| HOP NAME<br>酒话名称                | ALPHA ACID %<br>阿尔法酸 % | BETA ACID %<br>倍塔酸 % | COHUMULONE<br>联合葎草酮 | TOTAL OIL<br>油总量         | DESCRIPTION<br>描述  | FLAVOUR TYPE<br>味道类型   | ORIGIN<br>起源       | BEER STYLES<br>啤酒类型              | SUBSTITUTIONS<br>替代   | PRIMARY USE<br>主要用途        |
|---------------------------------|------------------------|----------------------|---------------------|--------------------------|--|--|--------------------|----------------------------------|---|----------------------------|
| Ahtanum™                        | 5.7 - 6.3%             | 5.0 - 6.5%           | 30 - 35%            | 0.8 - 1.2 mL / 100g      | Floral, earthy, citrus and grapefruit tones<br>花香,尼什,柑橘和柚子   | Citrus 柑橘<br>Floral 花似<br>Tobacco / Earthy 烟草 / 泥土           | USA 美国             | Pale Ale 淡色艾尔<br>IPA<br>Lager 拉咯 | Amarillo<br>Cascade   | Aroma 香气                   |
| Amarillo®                       | 8.0 - 11.0%            | 6.0 - 7.0%           | 21 - 24%            | 1.5 - 1.9 mL / 100g      | Floral, tropical, and citrus (lemon, orange and grapefruit) characteristics<br>花卉,热带,柑橘(柠檬,橘子和葡萄柚)特性                             | Citrus 柑橘<br>Floral 花似<br>Tropical Fruit 热带水果                | USA 美国             | Bitter 英式苦啤<br>IPA<br>Wheat 小麦   | Cascade<br>Centennial   | Aroma 香气                   |
| Apollo                          | 15.0 - 19.0%           | 5.5 - 8.0%           | 24 - 28%            | 1.5 - 2.5 mL / 100g      | Strong grapefruit, orange, and hoppy notes<br>强柚子,橙,和啤酒花   | Citrus 柑橘  | USA 美国             | American Ale 美式<br>艾尔<br>IPA     | Magnum<br>Columbus  | Bittering 苦味               |
| Australian Ella                 | 14.0 - 16.0%           | 4.0 - 7.5%           | ~36%                | ~2.9 mL / 100g           | Spicy, hoppy and floral with hints of anise<br>香料,酒花和花卉八角的香味   | Floral 花似<br>Herbal 草本<br>Spicy 芳香                           | Australia 澳大<br>利亚 | Lager 拉咯                         | Pallisade®<br>Perle   | Aroma 香气                   |
| Australian<br>Galaxy            | 11.0 - 16.0%           | 5.0 - 6.9%           | 32 - 42%            | 3.0 - 5.0 mL / 100g      | Distinct citrus, peach and passion fruit flavors 不同的柑橘,桃子和百香果口味  | Citrus 柑橘<br>Fruity 果味<br>Stone Fruit 核果                     | Australia 澳大<br>利亚 | IPA                              | Citra®  | Aroma 香气                   |
| Australian Helga                | 4.9 - 7.3%             | 5.0 - 7.0%           | 20 - 23%            | 0.6 - 1.0 mL / 100g      | Very mild and pleasant with delicate floral and herbal tones 非常温和宜人,精致的花卉和草药特性   | Floral 花似<br>Fruity 果味<br>Herbal 草本                          | Australia 澳大<br>利亚 | Ale 艾尔                           | Hallertau   | Aroma 香气                   |
| Australian Pride<br>of Ringwood | 8.6 - 10.5%            | 4.4 - 7.0%           | 26 - 34%            | 1.6 - 1.8 mL / 100g      | Pronounced and pleasant, a distinct Australian aroma with cedar, oak and herbal tones 独特的澳大利亚雪松香气,橡木和香叶                          | Cedar 雪松<br>Herbal 草本<br>Tobacco / Earthy 烟草 / 泥土            | Australia 澳大<br>利亚 | Pale Ale 淡色艾尔                    | Cluster<br>Galena   | Bittering 苦味               |
| Australian<br>Summer            | 5.6 - 6.4%             | 4.8 - 6.1%           | 20 - 25%            | 1.4 - 2.0 mL / 100g      | Balanced citrus, melon and light apricot<br>tones<br>平衡柑橘,甜瓜和浅杏色   | Citrus 柑橘<br>Spicy 芳香<br>Tropical Fruit 热带水果                 | Australia 澳大<br>利亚 | Ale 艾尔                           | Amarillo  | Aroma & Bittering<br>香气和苦味 |
| Australian Super<br>Pride       | 12.5 - 16.3%           | 6.0 - 8.0%           | 26 - 29%            | 3.4 - 4.0 mL / 100g      | Mild and pleasant subtle resin and fruit tones<br>温和宜人微妙树脂和果实  | Cedar 雪松<br>Fruity 果味<br>Tobacco / Earthy 烟草 / 泥土            | Australia 澳大<br>利亚 | Lager 拉咯                         | Australian Pride of Ringwood                                      | Bittering 苦味               |
| Australian Sylva                | 5.6 - 7.3%             | 3.0 - 4.6%           | 20 - 25%            | 1.0 - 1.4 mL / 100g      | Complex and subtle, floral and herbal characteristics 复杂和微妙花卉和草药的特性  | Floral 花似<br>Herbal 草本                                       | Australia 澳大<br>利亚 | Lager 拉咯                         | Saaz  | Aroma 香气                   |
| Australian Topaz                | 13.7 - 17.7%           | 6.4 - 7.9%           | 48 - 51%            | 1.7 - 2.2 mL / 100g      | Resinous, grassy tones with light<br>tropical flavours<br>树脂草香调光的热带风味  | Grassy 草地<br>Tobacco / Earthy 烟草 / 泥土<br>Tropical Fruit 热带水果 | Australia 澳大利亚     | Ale 艾尔                           | Amarillo<br>Columbus<br>Summit                                    | Aroma & Bittering<br>香气和苦味 |
| Bitter Gold                     | 15.44 - 18.84%         | 6.13 - 8.01%         | 36 - 41%            | 0.81 - 3.92 mL /<br>100g | Intense stone fruit and tropical fruit flavours, specifically pear and watermelon 激烈核果和热带水果的味道,特别是梨,西瓜                           | Stone Fruit 核果<br>Tropical Fruit 热带水果                        | USA 美国             | All Styles 所有款<br>式              | Galena<br>Nugget  | Aroma & Bittering<br>香气和苦味 |
| Bravo                           | 14.0 - 17.0%           | 3.0 - 5.0%           | 29 - 34%            | 1.6 - 2.4 mL / 100g      | Pleasant fruity and floral aroma characteristics 宜人的果香和花香的特性   | Floral 花似<br>Fruity 果味                                       | USA 美国             | American Pale Ale<br>美式淡色艾尔      | Columbus<br>Magnum<br>Nugget                                      | Bittering 苦味               |
| Brewer's Gold                   | 8.0 - 10.0%            | 3.5 - 4.5%           | 40 - 48%            | 2.0 - 2.4 mL / 100g      | Spicy, fruity characteristics, black currant<br>香料和果味特点,黑醋栗  | Fruity 果味<br>Spicy 芳香  | USA 美国             | Ale 艾尔                           | Chinook<br>Galena<br>Nugget                                       | Bittering 苦味               |
| Bullion                         | 6.7 - 12.9%            | 3.7 - 9.1%           | ~39%                | 1.1 - 2.7 mL / 100g      | Strong and zesty blackcurrant characteristics<br>强大和灿烂黑醋栗特点  | Fruity 果味  | England 英国         | Stout 烈性黑啤                       | Brewer's Gold<br>Chinook<br>Columbus<br>Galena<br>Northern Brewer | Bittering 苦味               |
| Cascade                         | 4.5 - 7.0%             | 4.5 - 7.0%           | 33 - 40%            | 0.8 - 1.5 mL / 100g      | Medium intense floral, citrus and grapefruit tones 中激烈的花香,柑橘和柚子  | Citrus 柑橘<br>Floral 花似<br>Fruity 果味                          | USA 美国             | American Pale Ale<br>美式淡色艾尔      | Ahtanum<br>Amarillo<br>Centennial                                 | Aroma 香气                   |
| Cashmere                        | 7.7 - 9.1%             | 6.4 - 7.1%           | 22 - 24%            | 1.2 - 1.4 mL / 100g      | Mild herbal aroma with strong melon,<br>lemon, lime and slightly spicy notes<br>温和的草本香气具有较强的哈密瓜,柠<br>檬,酸橙和略带香料味                  | Citrus 柑橘<br>Fruity 果味<br>Herbal 草本                          | USA 美国             | IPA                              | Mosaic  | Aroma & Bittering<br>香气和苦味 |
| Centennial                      | 9.5 - 11.5%            | 3.5 - 4.5%           | 28 - 30%            | 1.5 - 2.5 mL / 100g      | Medium intensity floral and citrus<br>(lemon) tones<br>中等强度的花香和柑橘(柠檬)  | Citrus 柑橘<br>Floral 花似                                       | USA 美国             | American Ale 美式<br>艾尔            | Cascade<br>Chinook<br>Columbus                                    | Aroma & Bittering<br>香气和苦味 |
| Chelan                          | 12.0 - 14.5%           | 8.5 - 9.8%           | 33 - 35%            | 1.5 - 1.9 mL / 100g      | Mild floral and citrus characteristics<br>温和的花香和柑橘特点   | Citrus 柑橘<br>Floral 花似                                       | USA 美国             | American Ale 美式<br>艾尔            | Galena<br>Nugget  | Bittering 苦味               |
| Chinook                         | 12.0 - 14.0%           | 3.0 - 4.0%           | 29 - 34%            | 1.5 - 2.5 mL / 100g      | Distinct, medium intensity spice and pine characteristics with subtle notes of grapefruit 柚子微妙的味道,中等强度的香料和松树特点                   | Citrus 柑橘<br>Pine 松树<br>Spicy 芳香                             | USA 美国             | American Pale Ale<br>美式淡色艾尔      | Columbus<br>Northern Brewer<br>Nugget                             | Aroma & Bittering<br>香气和苦味 |
| Citra®                          | 11.0 - 13.0%           | 3.5 - 4.5%           | 22 - 24%            | 2.2 - 2.8 mL / 100g      | Strong citrus and tropical tones of grapefruit, melon, lime, gooseberry, passion fruit and lychee 强大的柑橘和柚子,甜瓜,石灰,猕猴桃,百香果和荔枝的热带色调 | Citrus 柑橘<br>Fruity 果味<br>Tropical Fruit 热带水果                | USA 美国             | IPA                              | Galaxy  | Aroma 香气                   |

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|----------------------------|------------------------|----------------------|---------------------|---------------------|--|--|----------------------|------------------------------|--|----------------------------|
| Cluster                    | 5.5 - 8.5%             | 4.5 - 5.5%           | 36 - 42%            | 0.4 - 0.8 mL / 100g | Strong floral and spicy characteristics<br>强烈的花香和香料的特点   | Floral 花似<br>Spicy 芳香                              | USA 美国               | Stout 烈性黑啤                   | Galena   | Aroma & Bittering<br>香气和苦味 |
| Columbia                   | 6.8 - 11.5%            | 2.9 - 5.6%           | ~40%                | 0.5 - 1.6 mL / 100g | Subtle earth and mild fruit tones<br>微妙泥土和的水果味   | Fruity 果味<br>Tobacco / Earthy 烟草 / 泥土              | USA 美国               | English Ale 英式艾<br>尔         | Fuggle   | Aroma 香气                   |
| Columbus                   | 14.0 - 16.0%           | 4.0 - 5.0%           | 30 - 35%            | 1.5 - 2.0 mL / 100g | Pungent, black pepper, liquorice characteristics with subtle citrus overtones 味辛,黑胡椒,甘草与微妙的柑橘色彩特性  | Citrus 柑橘<br>Spicy 芳香                              | USA 美国               | Pale Ale 淡色艾尔                | Chinook<br>Galena<br>Millenium<br>Nugget                                     | Bittering 苦味               |
| Comet                      | 9.0 - 11.0%            | 4.0 - 6.1%           | 40 - 45%            | 1.4 - 3.3 mL / 100g | A pungent, wild American aroma with citrus (grapefruit) flavours  一股刺鼻的,野生美国香气柑橘(柚)  | Citrus 柑橘<br>Tobacco / Earthy 烟草 / 泥土              | USA 美国               | Lager 拉咯                     | Galena<br>Summit   | Bittering 苦味               |
| Crystal                    | 3.5 - 5.5%             | 4.5 - 6.7%           | 20 - 26%            | 0.8 - 2.1 mL / 100g | Mild, spicy and floral<br>温和香料和花香  | Floral 花似<br>Spicy 芳香                              | USA 美国               | IPA                          | Hallertau<br>Liberty<br>Mt. Hood<br>French Strisselpalt<br>German Hersbruker | Aroma 香气                   |
| Czech Premiant             | 7.0 - 11.0%            | 3.5 -6.0%            | 18 - 23%            | 0.9 - 1.3 mL / 100g | Pleasant, mild aroma<br>宜人温和的香气  | Floral 花似<br>Fruity 果味<br>Herbal 草本                | Czechoslovakia<br>捷克 | Pilsner 比尔森                  | Saaz   | Aroma 香气                   |
| Czech Saaz                 | 2.0 - 5.0%             | 7.0 - 8.0%           | 23 - 28%            | 0.4 - 1.0 mL / 100g | Very mild, with pleasant earthy, herbal and floral overtones 非常温和,宜人的泥土,草药和花的色彩  | Floral 花似<br>Herbal 草本<br>Tobacco / Earthy 烟草 / 泥土 | Czechoslovakia<br>捷克 | Lager 拉咯                     | Sterling<br>Polish Lublin  | Aroma 香气                   |
| Czech Sladek               | 5.0 - 9.0%             | 8.0 - 11.0%          | 22 - 28%            | 0.8 - 1.0 mL / 100g | Fruity flavor profile including hints of peach, grapefruit and passion fruit 水果风味,包括桃子,柚子和百香果  | Citrus 柑橘<br>Spicy 芳香<br>Tropical Fruit 热带水果       | Czechoslovakia<br>捷克 | Lager 拉咯                     | Premiant<br>Saaz   | Aroma 香气                   |
| Delta                      | 5.5 - 7.0%             | 5.5 - 7.0%           | 22 - 24%            | 0.5 - 1.1 mL / 100g | Mild and pleasant aroma that is slightly spicy with a hint of citrus 温和宜人的香气是略带香料与柑橘的口味  | Citrus 柑橘<br>Spicy 芳香                              | USA 美国               | American Ale 美式<br>艾尔        |  | Aroma & Bittering<br>香气和苦味 |
| El Dorado                  | 14.0 - 16.0 %          | 7.0 - 8.0%           | 30%                 | 2.5 - 2.8 mL / 100g | Aromas of watermelon, pear, candy, or stone fruit. There is often an undertone of citrus, and sometimes an identifiable fresh-cut-grass taste  西瓜,梨,糖果,或核果的香气。经常有柑橘的底色,有时可识别的鲜切草的味道                                  | Citrus 柑橘<br>Grassy 草地<br>Stone Fruit 核果           | USA 美国               | American Pale Ale<br>美式淡色艾尔  | Citra<br>Nelson<br>Sauvin<br>Rakau   | Aroma & Bittering<br>香气和苦味 |
| Equinox™                   | 14.4 - 15.6%           | 4.6 - 5.1%           | 31.7 - 38%          | 2.9 mL / 100g       | A pronounced aroma profile with citrus, tropical fruit, floral and herbal characteristics. Specific descriptors include lemon, lime, papaya, apple, and green pepper  一个明显的芳香型柑橘,热带水果,花卉和草药的特性。具体描述符包括柠檬,酸橙,木瓜,苹果,青椒 | Citrus 柑橘<br>Herbal 草本<br>Tropical Fruit 热带水果      | USA 美国               | American Ale 美式<br>艾尔<br>IPA |  | Aroma 香气                   |
| Eroica                     | 7.3 - 14.9%            | 3.0 - 5.3%           | ~40%                | ~0.9 mL / 100g      | Forward fruit flavours<br>水果口味   | Fruity 果味  | USA 美国               | American Ale 美式<br>艾尔        | Brewer's Gold<br>Galena<br>Glacier<br>Bullion                                | Bittering 苦味               |
| Exp - HBC 291              | 11.2 - 13.1%           | 5.1 - 6.1%           | 19.8 - 23.8%        | 2.3 mL / 100g       | Typically described as peppery, floral and fruity 通常被描述为暴躁,花果香调  | Floral 花似<br>Fruity 果味<br>Spicy 芳香                 |                      |                              | Buttleti   |                            |
| Exp - HBC 342              | 11 - 14%               |                      |                     | mL / 100g           | Mild citrus, tropical fruit and melon notes 温和的柑橘,热带水果和甜瓜  | Citrus 柑橘<br>Fruity 果味<br>Tropical Fruit 热带水果      |                      |                              |  |                            |
| Falconer's<br>Flight® 7C's | 9.0 - 10.5%            | 4.7 - 5.1%           |                     | ~1.72 mL / 100g     | Strong fruit and citrus characteristics, with layers of spicy and earthy overtones  强大的水果和柑橘的特点,具有香料和 泥土的味道  | Citrus 柑橘<br>Fruity 果味<br>Tobacco / Earthy 烟草 / 泥土 | USA 美国               | Pale Ale 淡色艾尔                |  | Aroma 香气                   |
| Falconer's<br>Flight®      | 9.5 - 12.0%            | 4.0 - 5.0%           | 20 - 25%            | ~1.6 mL / 100g      | Distinct tropical, floral, lemon and grapefruit characteristics 独特的热带风光,花卉,柠檬和葡萄柚特点  | Citrus 柑橘<br>Floral 花似<br>Tropical Fruit 热带水果      | USA 美国               |                              |  | Aroma 香气                   |
| French Aramis              | 7.9 - 8.3%             | 3.8 - 4.5%           | ~42 %               | 1.2 - 1.6 mL / 100g | Very fine spice and herbal notes with subtle citrus characteristics 极细的香料和草药票据与微妙的柑橘特色   | Citrus 柑橘<br>Herbal 草本<br>Spicy 芳香                 | France 法国            | Belgian Ale 比利时<br>艾尔        | Centennial<br>Chinook<br>Hallertau<br>Tettnang                               | Aroma 香气                   |
| French<br>Strisselpalt     | 1.8 - 2.5%             | 3.0 - 6.0%           | 20 - 23%            | 0.6 - 0.8 mL / 100g | Very fine spicy, herbal, floral, lemon and other fruit tones 极细的辣,中草药,花卉,柠檬等水果   | Citrus 柑橘<br>Floral 花似<br>Herbal 草本                | France 法国            | Belgian Ale 比利时<br>艾尔        | Crystal<br>Liberty<br>Mt. Hood<br>German Hersbruker                          | Aroma 香气                   |
| French Triskel             | ~2.6%                  | ~6.7%                | 20 - 23%            | ~0.7 mL / 100g      | Strong floral, fruit and citrus characteristics 强烈的花香,水果和柑橘特点  | Citrus 柑橘<br>Floral 花似<br>Fruity 果味                | France 法国            | Belgian Ale 比利时<br>艾尔        | Ahtanum<br>Centennial<br>Chinook<br>Simcoe                                   | Aroma 香气                   |

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|-----------------------------------|------------------------|----------------------|---------------------|---------------------|---|--|--------------|-----------------------|---|----------------------------|
| Fuggle                            | 4.0 - 5.5%             | 1.5 - 2.0%           | 25 - 32%            | 0.7 - 1.2 mL / 100g | Mild wood and fruit characteristics<br>轻度木材和水果特点  | Fruity 果味<br>Tobacco / Earthy 烟草 / 泥土              | England 英国   | English Ale 英式艾<br>尔  | Styrian Savinjski Golding<br>Willamette                             | Aroma 香气                   |
| Galena                            | 12.0 - 14.0%           | 7.0 - 9.0%           | 37 - 42%            | 0.9 - 1.2 mL / 100g | Spicy, blackcurrant and citrus<br>(grapefruit) tones<br>香料,黑加仑和柑橘(柚)  | Citrus 柑橘<br>Spicy 芳香<br>Stone Fruit 核果            | USA 美国       | English Ale 英式艾尔      | Brewer's Gold<br>Columbus<br>Nugget                                 | Bittering 苦味               |
| German Brewer's<br>Gold           | 5.0 - 9.0%             | 2.5 - 3.5%           | 40 - 48%            | 1.8 - 2.2 mL / 100g | Black currant, fruit and spice characteristics<br>黑加仑,水果和香料的特性  | Fruity 果味<br>Spicy 芳香                              | Germany 德国   | Ale 艾尔                | Galena<br>Northern Brewer<br>UK Northdown                           | Bittering 苦味               |
| German<br>Hallertau Blanc         | 9.0 - 12.0%            | 4.5 - 5.5%           | 22 - 26%            | 1.2 - 1.5 mL / 100g | Floral and fruity with passion fruit, grapefruit, pineapple, grape and lemongrass overtones 花果香调与百香果,葡萄柚,菠萝,葡萄和柠檬草            | Floral 花似<br>Fruity 果味<br>Grassy 草地                | Germany 德国   | American Ale 美式<br>艾尔 | Liberty<br>Mt. Hood<br>Tettnanger                                   | Aroma 香气                   |
| German<br>Hallertau<br>Mittelfrüh | 3.0 - 5.5%             | 3.0 - 5.0%           | 18 - 28%            | 0.7 - 1.3 mL / 100g | Mild, yet spicy, with floral and citrus tones 温和的但芳香,有花卉和柑橘   | Citrus 柑橘<br>Floral 花似<br>Spicy 芳香                 | Germany 德国   | Lager 拉咯              | German Tradition<br>Liberty<br>Vanguard                             | Aroma 香气                   |
| German Herkules                   | 12.0 - 17.0%           | 4.0 - 5.5%           | 32 - 38%            | 1.6 - 2.4 mL / 100g | Spicy, floral and hop notes with hints of pine, black pepper and melon 芳香花香和跳跃的特性,松木的香味,黑胡椒和甜瓜                                | Floral 花似<br>Pine 松树<br>Spicy 芳香                   | Germany 德国   | German Ale 德式艾尔       |   | Bittering 苦味               |
| German<br>Hersbruker              | 2.0 - 5.0%             | 2.5 - 6.0%           | 18 - 25%            | 0.7 - 1.3 mL / 100g | Mild, herbal and floral characteristics, with fruity overtones 温和草药和花的特点,果味色彩   | Floral 花似<br>Fruity 果味<br>Herbal 草本                | Germany 德国   | Belgian Ale 比利时<br>艾尔 | Mt. Hood<br>French Strisselpalt                                     | Aroma 香气                   |
| German Hull<br>Melon              | 6.9 - 7.5%             | 7.3 - 7.9%           | 25 - 30%            | ~0.8 mL / 100g      | Distinct fruit characteristics including honeydew melon and strawberry flavours 鲜明的特色水果,包括蜜瓜和草莓口味                             | Fruity 果味<br>Tropical Fruit 热带水果                   | Germany 德国   | German Ale 德式艾尔       | Citra   | Aroma 香气                   |
| German Magnum                     | 11.0 - 16.0%           | 5.0 - 7.0%           | 21 - 29%            | 1.6 - 2.6 mL / 100g | A delicate aroma with inclinations towards floral and fruit flavourings and a prevalent hoppy tang  一种微妙的香气对花卉和水果香料和普遍的啤酒花的味道 | Floral 花似<br>Fruity 果味                             | Germany 德国   | Ale 艾尔                | Columbus<br>Nugget  | Bittering 苦味               |
| German<br>Mandarina<br>Bavaria    | 7.0 - 10.0%            | 5.0 - 6.5%           | 31 - 35%            | ~2.2 mL / 100g      | Distinct tangerine and citrus flavours<br>独特的橘子和柠檬香料  | Citrus 柑橘<br>Fruity 果味<br>Tropical Fruit 热带水果      | Germany 德国   | Ale 艾尔                | Citra   | Aroma 香气                   |
| German Merkur                     | 12.0 - 15.0%           | 3.5 - 7.0%           | 16 - 20%            | 2.2 - 2.8 mL / 100g | Strong earthy, floral and citrus impressions<br>强大的泥土,花香和柑橘印象   | Citrus 柑橘<br>Floral 花似<br>Tobacco / Earthy 烟草 / 泥土 | Germany 德国   | Lager 拉咯              | Magnum<br>German Taurus<br>German Tradition                         | Bittering 苦味               |
| German<br>Northern Brewer         | 7.0 - 10.0%            | 3.5 - 5.0%           | 27 - 33%            | 1.6 - 2.1 mL / 100g | Medium intense herbal and floral tones<br>中激烈的草药和花  | Floral 花似<br>Herbal 草本                             | Germany 德国   | Bitter 英式苦啤           | Chinook Columbus Galena Magnum Northern Brewer German Brewer's Gold | Aroma & Bittering<br>香气和苦味 |
| German Opal                       | 5.0 - 8.0%             | 3.5 - 5.5%           | 13.0 - 17.0%        | 0.8 - 1.3 mL / 100g | Even dispersal of all aroma characteristics - fruity, floral, herbal and hoppy tones all appear 即使分散的所有特征香气 - 果香,花香,草药和啤酒花    | Floral 花似<br>Fruity 果味<br>Herbal 草本                | Germany 德国   | Belgian Ale 比利时<br>艾尔 | Tettnang<br>UK East Kent Golding<br>Styrian Savinjski Golding       | Aroma 香气                   |
| German Perle                      | 6.0 - 10.0%            | 2.5 - 5.0%           | 28 - 32%            | 0.8 - 1.3 mL / 100g | Delicate floral, fruit, spice and mint tones 精致的花卉,水果,香料和薄荷   | Floral 花似<br>Fruity 果味<br>Spicy 芳香                 | Germany 德国   | Ale 艾尔                | Northern Brewer<br>Perle  | Aroma 香气                   |
| German Polaris                    | 18.0 - 23.0%           | 4.5 - 6.0%           | 22 - 28%            | 4.0 - 5.0 mL / 100g | Intense floral and pleasant mint tones<br>强烈的花香宜人的薄荷  | Floral 花似<br>Herbal 草本                             | Germany 德国   | Ale 艾尔                |   | Aroma 香气                   |
| German Saphir                     | 2.0 - 4.5%             | 4.0 - 7.0%           | 12 - 17%            | 0.8 - 1.4 mL / 100g | Distinct spicy, fruit and citrus (tangerine) tones 独特的芳香,水果和柑橘(橘子)  | Citrus 柑橘<br>Fruity 果味<br>Spicy 芳香                 | Germany 德国   | Belgian Ale 比利时<br>艾尔 | Hallertau   | Aroma 香气                   |
| German Select                     | 3.0 - 6.5%             | 2.5 - 5.0%           | 21 - 27%            | 0.6 - 0.9 mL / 100g | Floral and fruit characteristics<br>花和果实特征  | Floral 花似<br>Fruity 果味                             | Germany 德国   | Lager 拉咯              | Saaz<br>Tettnang<br>German Hersbruker<br>German Spalt               | Aroma 香气                   |
| German Smaragd<br>(Emerald)       | 4.0 - 6.0%             | 3.5 - 5.5%           | 13 - 18%            | 0.7 - 1.7 mL / 100g | Predominantly fruity with strong floral and hop tones 主要是果味与强烈的花香   | Floral 花似<br>Fruity 果味                             | Germany 德国   | Ale 艾尔                |   | Aroma 香气                   |
| German Spalt                      | 2.5 - 5.5%             | 3.0 - 5.0%           | 22 - 29%            | 0.5 - 0.9 mL / 100g | Mild and herbal, with spicy, floral and fruit tones 轻度和草药香料花香和水果  | Floral 花似<br>Fruity 果味<br>Herbal 草本                | Germany 德国   | Bock 博克               | Saaz<br>Tettnang  | Aroma 香气                   |
| German Tettnang                   | 3.0 - 6.0%             | 3.0 - 5.0%           | 22 - 29%            | 0.5 - 0.9 mL / 100g | Mild and pleasant with balanced earthy, herbal and floral aroma impressions 温和宜人与平衡的泥土,草药和花的香味印象                              | Floral 花似<br>Herbal 草本<br>Tobacco / Earthy 烟草 / 泥土 | Germany 德国   | Belgian Ale 比利时<br>艾尔 | Saaz<br>German Hersbruker<br>German Spalt<br>German Select          | Aroma 香气                   |
| German Traditon                   | 5.0 - 7.0%             | 4.0 - 5.0%           | 26 - 29%            | 1.0 - 1.4 mL / 100g | Medium intense floral and herbal<br>(grassy) tones<br>中激烈的花卉和草本(草)  | Floral 花似<br>Grassy 草地<br>Herbal 草本                | Germany 德国   | Bock 博克               | Liberty<br>German Hallertau Mittelfrüh                              | Aroma 香气                   |

| HOP NAME<br>酒话名称              | ALPHA ACID %<br>阿尔法酸 % | BETA ACID %<br>倍塔酸 % | COHUMULONE<br>联合葎草酮 | TOTAL OIL<br>油总量    | DESCRIPTION<br>描述  | FLAVOUR TYPE<br>味道类型                               | ORIGIN<br>起源       | BEER STYLES<br>啤酒类型         | SUBSTITUTIONS<br>替代   | PRIMARY USE<br>主要用途        |
|-------------------------------|------------------------|----------------------|---------------------|---------------------|--|--|--------------------|-----------------------------|---|----------------------------|
| Glacier                       | ~5.5%                  | ~8.2%                | 11 - 13%            | 0.7 - 1.6 mL / 100g | Pleasant hop aroma<br>酒花香  | Herbal 草本  | USA 美国             | American Pale Ale<br>美式淡色艾尔 | Fuggle Willamette Styrian Savinjski Golding   | Aroma & Bittering<br>香气和苦味 |
| Golding                       | 4.0 - 6.0%             | 2.0 - 3.0%           | 20 - 25%            | 0.4 - 1.0 mL / 100g | Mild and delicate with sweet floral characteristics<br>温和细腻甜美的花香特色   | Floral 花似<br>Spicy 芳香                              | England 英国         | Bitter 英式苦啤                 | Fuggle<br>Willamette<br>UK East Kent Golding<br>Styrian Savinjski Golding                               | Aroma 香气                   |
| Hallertau                     | 3.5 - 5.5%             | 3.5 - 5.5%           | 18 - 25%            | 0.6 - 1.5 mL / 100g | Mild and pleasant, yet spicy, with herbal and floral characteristics 温和宜人,又芳香,用草药和花的特性   | Floral 花似<br>Herbal 草本<br>Spicy 芳香                 | USA 美国             | Belgian Ale 比利时<br>艾尔       | Liberty Mt. Hood German Magnum German Merkur German Taurus German Tradition German Hallertau Mittelfrüh | Aroma 香气                   |
| Horizon                       | 11.0 - 13.0%           | 6.5 - 8.5%           | 16 - 19%            | 1.5 - 2.0 mL / 100g | Pleasant and spicy, with floral characteristics 芳香,以花卉特色   | Floral 花似<br>Spicy 芳香                              | USA 美国             | American Ale 美式<br>艾尔       | Magnum  | Aroma & Bittering<br>香气和苦味 |
| Liberty                       | 3.0 - 5.0%             | 3.0 - 4.0%           | 24 - 30%            | 0.6 - 1.8 mL / 100g | Mild and spicy with subtle lemon and citrus characteristics 轻度和香料带有微妙的柠檬和柑橘特点  | Citrus 柑橘<br>Spicy 芳香                              | USA 美国             | Bock 博克                     | Hallertau<br>Mt. Hood<br>German Tradition   | Aroma 香气                   |
| Millennium                    | 14.5 - 16.5%           | 4.3 - 5.3%           | 28 - 32%            | 1.8 - 2.2 mL / 100g | Mild and resinous with floral and herbal tones 轻度和树脂与花卉和草药   | Floral 花似<br>Herbal 草本<br>Tobacco / Earthy 烟草 / 泥土 | USA 美国             | Stout 烈性黑啤                  | Columbus<br>Nugget<br>Summit™   | Bittering 苦味               |
| Mosaic™                       | 11.5 - 13.5%           | 3.2 - 3.9%           | 24 - 26%            | 1.0 - 1.5 mL / 100g | A complex array of tropical fruit, citrus, berry, herbal, earthy and pine characteristics 热带水果,柑橘,草莓,花草,泥土和松树特性的复杂阵列                         | Citrus 柑橘<br>Grassy 草地<br>Floral 花似                | USA 美国             | IPA                         | City<br>Galaxy  | Aroma 香气                   |
| Mt. Hood                      | 4.0 - 8.0%             | 5.0 - 7.5%           | 22 - 27%            | 1.6 - 3.4 mL / 100g | Mild, herbal and somewhat pungent or spicy 温和,草药,有点刺鼻或香料   | Herbal 草本<br>Spicy 芳香<br>Tobacco / Earthy 烟草 / 泥土  | USA 美国             | Lager 拉咯                    | French Strisselpalt<br>German Hersbruker<br>German Hallertau Mittelfrüh                                 | Aroma 香气                   |
| Mt. Rainier                   | 5.0 - 8.1%             | 5.0 - 7.0%           | 21 - 24%            | 0.2 - 0.5 mL / 100g | Excellent floral and noble aromas, with citrus and liquorice overtones 优秀的花香和高贵的香气,柑橘和甘草   | Citrus 柑橘<br>Floral 花似<br>Spicy 芳香                 | USA 美国             | Lager 拉咯                    | Brewer's Gold<br>Juggle<br>Hallertau  | Aroma & Bittering<br>香气和苦味 |
| New Zealand Dr.<br>Rudi       | 10 - 12%               | 7 - 8.5%             | 33 - 36%            | 1.3 mL / 100g       | Fresh citrus peel, pine and lemongrass<br>flavours<br>新鲜柑橘皮,松树和柠檬草的味道  | Citrus 柑橘<br>Pine 松树                               | New Zealand<br>新西兰 | Ale 艾尔                      |   | Aroma & Bittering<br>香气和苦味 |
| New Zealand<br>Green Bullet   | 11.0 - 14.0%           | 6.5 - 7.0%           | 41 - 43%            | ~1.1 mL / 100g      | Subtle spiciness<br>微妙的芳香  | Spicy 芳香   | New Zealand<br>新西兰 | Lager 拉咯                    | Fuggle<br>Willamette  | Bittering 苦味               |
| New Zealand<br>Motueka        | 6.5 - 8.5%             | 5.0 - 5.5%           | ~29%                | ~0.8 mL / 100g      | Lively lemon and lime tones with background hints of tropical fruit 活泼的柠檬和酸橙色调的热带水果背景提示  | Citrus 柑橘<br>Fruity 果味<br>Tropical Fruit 热带水果      | New Zealand<br>新西兰 | Ale 艾尔                      | Sterling<br>Saaz  | Aroma 香气                   |
| New Zealand<br>Nelson Sauvin  | 12.0 - 13.0%           | 6.0 - 8.0%           | ~24%                | ~1.1 mL / 100g      | Distinct cool climate and white wine "fruitiness" with fresh crushed gooseberry and grape infused flavours 独特的凉爽气候葡萄酒和白葡萄酒"果香"新鲜碎猕猴桃和葡萄口味的注入 | Fruity 果味<br>Tropical Fruit 热带水果                   | New Zealand<br>新西兰 | American Pale Ale<br>美式淡色艾尔 |   | Aroma & Bittering<br>香气和苦味 |
| New Zealand<br>Pacific Gem    | 13.5 - 15.0%           | 7.0 - 9.0%           | 37 - 40%            | ~1.2 mL / 100g      | No distinct characteristics. Some brewers have noted delicate blackberry and floral or oak tones 没有鲜明的特色。一些酿酒师已经注意 到微妙的黑莓和花卉或橡木味道            | Floral 花似  | New Zealand<br>新西兰 | Lager 拉咯                    | Galena  | Bittering 苦味               |
| New Zealand<br>Pacific Jade   | 12.0 - 14.0%           | 7.0 - 8.0%           | ~24%                | ~1.4 mL / 100g      | Bold herbal aromas with hints of fresh citrus and crushed black pepper 大胆的草药香味的新鲜柑橘的提示和黑胡椒碎  | Citrus 柑橘<br>Herbal 草本<br>Spicy 芳香                 | New Zealand<br>新西兰 | Lager 拉咯                    |   | Aroma & Bittering<br>香气和苦味 |
| New Zealand<br>Pacifica       | 5.0 - 6.0%             | ~6.0%                | ~25%                | ~1.0 mL / 100g      | Classic Hallertau character with some citrus and floral notes  一些柑橘和花香经典哈拉道特性  | Citrus 柑橘<br>Floral 花似                             | New Zealand<br>新西兰 | IPA                         | Hallertau   | Aroma 香气                   |
| New Zealand<br>Rakau          | 10.0 - 11.0%           | 5.0 - 6.0%           | ~24%                | ~2.2 mL / 100g      | Fresh orchard fruits, specifically apricot with some resinous pine needle characteristics are noted 新鲜的果园水果,特别是与被注意到,一些树脂松针特点杏               | Pine 松树<br>Stone Fruit 核果                          | New Zealand<br>新西兰 | Ale 艾尔                      | Amarillo®<br>Summit™  | Aroma & Bittering<br>香气和苦味 |
| New Zealand<br>Southern Cross | 11.0 - 14.0%           | 5.0 - 6.0%           | 25 - 28%            | ~1.2 mL / 100g      | A delicate balance of citrus and spice, including a heady mix of lemon peel and pine needles 柑橘和香料的一种微妙的平衡,包括柠檬皮和松针的兴奋混合                     | Citrus 柑橘<br>Pine 松树<br>Spicy 芳香                   | New Zealand<br>新西兰 | Lager 拉咯                    |   | Aroma & Bittering<br>香气和苦味 |
| New Zealand<br>Sticklebract   | 13.0 - 14.2%           | 7.5 - 8.5%           | 40 - 45%            | 0.8 - 1.7 mL / 100g |  | Citrus 柑橘<br>Pine 松树                               | New Zealand<br>新西兰 | Pale Ale 淡色艾尔               | German Northern Brewer  | Aroma & Bittering<br>香气和苦味 |
| New Zealand<br>Waimea         | 16.0 - 19.0%           | 7.0 - 9.0%           | 22 - 24%            | ~2.1 mL / 100g      | Intense tangelo and citrus fruit with subtle pine characteristics 激烈桔柚和柑桔类水果与微妙的松树特点   | Citrus 柑橘<br>Pine 松树                               | New Zealand<br>新西兰 | IPA                         |   | Aroma & Bittering<br>香气和苦味 |

| HOP NAME<br>酒话名称             | ALPHA ACID %<br>阿尔法酸 % | BETA ACID %<br>倍塔酸 % | COHUMULONE<br>联合葎草酮 | TOTAL OIL<br>油总量        | DESCRIPTION<br>描述  | FLAVOUR TYPE<br>味道类型                               | ORIGIN<br>起源       | BEER STYLES<br>啤酒类型   | SUBSTITUTIONS<br>替代                                       | PRIMARY USE<br>主要用途        |
|------------------------------|------------------------|----------------------|---------------------|-------------------------|--|--|--------------------|-----------------------|---|----------------------------|
| New Zealand<br>Wakatu        | 6.5 - 8.5%             | ~8.5%                | 28 - 30%            | ~1.0 mL / 100g          | Restrained floral notes and freshly zested lime  | Citrus 柑橘<br>Floral 花似                             | New Zealand<br>新西兰 | Lager 拉咯              |   | Aroma & Bittering<br>香气和苦味 |
| Northern Brewer              | 8.0 - 10.0%            | 3.0 - 5.0%           | 20 - 30%            | 1.5 - 2.0 mL / 100g     | 约束花香和新鲜青柠檬皮 Medium intensity, pine and mint characteristics 中等强度松树和薄荷特点  | Pine 松树<br>Tobacco / Earthy 烟草 / 泥土                | England 英国         | Ale 艾尔                | Chinook<br>Galena<br>German Northern Brewer               | Aroma & Bittering<br>香气和苦味 |
| Nugget                       | 12.0 - 14.5%           | 4.0 - 6.0%           | 22 - 26%            | 1.8 - 2.2 mL / 100g     | Mild and pleasant with spicy, herbal tones 温和宜人香料草药  | Herbal 草本<br>Spicy 芳香                              | USA 美国             | Barley Wine 麦子<br>酒   | Columbus<br>Galena<br>Magnum                              | Bittering 苦味               |
| Olympic                      | 10.6 - 13.8%           | 3.8 - 6.1%           | ~31%                | 0.86 - 2.55 mL/<br>100g | Citrus characteristics with subtle spicy notes 与微妙的香料柑橘特色  | Citrus 柑橘<br>Spicy 芳香                              | USA 美国             | American Ale 美式<br>艾尔 | Chinook   | Bittering 苦味               |
| Palisade®                    | 5.5 - 9.5%             | 6.0 - 8.0%           | 24 - 29%            | 1.4 - 1.6 mL / 100g     | Apricot, grass and clean floral characteristics<br>杏,草和干净的花卉特性   | Grassy 草地<br>Herbal 草本<br>Stone Fruit 核果           | USA 美国             | English Ale 英式艾<br>尔  | Willamette  | Aroma 香气                   |
| Perle                        | 7.0 - 9.5%             | 4.0 - 5.0%           | 27 - 32%            | 0.7 - 0.9 mL / 100g     | Slightly spicy with herbal and floral characteristics 略带香料草药和花的特点  | Floral 花似<br>Herbal 草本<br>Spicy 芳香                 | Germany 德国         | Stout 烈性黑啤            | Northern Brewer<br>German Northern Brewer<br>German Perle | Aroma & Bittering<br>香气和苦味 |
| Polish Lublin                | 3.0 - 4.5%             | 2.5 - 3.5%           | 25 - 30%            | 0.7 - 1.2 mL / 100g     | Mild aroma typical of classic noble hops<br>温和的香气典型的古典高贵啤酒花  | Herbal 草本<br>Spicy 芳香                              | Poland 波兰          | Lager 拉咯              |   | Aroma 香气                   |
| Saaz                         | 3.0 - 4.5%             | 3.0 - 4.5%           | 24 - 28%            | 0.5 - 1.0 mL / 100g     | Mild spice and earth tones<br>温和香料和大地色系  | Spicy 芳香<br>Tobacco / Earthy 烟草 / 泥土               | USA 美国             | Belgian Ale 比利时<br>艾尔 | Czech Saaz<br>Sterling<br>Polish Lublin                   | Aroma 香气                   |
| Santiam                      | 5.0 - 7.0%             | 6.0 - 8.5%           | 20 - 24%            | 1.3 - 1.7 mL / 100g     | Slightly spicy with herbal and floral characteristics<br>略带芳香草药和花的特点   | Floral 花似<br>Herbal 草本<br>Spicy 芳香                 | USA 美国             | Bock 博克               | German Spalt<br>German Tettnang<br>German Select          | Aroma 香气                   |
| Simcoe®                      | 12.0 - 14.0%           | 4.0 - 5.0%           | 15 - 20%            | 2.0 - 2.5 mL / 100g     | Unique passionfruit, pine, earth and citrus characteristics 独特的百香果,松,泥土和柑橘特点   | Citrus 柑橘<br>Pine 松树<br>Tobacco / Earthy 烟草 / 泥土   | USA 美国             | IPA                   | Magnum<br>Summit  | Aroma & Bittering<br>香气和苦味 |
| Sorachi Ace                  | 10.0 - 16.0%           | 6.0 - 7.0%           | ~23%                | 2.0 - 2.8 mL / 100g     | Unique lemon and dill characteristics<br>独特的柠檬和莳萝特点  | Citrus 柑橘<br>Grassy 草地<br>Herbal 草本                | Japan 日本           | Pale Ale 淡色艾尔         |   | Aroma & Bittering<br>香气和苦味 |
| Sterling                     | 6.0 - 9.0%             | 4.0 - 6.0%           | 22 - 28%            | 1.3 - 1.9 mL / 100g     | Herbal and spicy, with a hint of floral, citrus (lemon/pineapple) characteristics 草药和辛辣,有花卉,柑橘(柠檬/菠萝)的暗示特征                         | Citrus 柑橘<br>Floral 花似<br>Spicy 芳香                 | USA 美国             | Belgian Ale 比利时<br>艾尔 | Saaz<br>Polish Lublin                                     | Aroma 香气                   |
| Styrian Aurora               | 7.0 - 9.5%             | 2.7 - 4.4%           | 22 - 26%            | 0.9 - 1.6 mL / 100g     | Intense and pleasant displaying floral, pine and hoppy characteristics 激烈宜人显示花香,松树和啤酒花特点   | Floral 花似<br>Pine 松树                               | Slovenia 斯洛<br>文尼亚 | Ale 艾尔                | Styrian Bobek<br>Styrian Savinjski Golding                | Aroma 香气                   |
| Styrian Bobek                | 3.5 - 7.0%             | 4.0 - 6.1%           | 27 - 31%            | 0.7 - 4.0 mL / 100g     | Intense and pleasant with floral, pine and hop overtones 激烈和愉快的花香,松树和啤酒花的弦外之音  | Floral 花似<br>Pine 松树                               | Slovenia 斯洛<br>文尼亚 | English Ale 英式艾尔      |   | Aroma 香气                   |
| Styrian Celeia               | 3.0 - 6.0%             | 2.0 - 3.3%           | 26 - 29%            | 0.6 - 3.6 mL / 100g     | Pleasant and hoppy, similar to<br>traditional European varieties<br>啤酒花,类似于传统的欧洲品种   | Floral 花似  | Slovenia 斯洛<br>文尼亚 | English Ale 英式艾<br>尔  | Saaz<br>Styrian Bobek<br>Styrian Savinjski Golding        | Aroma 香气                   |
| Styrian Savinjski<br>Golding | 2.8 - 5.5%             | 2.0 - 3.0%           | 25 - 30%            | 0.3 - 1.0 mL / 100g     | Very mild, noble hop flavour<br>很温和,高贵的酒花风味  | Fruity 果味<br>Herbal 草本<br>Tobacco / Earthy 烟草 / 泥土 | Slovenia 斯洛<br>文尼亚 | Belgian Ale 比利时<br>艾尔 | Juggle<br>Styrian Bobek                                   | Aroma 香气                   |
| Summit™                      | 16.0 - 19.0%           | 3.3 - 6.0%           | 26 - 33%            | 1.5 - 2.5 mL / 100g     | Distinct spice, earthy, onion, garlic and citrus (pink grapefruit, orange and tangerine) tones 不同的香料,泥土,洋葱,大蒜和柑橘(粉红葡萄柚,橘子和橘子)      | Citrus 柑橘<br>Spicy 芳香<br>Tobacco / Earthy 烟草 / 泥土  | USA 美国             | IPA                   | Columbus<br>Millennium<br>Simcoe®<br>Warrior®             | Bittering 苦味               |
| Tahoma                       | 7.2 - 8.2%             | 8.5 - 9.5%           | 15 - 17%            | 1.0 - 2.0 mL / 100g     | Predominate citrus and lemon notes with cedar, pine, floral, pepper and subtle green melon notes 占主导地位的柑橘和柠檬的音符杉树, 松树,花卉,胡椒和微妙的绿色瓜 | Cedar 雪松<br>Citrus 柑橘<br>Pine 松树                   | USA 美国             |                       |   | Aroma 香气                   |
| Tettnang                     | 4.0 - 5.0%             | 3.0 - 4.5%           | 20 - 25%            | 0.4 - 0.8 mL / 100g     | Noble aroma that is pleasant and spicy<br>高贵的香料香气宜人  | Spicy 芳香   | Germany 德国         | American Ale 美式<br>艾尔 | Fuggle<br>Santiam<br>German Spalt                         | Aroma 香气                   |
| Triplepearl                  | 10.25 - 11.2%          | 3.3 - 4.2%           | 21 - 25%            | 1.1 - 1.79 mL / 100g    | Pleasant and balanced with notes of melon, orange citrus, resin, spice and pepper 甜瓜,橘柑,树脂,香料和胡椒的味道平衡                              | Citrus 柑橘<br>Spicy 芳香                              | USA 美国             | Pale Ale 淡色艾尔         | Perle   | Aroma 香气                   |
| UK Admiral                   | 13.0 - 16.0%           | 4.0 - 6.0%           | 37 - 45%            | 1.0 - 1.7 mL / 100g     | Pleasant, resinous hop aroma with hints of citrus (orange) and herbal flavours 树脂啤酒花的香气与柑橘的香味(橙色)和草药的味道                            | Citrus 柑橘<br>Herbal 草本<br>Tobacco / Earthy 烟草 / 泥土 | England 英国         | English Ale 英式艾尔      | UK Northdown<br>UK Target<br>UK Challenger                | Bittering 苦味               |
| UK Boadicea                  | 7.0 - 10.0%            | 3.0 - 4.0%           | ~26%                | 1.4 - 2.0 mL / 100g     | Mild floral and spicy characteristics with slightly grassy overtones 略有草香色彩柔和花香和芳香的特点  | Grassy 草地<br>Floral 花似<br>Spicy 芳香                 | England 英国         |                       |   | Aroma & Bittering<br>香气和苦味 |

| HOP NAME<br>酒话名称        | ALPHA ACID %<br>阿尔法酸 % | BETA ACID %<br>倍塔酸 % | COHUMULONE<br>联合葎草酮 | TOTAL OIL<br>油总量    | DESCRIPTION<br>描述   | FLAVOUR TYPE<br>味道类型                               | ORIGIN<br>起源 | BEER STYLES<br>啤酒类型   | SUBSTITUTIONS<br>替代  | PRIMARY USE<br>主要用途        |
|-------------------------|------------------------|----------------------|---------------------|---------------------|---|--|--------------|-----------------------|--|----------------------------|
| UK Bramling<br>Cross    | 6.0 - 8.0%             | 2.3 - 3.5%           | 34%                 | 0.7 - 1.2 mL / 100g | Strong spice, blackcurrant, loganberry and lemon characteristics 强大的香料,黑加仑,杨莓和柠檬特点  | Citrus 柑橘<br>Fruity 果味<br>Spicy 芳香                 | England 英国   | All Styles 所有款<br>式   | UK East Kent Golding<br>UK Progress                        | Aroma 香气                   |
| UK Challenger           | 6.5 - 9.0%             | 3.2 - 4.2%           | 20 - 25%            | 1.0 - 1.5 mL / 100g | Cedar, green tea and sweet floral characteristics (as a late addition, it can provide crisp, fruity flavours) 雪松,绿茶和甜花香的特性(如后期此外,它还可以提供脆果味) | Cedar 雪松<br>Floral 花似<br>Spicy 芳香                  | England 英国   | English Ale 英式艾尔      | Northern Brewer<br>German Perle                            | Aroma & Bittering<br>香气和苦味 |
| UK East Kent<br>Golding | 4.0 - 6.0%             | 1.9 - 3.0%           | 25 - 30%            | 0.4 - 0.8 mL / 100g | Smooth and delicate with floral, lavender, spice, honey, earth, lemon and thyme overtones 细腻的花卉,薰衣草,香料,蜂蜜,土,柠檬和百里香色彩                        | Floral 花似<br>Spicy 芳香<br>Tobacco / Earthy 烟草 / 泥土  | England 英国   | English Ale 英式艾<br>尔  | Golding<br>UK Progress                                     | Aroma & Bittering<br>香气和苦味 |
| UK First Gold           | 6.5 - 10.0%            | 3.0 - 4.5%           | 32 - 35%            | 0.7 - 1.7 mL / 100g | Slightly spicy, but smooth, with tangerine, orange marmalade, magnolia and floral flavours 微香,有橘子,玉兰花香的味道                                   | Citrus 柑橘<br>Floral 花似<br>Spicy 芳香                 | England 英国   | Ale 艾尔                | Crystal<br>UK East Kent Golding                            | Aroma & Bittering<br>香气和苦味 |
| UK Fuggle               | 3.5 - 6.5%             | 2.0 - 4.0%           | 27 - 33%            | 0.7 - 1.1 mL / 100g | Delicate and pleasant mint, grass and floral tones 精致宜人的薄荷,青草和花香  | Floral 花似<br>Grassy 草地                             | England 英国   | Belgian Ale 比利时<br>艾尔 | Willamette<br>Styrian Savinjski Golding                    | Aroma 香气                   |
| UK Northdown            | 7.0 - 10.0%            | 4.0 - 5.0%           | ~31%                | 1.2 - 2.2 mL / 100g | Pleasant spice, cedar and pine characteristics with hints of floral and berry flavours 宜人的香料,用花卉和浆果风味的提示杉树和松树特点                             | Cedar 雪松<br>Pine 松树<br>Spicy 芳香                    | England 英国   | Ale 艾尔                | Northern Brewer<br>UK Challenger                           | Aroma & Bittering<br>香气和苦味 |
| UK Phoenix              | 8.0 - 12.0%            | 3.8 - 5.4%           | ~30%                | 1.2 - 2.5 mL / 100g | Crisp and mellow tones of pine, chocolate, molasses and spice characteristics 松,巧克力,糖蜜和香料的特性  | Citrus 柑橘<br>Pine 松树<br>Spicy 芳香                   | England 英国   | English Ale 英式艾尔      | UK Northdown<br>UK Challenger                              | Aroma & Bittering<br>香气和苦味 |
| UK Pilgrim              | 9.0 - 13.0%            | 4.0 - 5.0%           | ~35%                | 1.0 - 1.8 mL / 100g | Distinct fruit and spice characteristics with pleasant lemon, grapefruit, pear and berry flavours 宜人的柠檬,柚子,梨和浆果口味独特 的水果和香料的特性               | Citrus 柑橘<br>Fruity 果味<br>Spicy 芳香                 | England 英国   | Ale 艾尔                | UK Target<br>UK Challenger                                 | Aroma & Bittering<br>香气和苦味 |
| UK Pioneer              | 8.0 - 10.5%            | 3.5 - 4.0%           | ~36%                | 0.8 - 1.8 mL / 100g | Distinctly hoppy with pleasant citrus (lemon and grapefruit) tones and hints of herbal, cedar flavours 明显的啤酒花宜人的柑橘(柠檬和葡萄 柚),草药,雪松的味道提示      | Cedar 雪松<br>Citrus 柑橘<br>Herbal 草本                 | England 英国   | Ale 艾尔                | UK East Kent Golding                                       | Aroma & Bittering<br>香气和苦味 |
| UK Progress             | 6.0 - 7.5%             | 2.0 - 3.3%           | ~33%                | 0.8 - 1.0 mL / 100g | Moderately strong spicy, grassy, floral, mint, earth and honey tones 适度强烈的香料,草香,花香,薄荷,土蜂蜜   | Grassy 草地<br>Spicy 芳香<br>Tobacco / Earthy 烟草 / 泥土  | England 英国   | Ale 艾尔                | Juggle<br>UK East Kent Golding                             | Aroma 香气                   |
| UK Sovereign            | 4.5 - 6.5%             | 2.1 - 3.1%           | 26 - 30%            | 0.6 - 1.0 mL / 100g | Pleasant but intense fruity flavours with mild floral, grassy, herbal and mint characteristics 强烈的果香与花香温和,草香,草药和薄荷特点                        | Floral 花似<br>Grassy 草地<br>Herbal 草本                | England 英国   | Pale Ale 淡色艾尔         |  | Aroma 香气                   |
| UK Target               | 8.5 - 13.5%            | 4.0 - 5.7%           | ~37%                | 1.2 - 1.8 mL / 100g | An intense English hop aroma with distinct spicy, floral, sage and citrus characteristics  一种强烈的英式啤酒花的香气具有独特的香料香气,花香,鼠尾草和柑橘特点               | Floral 花似<br>Pine 松树<br>Spicy 芳香                   | England 英国   | Ale 艾尔                | Fuggle<br>Willamette                                       | Bittering 苦味               |
| UK WGV                  | 5.0 - 7.5%             | 2.5 - 3.5%           | ~37%                | 0.8 - 1.2 mL / 100g | Fresh earthy, botanical and floral flavours<br>新鲜的泥土,植物和花卉的味道   | Floral 花似<br>Herbal 草本<br>Tobacco / Earthy 烟草 / 泥土 | England 英国   | Pale Ale 淡色艾尔         | UK East Kent Golding<br>UK Progress                        | Aroma 香气                   |
| Ultra                   | 2.0 - 3.5%             | 3.0 - 4.5%           | 23 - 38%            | 1.3 - 1.5 mL / 100g | Mild and pleasant with spicy, floral tones<br>温和宜人香料,花香   | Floral 花似<br>Spicy 芳香                              | USA 美国       | Lager 拉咯              | Hallertau  | Aroma 香气                   |
| Vanguard                | 5.0 - 6.0%             | 5.0 - 7.0%           | 14 - 16%            | 0.8 - 1.2 mL / 100g | Herbal and floral tones<br>草药和花   | Floral 花似<br>Herbal 草本                             | USA 美国       | Belgian Ale 比利时<br>艾尔 | Hallertau<br>Liberty<br>Mt. Hood<br>German Hersbruker      | Aroma 香气                   |
| Warrior®                | 15.0 - 17.0%           | 4.5 - 5.5%           | 24 - 26%            | 1.0 - 2.0 mL / 100g | Mild and resinous with subtle citrus, pine and herbal characteristics 轻度和树脂与微妙的柑橘,松树和草药的特性  | Citrus 柑橘<br>Herbal 草本<br>Pine 松树                  | USA 美国       | IPA                   | Columbus<br>Magnum<br>Nugget                               | Bittering 苦味               |
| Willamette              | 4.0 - 6.0%             | 3.0 - 4.5%           | 30 - 35%            | 1.0 - 1.5 mL / 100g | Mild and pleasant, with slightly spicy<br>and floral tones<br>温和宜人略有香料和花香   | Floral 花似<br>Spicy 芳香                              | USA 美国       | English Ale 英式艾<br>尔  | Fuggle<br>Glacier<br>Tettnang<br>Styrian Savinjski Golding | Aroma 香气                   |
| Zythos™                 | 10.0 - 12.5%           | 4.7 - 6.2%           | 28 -31%             | 0.7 - 1.2 mL / 100g | Superior aromatic qualities, imparting distinct tangerine, citrus, floral, pine and grapefruit tones 高级芳香特质,赋予不同的橘子,柑橘,花卉,松树和柚子的味道          | Citrus 柑橘<br>Floral 花似<br>Pine 松树                  | USA 美国       | IPA                   | Amarillo<br>Cascade  | Aroma & Bittering<br>香气和苦味 |