SUPPLEMENTARY DATA

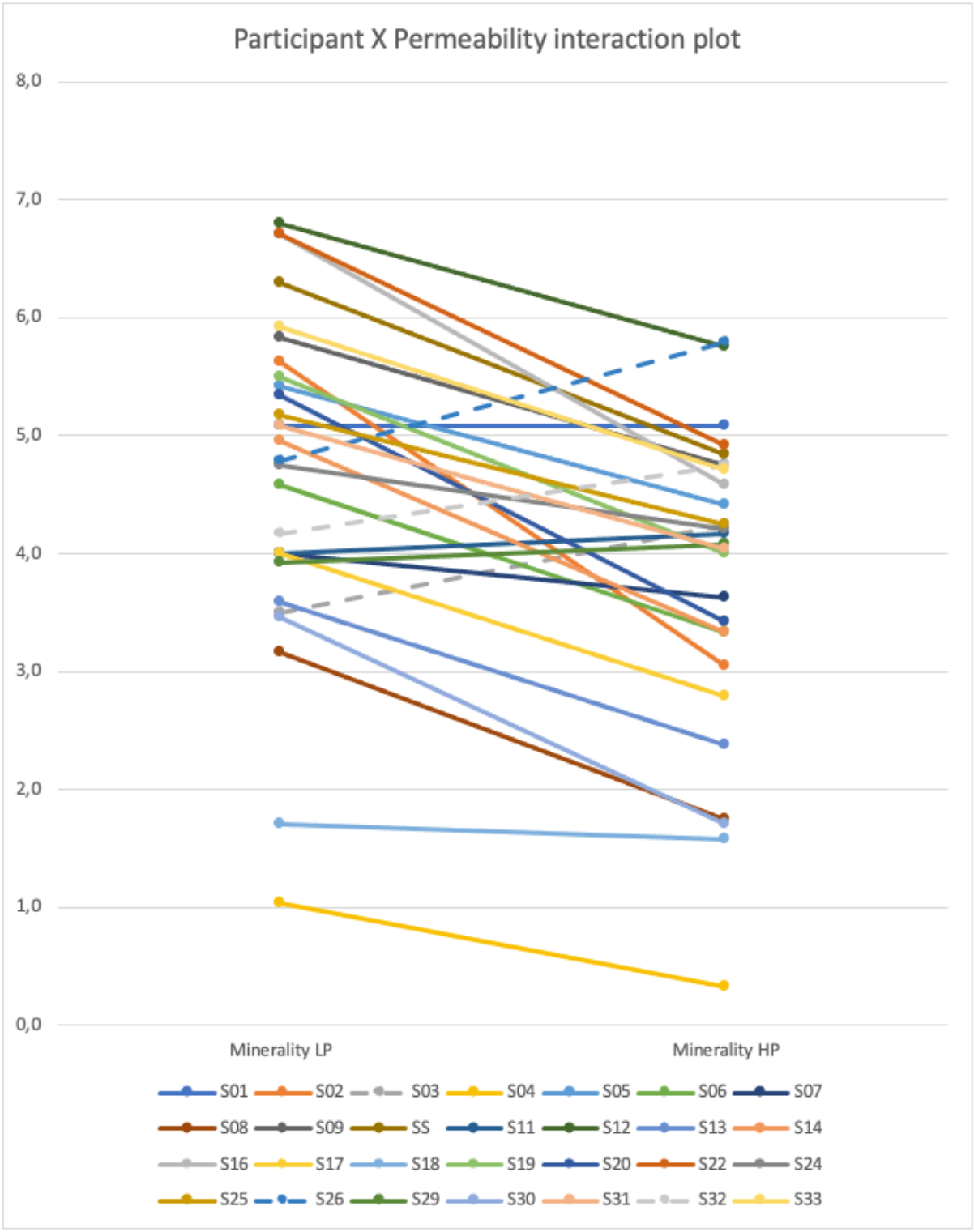


Figure S1. Plot of the Participant X Permeability interaction. The three participants that contributed the most to the interaction (3, 26, and 32) are marked with dotted lines.

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Nazaryan, S., Pons, A., Loisel, C., Galy, N., Tixador, D., & Ballester, J. (2026). Impact of closure permeability on the perception of minerality in white wines of different ages. *OENO One, 60*(4).
https://doi.org/10.20870/oeno-one.2026.60.4.10036

Table S1. Cleaned vocabulary obtained from experts' free description of the samples (cumulated DG and TG) and their categorization. Categories marked with an (*) reached citations above the noise level (15 % for at least one sample).

Acidity *	**Toasted/smoky ***	**Oxydation ***	**Sweet**	**Defect**	**Musty/dust**
tension	coffee	oxidized	sweet	not clean	musty
acidity	torrefied	oxidation		volatile	dusty
sharp	smoky	wax	**Vegetal**	solvent-like	
biting	toasted	encaustic	vegetal	phenolic defect	**Under-ripe**
tight	roasted	honey	stem	acetic	lack of ripeness
vivacity		wallnut	canned corn		low ripeness
tart	**Floral ***	ethanal		**Subtle**	
	floral	tired	**Powerful**	fairly neutral	**Uncategorised**
Citrus*	white flowers		powerful	subtle nose	dynamic
citrus	terpenes	**Reduction ***	richness	not very aromatic	energy
lemon	muscat-like	hint of reduction		restrained nose	ink
zest		reductive character	**Fermentative**	unremarkable nose	less tannic
lime	**Fresh ***	reducing	fermentative	neutral	light
	fresh			reserved	sulfites
Alcohol*		**Roundness ***	**Balanced**		low minerality
alcohol	**Fruity ***	round	balanced	**Short**	straight
warm	fruity	volume		shorter finish	depht
burning	freshfruit	broad	**Less acidic**	less length	crystalline
ethanol	whitefruit	supple	less tart		austere
	yellowfruits	viscous	less taut	**Heavy**	minty
Bitter*	peach	viscosity	lack of tension	lack of finesse	less aerial
bitterness	plum	enveloping	lack of acidity	heaviness	pretty
	amylic	chewy			tracing
Oakageing*	exoticfruit	oily	**Mushroom**	**Long**	healthy
wood		full-bodied	mushroom	lingering	pure
vanilla	**Ripe/cookedfruit***	velvety	earthy	persistent	precise
oaky	ripe	syrupy texture		length	sappy
hazelnut	overripeness	coating	**buttery**	persistence	ointment
coconut	dried fruit	density	buttery		solar
	ripe fruitiness	spherical	lactic	**Expressive**	strict
Flinty *	ripe white fruits			open	vinous
stone	prune	**Salinity/salivation ***	**Watery**	very aromatic	chiselled
chalk	candied fruit	salinity	low volume		hard
limestone	candy-like	salty	light	**Dryness/astringence**	complex
pencil lead	fruit paste	magnesium-like	watery	dryness	fluid
pebbles		mineral salt	hollow	coarse	irony
dry stone	**mineral ***	saline	flat	drying	petrol
damp chalk	seashore	flaky sea salt	little structure	astringent	spicy
graphite	mineral	salivating	lack of body	tannic	
flint	iodine	mouth-watering	lacks depth	dry	
gunpowder	oyster shells	seashore		grip	
matchstick-like					

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Table S2. Results of the chemical analyses on volatile sulphur compounds and enological parameters with standard deviations when appropriate. (nd = not detected). For volatile sulphure compounds, n = 2; for enological parameters, n = 1.

Sample	Detection threshold	GB09HP	GB09LP	CH11HP	CH11LP	CH13HP	CH13LP	GB15HP	GB15LP	GG18HP	GG18LP	F20HP	F20LP
2-SAE (ng/L)	200	192.9 ± 9.6	227.9 ± 11.4	189.3 ± 9.4	165.4 ± 8.3	51.5 ± 2.6	420.0 ± 21.0	61.9 ± 3.1	206.2 ± 10.3	69.3 ± 3.5	564.3 ± 28.2	61.7 ± 3.1	292 ± 14.6
3-SH (ng/L)	60	40.0 ± 1.6	71.7 ± 2.9	345.6 ± 13.8	273.5 ± 10.9	181.6 ± 7.3	718.0 ± 28.7	109.8 ± 4.4	287.9 ± 11.5	30.7 ± 1.3	496.1 ± 19.8	29.0 ± 1.2	152.2 ± 6.1
3-SHA (ng/L)	4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
4-MSP (ng/L)	0.8	nd	0.6 ± 0.05	1 ± 0.1	0.7 ± 0.05	0.4 ± 0.04	0.7 ± 0.04	nd	0.7 ± 0.04	nd	0.7 ± 0.04	nd	nd
3-SHEPT (ng/L)	35	nd	nd	5.6 ± 0.5	4.6 ± 0.4	2.2 ± 0.2	8.4 ± 0.7	nd	3.4 ± 0.3	nd	2.3 ± 0.2	nd	nd
2-MPE (ng/L)	500	15.3 ± 0.6	23.2 ± 0.9	56.3 ± 2.3	45 ± 2	13.7 ± 0.6	68 ± 2.7	14.3 ± 0.6	27.8 ± 1.2	11.7 ± 0.5	261 ± 10.5	6.7 ± 0.3	15.7 ± 0.7
3-MPE (ng/L)	200	328.8 ± 9.8	868.3 ± 26.1	924.7 ± 27.7	792.1 ± 23.7	319.2 ± 9.6	1303.6 ± 39.1	73.3 ± 2.2	761.2 ± 22.8	206.2 ± 6.2	1352.9 ± 40.6	122.9 ± 3.7	592.1 ± 17.7
FFT (ng/L)	0.4	8.2 ± 0.6	17.2 ± 1.2	7.5 ± 0.5	5.3 ± 0.4	nd	6.1 ± 0.4	nd	5 ± 0.4	nd	11.6 ± 0.8	nd	nd
5M-FFT (ng/L)	0.8	1.6 ± 0.2	2.1 ± 0.2	3.4 ± 0.3	3.1 ± 0.3	0.9 ± 0.05	2.4 ± 0.2	1.1 ± 0.1	3.1 ± 0.3	2.3 ± 0.2	2.7 ± 0.3	0.8 ± 0.1	1.7 ± 0.2
BM (ng/L)	0.3	nd	nd	2.5 ± 0.1	3.9 ± 0.2	nd	2.7 ± 0.2	2.2 ± 0.2	4.5 ± 0.3	2.1 ± 0.1	2.5 ± 0.1	nd	2.7 ± 0.2
DMS (µg/L)	27	10.8 ± 1.1	12.1 ± 1.0	11.2 ± 1.1	10.1 ± 1.0	11.0 ± 1.0	12.6 ± 1.3	7.5 ± 0.7	7.8 ± 0.7	8.2 ± 0.8	11.4 ± 1.1	8.7 ± 0.9	8.3 ± 0.8
H_2S (µg/L)	1.1-1.6	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
CS_2 (µg/L)	> 38	nd	nd	nd	nd	2.1 ± 0.2	2.1 ± 0.2	nd	nd	nd	nd	1.4 ± 0.2	1.1 ± 0.2
TAV (% vol.)	-	14.47	14.5	12.89	12.84	13.23	13.21	13.51	13.52	13.28	13.3	14.13	14.12
Glu/Fru (g/L)	-	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.66	1.83
pH	-	3.5	3.5	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.2	3.2
Malic acid (g/L)	-	1.46	1.47	1.71	1.64	2.44	2.42	1.59	1.69	1.44	1.43	2.43	2.44
TPI (mg/L)	-	4	6	11	10	10	10	6	6	8	8	8	6
TA (g/L H_2SO_4)	-	3.3	3.31	3.62	3.59	3.93	3.91	3.9	3.89	3.82	3.83	4.26	4.26
VA (g/l)	-	0.47	0.47	0.35	0.37	0.28	0.27	0.4	0.39	0.24	0.23	0.32	0.32
total SO_2 (mg/L)	-	72	74	123	119	67	81	97	102	70	89	47	55
free SO_2 (mg/L)	-	3	3	13	11	5	10	5	6	0	7	2	3