RESINTECH INC
INNOVATIONS IN ION EXCHANGE

TECHNICAL DATA SHEET | **ALKALINITY**

The alkalinity of the water is expressed in terms of MO and P values. The abbreviations stand for Methyl Orange and Phenolphthalein, which are complex organic compounds known as indicators and they exhibit the property of changing color at certain pH values. The Methyl Orange alkalinity measures or represents all of the alkalinity coming from all of the bicarbonate, carbonate, and hydroxyl. The Phenolphthalein alkalinity is that derived from ½ of the carbonate and all of the hydroxyl.

The derivation of the alkalinity distribution calculations is made as follows:

1. MO alkalinity = $HCO_3 + CO_3 + OH$
2. P alkalinity = $½\ CO_3 + OH$

Note: HCO_3 and OH cannot exist together in the same solution.

If the assumption is made that HCO_3 is present, then the following is true:

a) $MO = HCO_3 + CO_3$
b) $P = ½\ CO_3$

To determine the HCO_3 concentration double equation b) and subtract from equation a): $MO - 2P = HCO_3$.

The CO_3 concentration is b) doubled: $2P = CO_3$.

If the assumption is made that OH is present, then from our basic equations 1., and 2., the following is true:

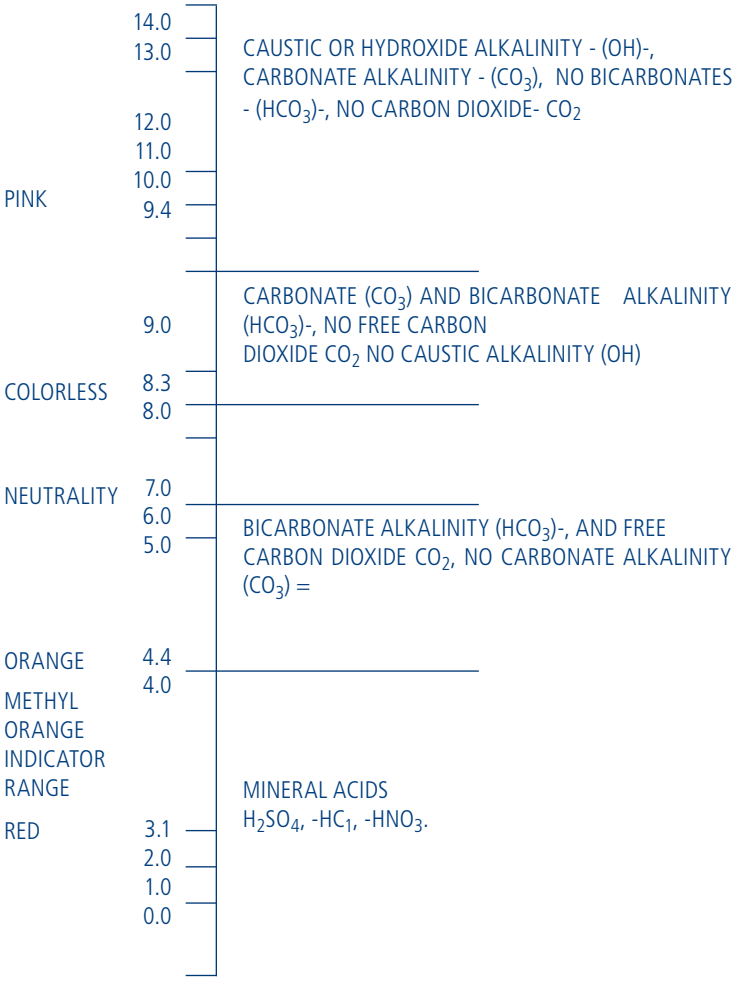
a) $MO = CO_3 + OH$
b) $P = ½\ CO_3 + OH$

To determine CO_3, subtract equation b) from a) and double the result: $2\ (MO-P) = CO_3$.

To determine OH, double equation b) and subtract a) from b): $2P - MO = OH$.

If the assumption has been made that HCO_3 (or OH) is present and the equations result in negative numbers, then the assumption is incorrect and the other equations should be used.

PH SCALE SHOWING CONSTITUENTS THAT CAN EXIST AT VARIOUS PH VALUES IN NATURAL AND TREATED WATERS



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