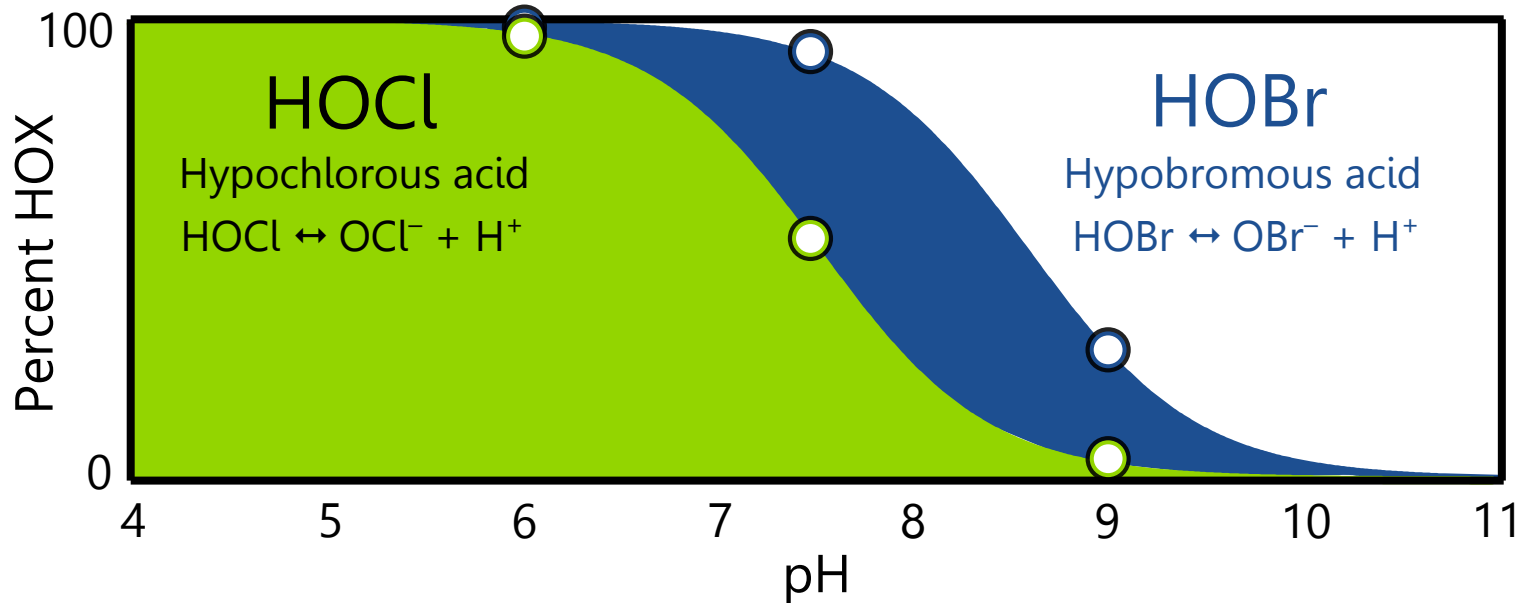


Activated Bromine and the Zirkon[®] DIS Sensor

Activated Bromine Chemistry

- When free chlorine (Cl_2) is added to water, hypochlorous acid (HOCl) and the hypochlorite ion (OCl^-) form.
- Similarly, when activated bromine (Br_2) is added to water, hypobromous acid (HOBr) and the hypobromite ion (OBr^-) form.
- HOCl and HOBr are the predominant biocides which kill waterborne pathogens.
- The total amount of HOCl and HOBr present depends on the sample's pH.

Dissociation of HOCl and HOBr



pH	6	7	8	9
% HOCl	97%	77%	25%	3%
% HOBr	>99%	98%	82%	31%

————— Decreasing biocide efficacy —————>

Activated Bromine Extends the Working pH Range

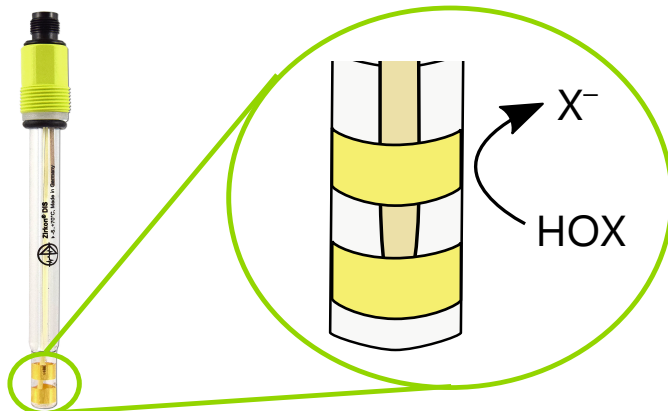
- As pH increases, the amount of HOCl or HOBr decreases.
- Free chlorine is effective up to pH = 8.5, and cannot be measured above this pH using amperometric technology.
- Activated bromine is effective and can be measured up to pH = 9.5.
- Because of its efficacy at higher pH ranges, activated bromine is used in applications where corrosion is a concern.



Zirkon® DIS Sensor
Free chlorine or activated bromine

KUNTZE TECH HIGHLIGHT: Zirkon® DIS Sensor

- The Zirkon® DIS sensor (right), measures HOX, where X = Cl or Br.
- HOX is reduced on the measuring electrode, resulting in a current.
- This current is then translated by the instrument to a free chlorine or activated bromine concentration.



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