TECHNICAL BULLETIN

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Subject: **PeCOD Inorganic Interference Review**

The following tables summarize the impact of a range of common inorganic anions and cations on the determination of COD using the PeCOD® technique.

For each inorganic species, solutions containing 0, 20, 50, 100, 250, 500 ppm (by mass) of the anion or cation, 60ppm COD (as sorbitol) and 1M LiNO3 (containing 20ppm COD spike) were prepared and analyzed, unless otherwise stated. Therefore, the below ion concentrations represent the concentration IN THE CELL (i.e. if analyzed in a different range, the interference levels may vary due to different electrolyte dilution effects).

Anions	**Formula**	**Remark**
Ammonium	NH_4^+	No interference for $NH_4^+ \leq 500$ ppm Note: Similar results are obtained for Ammonia
Carbonate	CO_3^{2-}	No interference for $CO_3^{2-} \leq 500$ppm using chloride resistant sensor
Chlorate	ClO_3^-	No interference for $ClO_3^- \leq 500$ppm
Chloride	Cl^-	No interference for $Cl^- < 200$ ppm. COD reduced by up to 20% at Cl- levels of 500ppm using Chloride resistant sensor. Other halides (F-, Br-, I-) would be expected to behave in the same manner
Nitrate	NO_3^-	No interference, NO_3^- can be used as PeCOD electrolyte
Nitrite	NO_2^-	No interference for $NO_2^- \leq 500$ppm
Perchlorate	ClO_4^-	No interference, ClO_4^- can be used as PeCOD electrolyte
Phosphate	PO_4^{3-}	No interference for $PO_4^{3-} \leq 500$ppm
Sulfate	SO_4^{2-}	No interference for $SO_4^{2-} \leq 500$ppm
Sulfite	SO_3^{2-}	Interference for SO3 ≥ 20 ppm, giving COD high by 90% at 250 ppm SO_3^{2-}
Sulfide	S^{2-}	Interference for $S^{2-} > 0$ ppm, giving COD high by >100% at 50 ppm S^{2-}

Cations	Formula	Remark
Aluminum	Al^{3+}	No interference for $Al^{3+} \leq 500ppm$
Calcium	Ca^{2+}	No interference for $Ca^{2+} \leq 500ppm$
Chromate	Cr^{3+}	Interference for $Cr^{3+} > 2$ ppm, giving low COD
Ferric Iron	Fe^{3+}	No interference for $Fe^{3+} \leq 500ppm$
Ferrous Iron	Fe^{2+}	Interference for $Fe^{2+} > 100$ ppm, giving low COD
Magnesium	Mg^{2+}	No interference for $Mg^{2+} \leq 500ppm$
Potassium	K^{+}	No interference for $K^{+} \leq 500ppm$
Silver	Ag^{+}	Interference for $Ag^{+} > 10$ ppm, giving low COD
Sodium	Na^{+}	No interference for $Na^{+} \leq 500ppm$
Zinc	Zn^{2+}	No interference for $Zn^{2+} \leq 500ppm$

For further details, please contact the MANTECH technical team at support@mantech-inc.com.