



## Degassing Perfluorocarbons

Perfluorocarbon liquids are well-known for their ability to dissolve gases, and this can be useful in many applications. However, it is sometimes desirable to remove the dissolved gas. There are three ways to "degas" a perfluorocarbon liquid.

The first is by boiling. At the boiling point, gas solubility is zero, so vigorously boiling the liquid for five minutes will ensure no gas is present. It will then be necessary to seal the container to prevent air from re-dissolving as the liquid is cooled. Care must be taken at this point; it is important to remove the source of heat first, then to seal the container as fast as possible. Sealing the container while heat is still being applied could result in the container becoming pressurised and possibly exploding.

The second method is to apply vacuum. This effectively reduces the boiling point, which removes the gas as before. Vacuum should be applied slowly, otherwise the perfluorocarbon will be vaporised and lost. Apply vacuum until some bubbling is observed. If a pressure gauge is available, try to keep the system at this pressure. After a few minutes the bubbles should subside, and soon after reappear, but now somewhat smaller; this is the perfluorocarbon boiling away, and an indication to stop. It is also worth noting the level in the vessel to see if the quantity of perfluorocarbon is reducing (stop if it is).

The third method is not strictly degassing, but in many applications it is sufficient to keep certain gases excluded. This can be done by bubbling another gas through the liquid to displace the undesired gas. For example, to exclude oxygen, you could use nitrogen. Allow at least 20 minutes; the actual time required will depend on the gas flow, quantities and the shape of the equipment, and it is really up to the user to determine. Once the new gas has completely displaced the undesired gas, keep the perfluorocarbon under an atmosphere of the new gas to keep it in that state.

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