



What's that smell – is that Brett?

With frequent winemaker inquiries about Brett, it is timely to look at this important subject in detail. This is the first in a two-part series on Brettanomyces.

THERE HAVE BEEN a number of queries lately to the AWRI regarding Brettanomyces, or 'Brett', in wine particularly the perception of Brett in different wine styles and at levels close to the sensory threshold. Here are some of those questions.

4EP, or the Band-aid aroma, is the main contributor and is considered the general 'marker' for Brett. Wine with Brett presents with more than just a Band-aid aroma, however, with 4-EG adding smoky and spicy notes, and 4-EC adding savoury, sweaty/cheesy and barnyard/animal nuances. The palate can also be affected; with diminished fruit flavour intensity and a drying and metallic aftertaste.

In a French Cabernet, Chatonnet and colleagues (1992) reported that the sensory perception threshold for 4EP was 605mg/L. In AWRI studies we found a lower threshold of 368mg/L for Australian style Cabernets.

Work on Brett at the AWRI has shown that the threshold of 4EP depends very much on the style and structure of the wine, with the intensity of other wine components able to mask Brett character. For example, the 4EP threshold in a 'green style' Cabernet wine, and in a heavily oaked Cabernet wine, increased to 425 and 569µg/L respectively.

Also remember that as a wine ages, primary fruit flavours reduce; this can also start to reveal more strongly any Brett characters that might have been hiding away.

Why does Brett smell different in different wines?

Brett compounds are usually always present together, albeit in different amounts or ratios to each other. These amounts have been shown to be proportional, or based on the different levels of their hydroxycinnamic acid precursor compounds present naturally in different grape varieties. Some typical ratios in varieties, and likely sensory effects compared to 4-EP alone, are shown in Table 1 (page 54).

Thus while a Brett Shiraz might smell like pure Band-aid, Brett Pinots will possibly smell more animal, barnyard and spicier, perhaps akin and often confused with savoury characters of Pinot Noir varietal and heavily toasted or spicy oak flavours.

Are we becoming better at detecting Brett or am I just super sensitive?

Brett has become the new TCA in terms of tasters wanting to show-off their Brett detection prowess. As discussed above, Brett wines usually contain both 4-EP and 4-EG. When present together there is an enhanced effect, and a lowering of the threshold. This was reported by Chatonnet and colleagues in 1992. Originally reporting the 4-EP threshold alone as 605µg/L, this reduced down to 369µg/L when present with 37µg/L of 4-EG (9:1 ratio). AWRI studies have shown the 4-EP threshold alone, as 368µg/L. Sensory studies at the AWRI have shown that when combined with 4-EG the threshold is much lower than this. So if you are smelling Brett in wines and having them



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Table 1. What does Brett smell like?

	Brett compounds		
Sensory descriptor	4-ethylphenol (4-EP)	4-ethylguaicol (4-EG)	4-ethylcatechol (4-EC)
Aroma	Band-aid® medicinal	Clove, spicy, smoky	Horsey, cheesy, smoky bacon
Palate	Metallic, phenolic, excessively drying		

analysed at levels <200µg/L then you might not be supersensitive, it might be just the real threshold for the combined Brett compounds in that wine style.

In addition, as with many aroma compounds, there is a learning effect and with repeated exposure to the aroma of Brett, it will be noted more easily.

In consumer testing, levels of 4-EP of 600µg/L with 4-EG of 200µg/L were sufficient to strongly reduce consumer preference, even though consumers would not have been able to describe the flavour and in fact only 4% of consumers had heard of Brett.

Misdiagnoses of Brett

Often the AWRI problem-solving team receives wine samples suspected of being

overtly Brett; yet a quick smell, and analysis if needed, reveals the wine to be Brett-free. More and more, Brett is labelled as the culprit for other wine faults – the most common being responsible for dirty sulfidic characters (sewerage, sweaty, rotting onions); sometimes low levels of oxidation that reduces fruit intensity and adds a savoury note; and sometimes for smoke-affected wine. Often this is also because Brett sensory knowledge is often passed down from one taster to another. If someone shows you a sulfidic wine and says it's Brett then that becomes your benchmark. It is important to know what 4-EP and 4-EG smell like for your own sensory memory bank. Wine aroma kits are available for purchase, or come along to one of AWRI's tastings. **CW**

Table 2. What is the sensory detection threshold for Brett compounds?

	Aroma threshold (µg/L) ¹		
	4-EP	4-EG	4-EC
French Bordeaux Cabernet Sauvignon ²	605	110	
Australian Cabernet Sauvignon ³	368	158	774
Australian green Cabernet Sauvignon	425	209	1131
Australian oak Cabernet Sauvignon	569	373	1528

1. ASTM three-alternative forced choice method, ascending concentration series. 2. Chatonnet *et al.* 1992. 3. Bramley *et al.* 2007

Variety	4-EP:4-EG ratio	Likely Brett sensory effect
Pinot Noir	3:1	More leather and barnyard, spicy
Cabernet Sauvignon, Nebbiolo	9:1	Similar to 4-EP alone, but with a pungent spice
Shiraz	23:1	Similar to 4-EP alone, pure Band-aid

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