

Silica Gel Desiccant Regeneration

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Objective

To regenerate saturated or less effective silica gel desiccant through a thermal process to revert the desiccant as close to its original state as possible.

Background

Silica gel desiccant is a form of highly porous silica able to absorb almost 40% of its weight in moisture. Once its capacity has been reached it is necessary to regenerate the desiccant. It is recommended to have your non-colored or clear desiccant mixed with either blue or yellow indicator (depending on application) to determine when it is saturated with moisture. Upon regeneration, the desiccant can be returned to its original state. Once saturated, blue desiccant will turn purple then pink, and yellow will turn blue/green or clear.



Procedure

Equipment

- An oven capable of reaching 150°C (~300°F)
- Baking tray or pan (to increase surface area exposed)

Method

- 1) Take spent desiccant and spread an even layer across the baking tray or pan.
- 2) Place tray or pan in the oven and set the oven to 150°C, ~300°F, temperatures greater than 162°C (325°F) can damage the material.
- 3) Leave in the oven at this temperature until color reverts to normal, approximately 1-2hrs. In most cases, 2 hours is suggested. *It is recommended to periodically shake the tray or pan to allow all surfaces to interact with the oven air.
- 4) Turn off the oven and allow the desiccant to cool to room temperature.
- 5) Use immediately or store in a tightly sealed container.
- 6) Depending on storage conditions, desiccant can have a long shelf life prior to use.

Important to Note

- It is recommended to follow this heating procedure prior to use to ensure the best performance of the desiccant.
- This is not an indefinite procedure as over time the pores will collapse ~100 runs.
- Use this procedure as needed, or, until the desiccant no longer performs optimally.