 |
| <b>Plant material</b>                                          | None                                                                                                                                       | Yes. Less plant material and higher levels of acids and oil compared to T90s                                                                                                   | Yes. More plant material and lower levels of acids and oil compared to Amplifire™ Pellets                                                                     |
| <b>Process</b>                                                 | Made through a patent-pending extraction process where the oil is extracted directly from the lupulin glands of 'wet' farm-fresh hop cones | Made through a patent-pending process by cryogenically separating the lupulin from the dried leaf and stem material of hop cones and concentrating and compressing the lupulin | Made by milling whole dried hop cones (leaf, steam, lupulin) and compressing them                                                                             |
| <b>Raw material</b>                                            | Fresh, undried whole hop cones                                                                                                             | Kiln-dried whole hop cones                                                                                                                                                     | Kiln-dried whole hop cones                                                                                                                                    |
| <b>Name origin</b>                                             | Amplifire™ is Clayton Hops' advanced hop products range, aimed at boosting flavour and aroma and reducing beer loss                        | Amplifire™ is Clayton Hops' advanced hop products range, aimed at boosting flavour and aroma and reducing beer loss                                                            | T90 is from the principle that 90% of the original hop material is retained after pelletising                                                                 |
| <b>Processing time from harvest</b>                            | Less than 24 hours                                                                                                                         | Weeks                                                                                                                                                                          | Target of less than one week                                                                                                                                  |
| <b>Preservation of hop volatiles</b>                           | Very high (no kilning of raw material)                                                                                                     | Medium to low (kilning loss)                                                                                                                                                   | Medium to low (kilning loss)                                                                                                                                  |
| <b>Bitterness contribution</b>                                 | None                                                                                                                                       | Yes (variety dependent)                                                                                                                                                        | Yes (variety dependent)                                                                                                                                       |
| <b>Flavour/aroma impact</b>                                    | High. Delivers cleaner, more vivid aromatics                                                                                               | More intense and reduced vegetal flavours compared to T90s                                                                                                                     | Moderate and increased vegetal flavours compared to Amplifire™ Pellets                                                                                        |
| <b>Use rate (dry hop T90 replacement)</b>                      | ~50:1 (by weight). For instance, 100mL of Amplifire™ Fresh Hop Oil is equivalent to circa. 5kgs T90s                                       | ~2:1 (by weight). For instance, use 500–600g of Amplifire™ Pellets instead of 1kg of T90s                                                                                      | Baseline                                                                                                                                                      |
| <b>Beer loss in whirlpool and dry hop (from using product)</b> | Minimal                                                                                                                                    | Low to moderate                                                                                                                                                                | Moderate                                                                                                                                                      |
| <b>Solubility</b>                                              | Fully water and beer soluble                                                                                                               | Requires mixing/rousing                                                                                                                                                        | Requires mixing/rousing                                                                                                                                       |
| <b>Ease of use</b>                                             | Simple liquid dosing. Highly flowable product at cool, room and warm temperatures                                                          | Similar handling as T90s                                                                                                                                                       | Standard handling                                                                                                                                             |
| <b>Recommended storage requirement</b>                         | Cold storage (ambient is permitted)                                                                                                        | Cold storage (ambient is not permitted)                                                                                                                                        | Cold storage (ambient is not permitted)                                                                                                                       |
| <b>Shelf life</b>                                              | 2 years commercially sealed                                                                                                                | 3 years                                                                                                                                                                        | 3 years                                                                                                                                                       |
| <b>Carbon footprint</b>                                        | Very low – no kilning of raw material and made in New Zealand                                                                              | Low – New Zealand made and ultra-concentrated, reducing total inputs and shipping needs                                                                                        | Moderate – New Zealand made but less concentrated so more volume and packaging per batch compared to the other two products, but a foundational brewing input |
| <b>Light stable</b>                                            | Yes                                                                                                                                        | No                                                                                                                                                                             | No                                                                                                                                                            |
| <b>Hop creep potential</b>                                     | None                                                                                                                                       | Low                                                                                                                                                                            | High                                                                                                                                                          |
| <b>'True-to-type' variety expression</b>                       | Yes                                                                                                                                        | Yes                                                                                                                                                                            | Yes                                                                                                                                                           |
| <b>Recommended applications</b>                                | Dry hop, brite tank (can also use in whirlpool)                                                                                            | Kettle, whirlpool, dry hop                                                                                                                                                     | Kettle, whirlpool, dry hop                                                                                                                                    |