



REPOUR AND OXYGEN ABSORPTION:

The Science of Wine Preservation

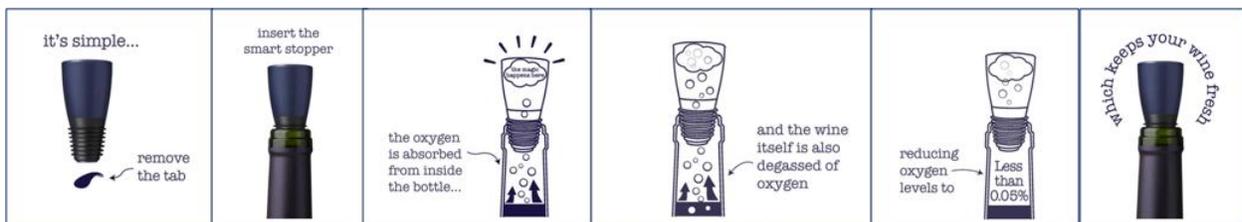
By Tom Lutz, Ph.D.

Since starting our Kickstarter Campaign and putting this product in front of the public for the first time, I've received amazing interest and support, along with some very specific scientific questions. To address the latter, I would like to share more about the science (and test results) behind our new invention. What I have learned during my scientific exploration comes from our last two years of development, which of course I need to protect. However, there is a lot that I can share openly and am happy to do so. I'll attempt to clear up some of the science here, but welcome any feedback or deeper conversation as desired. Please feel free to reach out to me directly (tom@repour.com) and I'll gladly answer any questions.

We all have witnessed oxygen-absorption in our daily lives, probably without ever noticing it. When we go to the grocery store and purchase "fresh" food, much of it uses the same type of oxygen-absorbing technology that we use in Repour. This is all FDA-approved and non-toxic, of course.

The Research Behind Repour:

For our own research and development into oxygen absorption for the preservation of wine, we tested a multitude of different chemistries and found unique characteristics amongst them, some working well some not so well. It turns out (and this is the magic we won't disclose) that there are certain hallmarks and characteristics that make some chemistries better than others. Here is how Repour works:



I'm a scientist, so I'm all about the data and the facts. With that in mind, we implemented initial analytical testing of Repour with a modified Vernier Oxygen sensor and a Vernier Air Pressure sensor to provide semi-analytical measurements. After Repour passed this initial testing with success, we then engaged Luther College and Dr. Jack Hedstrom, who conducted robust external 3rd party analytical testing. Dr. Hedstrom's lab results validated our product claims.

Oxygen Levels < 0.05%

Our final bit of research utilized "in situ" testing with market ready non-invasive sensors. We've utilized a variety of sensors based on "titration" type chemistry that provides a definitive "yes/no" result to oxygen levels above and below 0.05% in the headspace air above wine. This is critical and the most valid test we've conducted to date because it is 100% non-invasive. That is, we can stop a wine bottle with a Repour Smart Stopper, with NO modifications for sensor entry and no septums, etc. to extract air samples which would be used in gas chromatography and other analytical measurements. All of these types of modifications introduce error and leak issues, which are void in this setup.



We adopted the transition chemistry analysis method (from pink – to – purple) for low oxygen levels because it is utilized in a variety of products and is well vetted in the food and oxygen absorber industry. We've used a few different sensors that all work under the same chemistry/analysis. We've conducted hundreds of experiments using this transition chemistry technology to successfully validate our claim that Repour reduces oxygen levels to below 0.05% in the headspace above the wine itself.

Could oxygen levels in the headspace above the wine be even lower than 0.05%?

Absolutely, and they probably are, however we only publish what we stand behind and can prove and to date; that oxygen levels are below 0.05% is the best we claim at the moment. We're extending the testing into high level, high sensitivity experiments and for both concentrations of Oxygen Levels in the Air as well as dissolved oxygen within the wine itself.

What About Dissolved Oxygen Levels?

We have just received final validation from Dr. Hedstrom's lab at Luther College: Repour keeps dissolved oxygen levels in the wine itself to *below 0.03 ppm!*

External Validations by Wine Experts, Enthusiasts, and Certified Sommeliers:

We believe science and analytical testing only carries us so far, which is why we've engaged Certified Sommeliers to conduct in-depth evaluation of our product. We also conducted blind tastings with Sommeliers using standard Sommelier blind sampling protocols.



Additionally, we have handed out hundreds of prototypes to vineyard owners, wine distributors, specialty wine shop owners, restaurateur's and wine enthusiasts in order to validate our internal testing (both analytical and real sampling on wine saved for weeks and months). I am happy to report all have found Repour to be effective, easy to use, and very affordable on a per bottle basis. Jeff Quint, Owner of Cedar Ridge Vineyards, tested Repour and found the following:



"Here at Cedar Ridge our restaurant closes every Sunday and we don't re-open until Wednesday. In the past that meant every Sunday we had to pour out hundreds of dollars of wine. Now, with the Repour™ Wine Saver, we simply replace the corks with the stopper when we leave here on Sunday. When we come back on Wednesday the wines are as fresh as they were when we opened them."
– Jeff Quint, Owner, Cedar Ridge Winery

Dr. Steven Greif, who was the first Certified Sommelier to evaluate Repour, is one of only eight Certified Sommeliers registered in Iowa having passed his Introductory Sommelier Exam in Dallas in 2013 and his Certified Sommelier Exam in Denver in 2014. He has currently taken the Advanced Sommelier Course given through the Court of Master Sommeliers in preparation for taking the Advanced Sommelier exam, hopefully within the next two years. He currently works with the Cedar Rapids Country Club as the Wine Director where he manages the wine program, wine lists, and assists in wine related training for the staff. He also gives regular wine education and tasting classes at CRCC on a range of wine topics- wine regions, grape varietals etc. After extensive evaluation of Repour, Dr. Greif writes:



"In my use of the Repour wine preservation system, I have been impressed with how well it preserves wines of all types. I have tested it with various white, red and even sparkling wines with amazing results. It is my belief that Repour's ability to remove excess oxygen, not just out of the head space in an opened wine bottle but also directly out of the wine itself is what makes it such an effective way to preserve opened wines. Repour works better than any other wine preservation system I have used and considering its ease of use and low cost, should be a part of any wine professional's wine program or present in every wine connoisseur's home." – Dr. Steven Greif, Certified Sommelier

Simple Instructions for Using Repour

When I was designing Repour, I understood that the complexity, gadgetry, and additional “items” associated with solutions on the market today all get in the way of consumers being able to save their wine easily, effectively, and affordably. My goal was to make Repour extremely simple and easy to use, which is why I landed on a one-piece disposable design. There are four simple and important tips for using Repour effectively:

1. Repour works so well, the wine may need to "open up" again when you return to pour another glass.
2. To ensure its effectiveness, a new stopper must be used with each newly opened bottle. (Repour is designed with the oxygen-removal capacity to save one full bottle of wine, consumed glass by glass).
3. Keep Repour in the bottle when not pouring wine. Extended exposure to air outside of the bottle will lessen its ability to preserve wine.
4. Do not store a wine bottle stopped with Repour on its side.

In summary, I want you to be blown away by your experience with Repour. As a scientist, I'm always a skeptic until I'm convinced something works, and I hope you are too. I'd love your support and hope I've explained our approach and the state of our scientific testing. By reading this, we hope you know just a little more about how this project has come to be, why we are so convinced of its effectiveness, and that you will give Repour a try.

Once you've tried it, we would love to hear from you and we hope you'll share the benefits of saving wine with Repour with other wine enthusiasts!

Happy Sampling and Warmest Regards,

