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(II)

(Chemical Oxygen Demand)

(OH

).(Glaze et al.1987)

OH

(AOPs)

Advanced Oxidation Processes

COD

2,4-DCP

Oxidation – Reduction Potential (ORP)

$$E^{\circ} = + 3.06 \text{ V}$$

Fe²⁺ H₂O₂

2,4-DCP

OH

)

(

:(Freeman 1998)

() AOPs

DCP

COD BOD₅

BOD₅/COD

H₂O₂ /

UV /

H₂O₂/ UV /

UV/H₂O₂

Fe²⁺/ H₂O₂

H.J.H Fenton

()

(Fenton Reaction)

(Fenton Reagent)

.(Nesheiwat et al. 2000)

OH

H₂O₂

2,4-)

(DCP

.(Bigda 1995)

2,4-DCP

()

:
H₂O₂
H₂O₂
(Chamarro et al. 2001)
pH pH : pH
pH
pH
(Adams et al. 1994)
(Chlorophenols)
H₂O₂
:
 $\frac{Fe^{2+}}{Fe^{3+}}$
(Fares 2003)
2,4-DCP
(2,4-D)
(2,4-DP)
DCP
:
(Chen et al. 1997)
(high-production volume chemicals) (H₂O₂/substrate)
H₂O₂
(US EPA)
/
(BUA 1988)
(Adams et al. 1994)

Fe=15 mg/L

2,4-DCP=100 mg/L

pH

mg/L

2,4-DCP

pH=3

Fe=15 mg/L

(II)

() H₂O₂

H₂O₂

Fe=15 mg/L

pH

)

2,4-DCP=50 mg/L

pH (

2,4-DCP=100 mg/L

pH

H₂O₂

H₂O₂

H₂O₂ (II)

H₂O₂

COD

(Chamaro et al. 2001)

H₂O₂ =50 mg/L

BOD₅ COD

H₂O₂

COD

(APHA 1998)

(II)

H₂O₂=50 mg/L

COD %

Fe(II) =5 mg/L H₂O₂=50 mg/L

COD %

COD

% COD

COD

Fe(II) =5 mg/L

2,4-DCP=100 mg/L

BOD₅

H₂O₂=50, 75, 100 mg/L

mg/L		COD		COD	
BOD ₅	/ /	/ /	mg/L	H ₂ O ₂	H ₂ O ₂
/ / /	mg/L	()		COD	% % %
COD					
BOD ₅ /COD				COD	(II) H ₂ O ₂
	/				
COD					
				(II)	H ₂ O ₂ = 100 mg/L
Fe=15 mg/L	H ₂ O ₂ =100 mg/L			COD	%
	BOD ₅ /COD				5 mg/L
()	/			%	COD
	BOD ₅ /COD				
				H ₂ O ₂ = 100 mg/L	
				10 min	Fe(II) = 5 mg/L
				%	COD
BOD ₅ /COD	Fe=10 mg/L	H ₂ O ₂ =50 mg/L		COD	
/	2,4-DCP=50 mg/L				()
H ₂ O ₂ =100 mg/L	Fe=15 mg/L				
/		BOD ₅ /COD		H ₂ O ₂	
		()		COD %	%
		BOD ₅ /COD		COD	(II)
	Fe=15 mg/L				
Fe=15 mg/L				H ₂ O ₂ =75 mg/L	
	BOD ₅ /COD				Fe(II) = 10 mg/L
				COD	2,4-DCP=100 mg/L
		BOD ₅ /COD			

	H ₂ O ₂			
pH	(II)		2,4-DCP=100 mg/L	
/ / /	/			
.()	pH	2,4-DCP=100 mg/L	BOD ₅ /COD	
	pH		/	
pH	2,4-DCP=100 mg/L	H ₂ O ₂ =100 mg/L		
			Fe=15 mg/L	
	Fe=10 mg/L	H ₂ O ₂ =75 mg/L	H ₂ O ₂	
	COD		(BOD ₅ /COD)	
	Fe H ₂ O ₂			
pH	pH	Fe ²⁺	H ₂ O ₂	
		/		
			.()	/
			BOD ₅ /COD	
			(II)	
	%			
	%		H ₂ O ₂	
		.(Ma et al. 2000)	H ₂ O ₂	
		pH		
.(Bum et al. 1999)			BOD ₅ /COD	
		pH=3-4	pH	
		pH		
	.(Chamarro et al. 2001)	NaOH	pH	
				pH
			pH 2,4-DCP=50 mg/L	

%

)

COD

()

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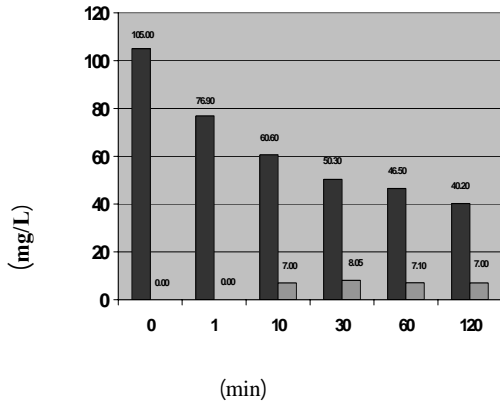
Fe(II)=10 mg/L	H ₂ O ₂		2,4-DCP=50 mg/L				$\frac{BOD_5}{COD}$		BOD ₅ , COD			
	Fe=10 mg/L											
	H ₂ O ₂ =100 mg/L		H ₂ O ₂ =75 mg/L		H ₂ O ₂ =50 mg/L							
$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	min
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Fe(II)=15 mg/L	H ₂ O ₂		2,4-DCP=50 mg/L				$\frac{BOD_5}{COD}$		BOD ₅ , COD			
	Fe=15 mg/L											
	H ₂ O ₂ =100 mg/L		H ₂ O ₂ =75 mg/L		H ₂ O ₂ =50 mg/L							
$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	min
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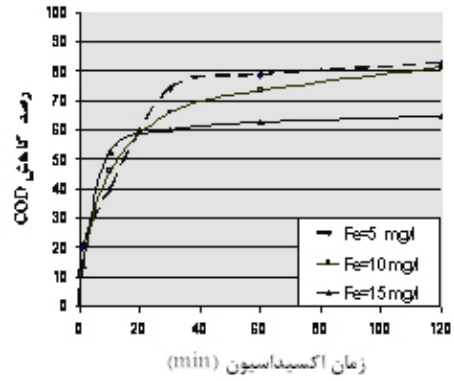
/ ...

Fe(II)=10 mg/L		H ₂ O ₂		2,4-DCP=100 mg/L				$\frac{BOD_5}{COD}$		BOD ₅ · COD		
Fe=10 mg/L												
H ₂ O ₂ =100 mg/L				H ₂ O ₂ =75 mg/L				H ₂ O ₂ =50 mg/L				
$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	min
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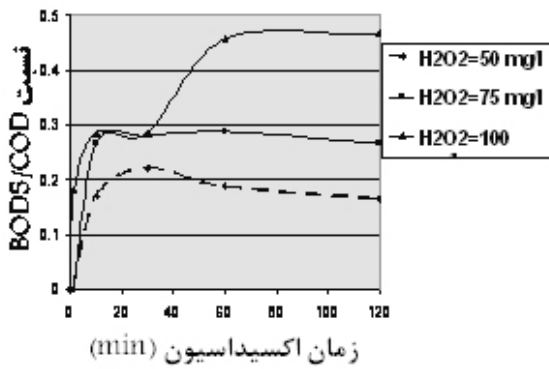
Fe(II)=15 mg/L		H ₂ O ₂		2,4-DCP=100 mg/L				$\frac{BOD_5}{COD}$		BOD ₅ · COD		
Fe=15 mg/L												
H ₂ O ₂ =100 mg/L				H ₂ O ₂ =75 mg/L				H ₂ O ₂ =50 mg/L				
$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	min
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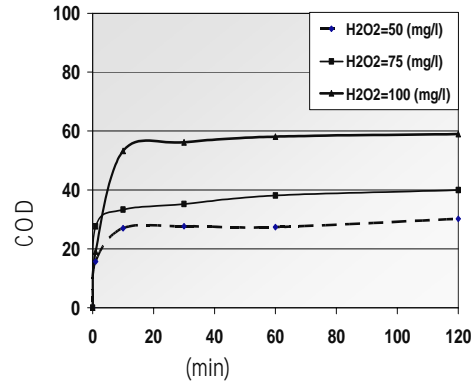
BOD₅ COD
 2,4-DCP=100 mg/L
 Fe=10(mg/L) H₂O₂=75(mg/L)



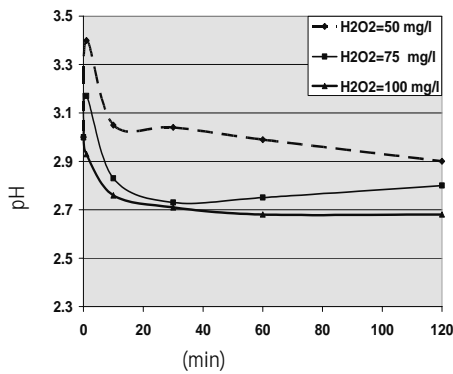
COD Fe(II)
 H₂O₂=50 mg/L 2,4-DCP=50 mg/L



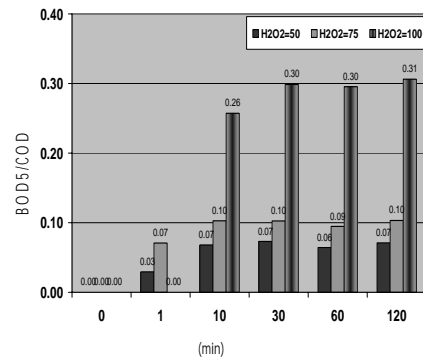
BOD₅/COD
 Fe=15 mg/L H₂O₂ 2,4-DCP=50 mg/L



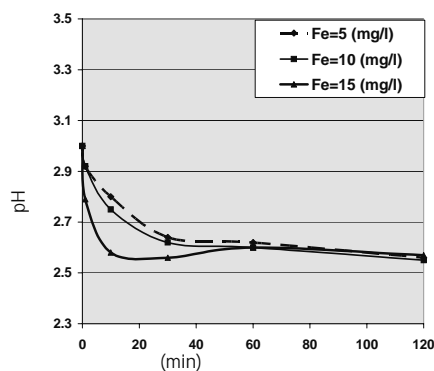
COD H₂O₂
 Fe(II)=15 mg/L 2,4-DCP=100 mg/L



pH
 2,4-DCP=100 mg/L
 Fe(II)=10 mg/L



2,4-DCP=100 mg/L
 Fe=15 mg/L H₂O₂



pH :
2,4-DCP=100 mg/L

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