

Part I

Blood Gas Analysis Interpretation Table

Normal Blood Gas Reference Ranges in Dogs and Cats

pH: 7.35 to 7.45





pCO₂: 35 to 45 mm Hg

HCO₃⁻: 20 to 25 mEq/L (mmol/L)

BE: -4 to 4 mEq/L (mmol/L)

Respiratory Component → Lungs
 Metabolic Component → Kidneys

The table below helps determine if a mixed acid-base disorder or a primary disturbance is present

↓ pH Acidemia	↑ pH Alkalemia
 ↑ PCO ₂ Respiratory Acidosis	 ↓ PCO ₂ Respiratory Alkalosis
 ↓ HCO ₃ ⁻ or BE Metabolic Acidosis	 ↑ HCO ₃ ⁻ or BE Metabolic Alkalosis

pH: potential of hydrogen or power of hydrogen, the negative base 10 logarithm of the hydrogen ion concentration (blood pH reflects hydrogen ion concentration in blood)

pCO₂: partial pressure of carbon dioxide

HCO₃⁻: bicarbonate ion

BE: base excess

Acidemia: the state of abnormally low blood pH

Alkalemia: the state of abnormally high blood pH

Acidosis: the process causing or leading to the state of acidemia

Alkalaosis: the process causing or leading to the state of alkalemia

The aim of the body is to maintain acid-base homeostasis by aiming to maintain a neutral blood pH within a narrow range of ~7.35 to 7.45 whenever possible.

pH varies inversely with changes in the respiratory component
 pH varies directly with changes in the metabolic component

Think: **"ROME"**
 Respiratory Opposite
 Metabolic Equal

See the *Vetpocket* app for more detailed reference material, including a *Blood Gas Analysis* e-book AND a *Blood Gas Calculator*!