

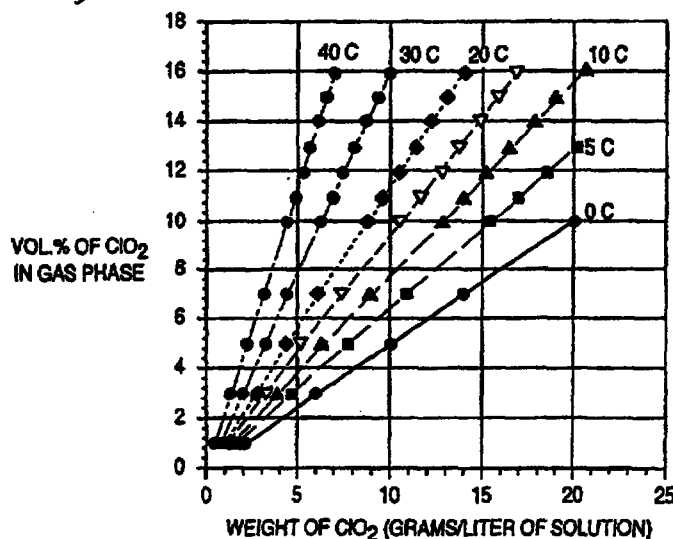
PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : C01B 11/02		A1	(11) International Publication Number: WO 97/30931
			(43) International Publication Date: 28 August 1997 (28.08.97)
(21) International Application Number: PCT/US97/02157		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 21 February 1997 (21.02.97)			
(30) Priority Data: 08/606,283 23 February 1996 (23.02.96) US			
(60) Parent Application or Grant (63) Related by Continuation US 08/606,283 (CON) Filed on 23 February 1996 (23.02.96)		Published With international search report.	
(71) Applicant (for all designated States except US): WATER TECHNOLOGIES LIMITED [US/US]; Suite I-6, 7701 Sharon Lakes Road, Charlotte, NC 28210 (US).			
(72) Inventor; and (75) Inventor/Applicant (for US only): LEE, Sunggyu [KR/US]; 975 Kingswood Drive, Akron, OH 44313-5955 (US).			
(74) Agents: DOODY, Patrick, A. et al.; Foley & Lardner, Suite 500, 3000 K Street, N.W., Washington, DC 20007-5109 (US).			

(54) Title: METHOD AND APPARATUS FOR MAKING AQUEOUS CHLORINE DIOXIDE



(57) Abstract

A method of forming an aqueous chlorine dioxide solution is disclosed which includes reacting in a reaction vessel an acid reaction solution containing a hydroxy carboxylic acid and a companion acid with an alkali metal salt of a chlorite ion. In accordance with the process, the hydroxy carboxylic acid serves to temporarily transfer chlorine from and does not form a salt with the alkali metal salt of a chlorite ion. The aqueous chlorine dioxide solution produced is substantially free of chlorous acid and preferably is free of other by-products such as sodium chloride and free chlorine. The method further includes maintaining the reaction vessel at a pH of less than 5 and/or withdrawing at least a portion of the chlorine dioxide from the aqueous chlorine dioxide solution. The method enables rapid, efficient, compact and safe generation of chlorine dioxide. A method of disinfecting water, and apparatus for making chlorine dioxide and for disinfecting water also are provided.