

EDUCATION MOMENTS

by Dr. Jeff

PART I. THE LIFE OF WINE

Chapter 2: Aeration of Wine: Decanters, Devices, and Time.



Dr. Jeff and his decanter

We have all heard the Sommelier decree, after pulling a cork, “be patient, this wine needs to breath”. In Chapter 1 we learned wine starts out in a chemically reduced state and that reduced wine tastes bad. Closed, harsh, metallic and chemically, summarized by Mike Scott as “blech”. Ageing wine in barrel and bottle allows slow exposure to tiny amounts

of oxygen, so that the wine slowly changes from a reduced state to partially oxidized. This “maturation” process develops bouquet, opens up fruit flavors and softens acids and tannins, among other things, so the wine is pleasant to drink. Being impatient (and thirsty) people though, we often pull the cork before ideal maturation occurs. *Not to worry!* We can improve our wine maturity by some (but not too much) additional aeration.

How much effect aeration gives depends upon 3 factors: 1) Time. Longer “breathing” gives greater effect. 2) Surface to Volume ratio (S/V ratio), determined by the area of the air/wine interface and the volume of wine. 3) Motion in the wine, such as swirling, which continually brings new wine to the surface where it encounters air.

So the Sommelier pulls the cork. Will the wine breath much? The S/V ratio will tell us. The bottles neck is 2 cm. across. So the exposed wine surface area is: $\pi \times r^2$ ($3.14 \times 1 \times 1 = 3.14$ sq. cm.). Dividing by the amount of wine (750 ml), gives a S/V ratio of $3.14/750 = \mathbf{0.004}$. A small S/V ratio gives little breathing.

But pour 2 oz (or 120 ml.) off into a glass bringing the level of wine in the bottle to just below the “shoulder”. The bottle is 8 cm. across so the area exposed is now $3.14 \times 4 \times 4 = 50.24$ sq. cm. giving S/V ratio $50.24/630 = \mathbf{0.079}$.

The S/V ratio increases 20 times, so breathing is 20 times faster. Thus what an hour of breathing does in the “poured down” bottle would take 20 hours to occur in the full bottle.

Pouring the entire 750 ml of wine into a large bottom decanter will provide a S/V of **0.654**. So the speed of breathing is 164 times faster than just pulling the cork and 8.25 times faster than the poured down bottle.

When pouring wine into a glass (Ridel Vinum) be aware; a 2 oz pour has a S/V of **0.335**, but a 6 oz pour only has a S/V of **0.161**. Knowing this can be helpful in restaurants. On wine lists young wine is the rule, and for best taste some breathing is needed. Small pours of ~ 2 Oz have a high S/V ratio.

Now stir or swirl the wine. This motion brings new wine to the surface where air exposure occurs, further accelerating the breathing .

OK, what about aeration devices such as Venturi? They create bubbles and droplets. Because of their surface area, huge S/V ratios occur and produce dramatic effects. Caution can avoid over-aeration with loss of fruit and balance. They are for young wines needing lots of air, not the more mature.

In summary, how do we judge the amount of aeration needed? Two criteria help: 1) The presence of sediment suggests maturity, so less need of aeration. 2) Taste the wine prior to aeration (and at first a few times as it progresses). A wine seeming closed, with harsh acids and tannin, and poor balance calls for more air.

At the March tasting the same wine was presented side by side, one glass unaerated and one decanted for about a half hour. Doing this at home a few times will quickly give you the experience needed to aerate confidently.



Vinturi Wine Aerator: Wine flows through the funnel, with air injection through small feed tubes - just above the black bottom - creating lots of small bubbles in the wine.