

Parameter	COD	BOD₅	TOC
Oxidant Used	K ₂ Cr ₂ O ₇ Mn ₂ (SO ₄) ₃	Oxidation by microorganisms	O ₂ K ₂ S ₂ O ₈ Heat Combination of the above with various catalysts
Most Suitable Use	Rapid and frequent monitoring of treatment plant efficiency and water quality	Modeling treatment plant process and the effects organic compounds on the dissolved oxygen content of receiving waters	Measures amount of total of organic carbon in samples
Test Completion Time	1-1/2 to 3 hours	5 days (for standard BOD test)	Several minutes to hours
Advantages	<ul style="list-style-type: none"> • Correlates with BOD on waste with constant composition • Toxic materials do not affect oxidant • Changes in the COD value between influent and effluent may parallel BOD content and supplement BOD results • Short analysis time 	<ul style="list-style-type: none"> • Most closely models the natural environment when used with the proper “seed” 	<ul style="list-style-type: none"> • Correlates with BOD on waste with constant composition, but not as closely as COD • Short analysis time
Disadvantages	<ul style="list-style-type: none"> • Interference from chloride ions • Some organic compounds are not oxidized completely 	<ul style="list-style-type: none"> • Toxic materials kill microorganisms • Microorganisms do not oxidize all materials present in waste • Inaccuracies when used with improper “seed” • Lengthy test period 	<ul style="list-style-type: none"> • Requires expensive equipment • Some organic compounds are not oxidized completely • Measures Total Organic Carbon and not oxygen demand

Source: Hach, “The Science of Chemical Oxygen Demand” Technical Information Series, Booklet No. 9, by Wayne Boyles.