



One of the BEST ways to transfer an air-sensitive reagent from one flask to another is by using a cannula (double-tipped needle). Here is a general protocol for doing so:

- First, be sure that both the flask being transferred from and the flask being transferred to are completely under an inert atmosphere.
- The key is to always be aware of where and how N<sub>2</sub> is flowing through the system.
- First, place the FROM flask under a positive flow of N<sub>2</sub> by connecting it to the nitrogen line with the N<sub>2</sub> gas flowing.
- Then place one end of the cannula into the FROM flask through the rubber septum, but don't put the cannula in so far that it is in contact with the reagent. Wait a moment while N<sub>2</sub> gas flows through the cannula, purging it of any oxygenated air.
- Next, insert the other end of the cannula through the rubber septum of the TO flask (which should also already be under a positive flow of N<sub>2</sub> gas), but don't push it in so far that it touches the reagents.
- Now, insert a second needle into the rubber septum of the TO flask. This needle will be used to relieve the pressure as reagent(s) in the FROM flask are forced into the TO flask by the flow of N<sub>2</sub> gas. The bubbler should still be bubbling even though this pressure relief needle is in the TO flask, if it isn't bubbling then turn up the N<sub>2</sub> flow.
- Now close the connection between the TO flask and the N<sub>2</sub> line (don't turn it all the way to vacuum though!). At this point both flasks are under positive flow of N<sub>2</sub>, only the nitrogen is flowing from the N<sub>2</sub> line, into the FROM flask, through the cannula, into the TO flask, and out the pressure relief needle (just as the arrows show in the diagram).
- Push the cannula down into the reagents of the FROM flask and use your finger (or a rubber septum) to partially cover the outlet of the bubbler. The pressure of the N<sub>2</sub> gas will push the reagent in the FROM flask through the cannula and into the TO flask. If the reagent isn't transferring, turn up the flow of N<sub>2</sub>.
- Once all the reagent is transferred disassemble the system in the following order (1) remove your finger or septum from the bubbler outlet, (2) open the flow of N<sub>2</sub> to the TO flask, (3) remove the pressure relief needle, (4) remove the cannula from the TO flask, (5) disassemble everything from the FROM flask.