

# Mandarina Bavaria

Mandarina Bavaria is one of the special flavor varieties developed as part of the flavor hop breeding program at the Hop Research Center in Hüll. This variety was bred specifically in response to the demand for flavor hops by the craft brewing industry. The American variety Cascade was specially crossed with breeding lines from Hüll to create Mandarina Bavaria. Since 2012, Mandarina Bavaria has increased the range of fine aromas available to brewers who are committed to tradition, yet are open to innovation, as well as to craft brewers who are keen to experiment with an expanded palette of aromas and flavors. These extraordinary aromas are inspiring in every form: from the smell of the fresh hops through to their usage in the brewing process and down to their

unmistakable impression in the finished beer. Fruity, citrus and also floral aroma impressions unfold in late additions of this variety, either in the whirlpool or through dry hopping on the cold side. As the name suggests, this variety exhibits an especially intense tangerine note.



Mother

Cascade

Father

2004/026/134

## Mandarina Bavaria

## Analytical Values

### Bitter Substances

$\alpha$ -acid [EBC 7.4]	8.1 % w/w
$\beta$ -acid [EBC 7.7]	6.5 % w/w
$\beta/\alpha$ [EBC 7.7]	0.8
Co-Humulone [EBC 7.7]	30 % rel.

### Aroma Substances

Total Oil [EBC 7.10]	1.20 ml/100 g
Myrcene [GC-FID]	365 mg/100 g
$\beta$ -Caryophyllene [GC-FID]	31 mg/100 g
Farnesen [GC-FID]	16 mg/100 g
$\alpha$ -Humulene [GC-FID]	101 mg/100 g
$\Sigma$ Hydrocarbon fraction [GC-FID]	699 mg/100 g
Linalool [GC-FID]	5 mg/100 g
Geraniol [GC-FID]	8 mg/100 g
Geranyl acetate [GC-FID]	0 mg/100 g
2-methylbutyl 2-methylpropanoate [GC-FID]	34 mg/100 g
$\Sigma$ Oxygen fraction [GC-FID]	129 mg/100 g
$\Sigma$ Monoterpene alcohols and esters [GC-FID]	17 mg/100 g
$\Sigma$ Propanoate [GC-FID]	45 mg/100 g
$\Sigma$ unsaturated esters [GC-FID]	14 mg/100 g
$\Sigma$ Esters [GC-FID]	69 mg/100 g
$\Sigma$ Sesquiterpene alcohols [GC-FID]	26 mg/100 g
$\Sigma$ Ketone [GC-FID]	16 mg/100 g
$\Sigma$ Hydrocarbon fraction + Oxygen fraction [GC-FID]	828 mg/100 g

### Polyphenols

Polyphenols [EBC 7.14]	4.0 % w/w
$\Sigma$ Low-molecular polyphenols [EBC 7.7]	7532 mg/l
Xanthohumol [EBC 7.7]	0.59 % w/w

# Mandarina Bavaria



## Usage in Brewing

### Often Used

	rarely	medium	frequently
Boil – Beginning		██████████	
Boil – Midpoint		██████████	
Boil – End & Whirlpool			██████████
Dry Hopping			██████████

### Recommended Beer Styles

	rarely	medium	frequently
Lager		██████████	
Ale			██████████
Heavily dry-hopped beers			██████████
Dark Beer		██████████	
Wheat Beer		██████████	
Belgian Origin Styles		██████████	

### Agronomic Aspects

Climate Tolerance		low	medium	high	
Plant Health	low	medium	good	very good	
Maturity	early	medium early	medium	medium late	late
Storage Stability		low	medium	high	