

Periodic Graphics

A collaboration between C&EN and
Andy Brunning, author of the popular
graphics blog **Compound Interest**

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To see more of
Brunning's work, go to
compoundchem.com.
To see all of C&EN's
Periodic Graphics,
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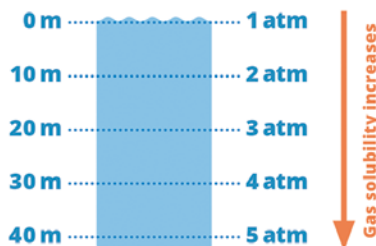
GASES FOR SCUBA DIVING

To breathe underwater, divers need an air supply. But this air doesn't always have the same composition as what we breathe above water. Here, we look at the reasons why.



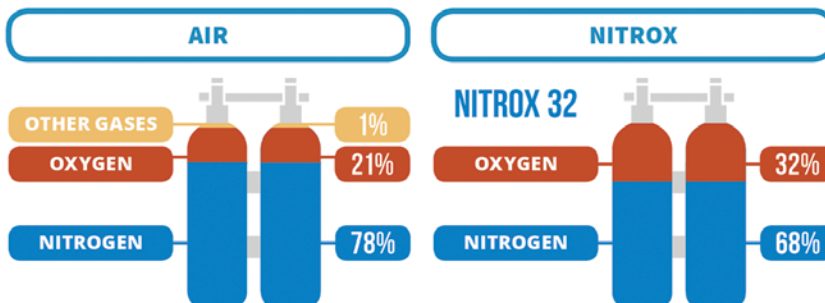
DIVING AND THE BENDS

As divers descend, the pressure on their bodies increases, and so does the solubility of gases they breathe.



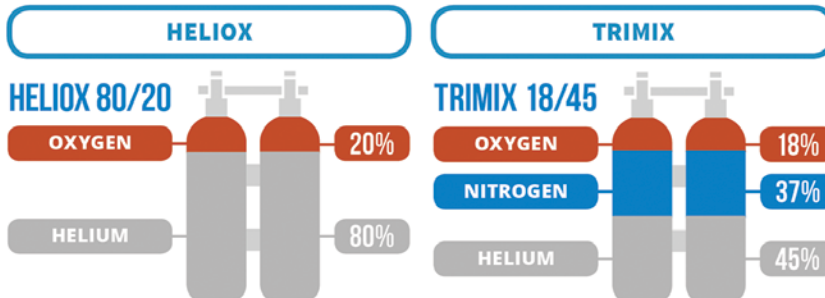
Nitrogen can dissolve in divers' blood and tissue. If divers ascend too quickly, the gas forms bubbles, causing the bends. This condition can lead to nerve problems, blood clots, and death.

DIVING AIR MIXES



The air that humans normally breathe can be safe to a depth of 40 meters. Beyond this, nitrogen can have a narcotic effect and cause the bends.

Lower N₂ content reduces the risk of the bends, enabling longer dive times. Nitrox comes in a range of mixes and is typically used for shallow dives.



Replacing N₂ with helium avoids N₂'s narcotic effects at depths over 50 meters. Helium is also easier to breathe at greater depths.

Replacing some N₂ and oxygen with helium prevents narcotic effects and O₂ toxicity. Mixes with less O₂ and N₂ are used for the deepest dives.