The United States of America

The Director of the United States Patent and Trademark Office

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extensions.

Jon W. Dudas

Director of the United States Patent and Trademark Office

US007341671B2

(12) **United States Patent**
Shim et al.

(10) **Patent No.: US 7,341,671 B2**
(45) **Date of Patent: *Mar. 11, 2008**

(54) **METHOD OF CONTROLLING THE GROWTH OF MICROORGANISMS**

(75) Inventors: **Sang-Hea Shim**, Seoul (KR); **Chung-Soo Kim**, Kyungki-do (KR)

(73) Assignee: **Acculab Co., Ltd.** (KR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/506,384**

(22) PCT Filed: **Mar. 5, 2003**

(86) PCT No.: **PCT/KR03/00423**

§ 371 (c)(1),
(2), (4) Date: **Mar. 2, 2005**

(87) PCT Pub. No.: **WO03/073848**

PCT Pub. Date: **Sep. 12, 2003**

(65) **Prior Publication Data**

US 2005/0147528 A1 Jul. 7, 2005

(30) **Foreign Application Priority Data**

Mar. 5, 2002 (KR) 10-2002-0011639

(51) **Int. Cl.**
C02F 1/76 (2006.01)

(52) **U.S. Cl.** **210/755**; 210/756; 422/37

(58) **Field of Classification Search** 422/37; 210/755, 756

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,328,294	A		6/1967	Self et al.
3,767,566	A		10/1973	Rutkiewic et al.
4,071,463	A	*	1/1978	Steinhauer 510/370
4,557,756	A		12/1985	Teach et al.
4,557,926	A		12/1985	Nelson et al.
4,992,209	A		2/1991	Smyk et al.
5,683,654	A		11/1997	Dallmier et al.
5,688,515	A		11/1997	Kuechler et al.
5,795,487	A		8/1998	Dallmier et al.
5,942,126	A		8/1999	Dallmier et al.
5,961,879	A	*	10/1999	Trigiante 252/187.25
6,037,318	A		3/2000	Na et al.
6,110,387	A		8/2000	Choudhury et al.
6,136,205	A		10/2000	Dallmier et al.
6,270,722	B1		8/2001	Yang et al.
6,303,038	B1		10/2001	Sanders et al.
6,478,972	B1		11/2002	Shim et al.
6,533,958	B2		3/2003	Shim et al.

FOREIGN PATENT DOCUMENTS

EP	0 403 465 A1	12/1990

* cited by examiner

Primary Examiner—Gladys J P Corcoran
Assistant Examiner—Sean E Conley
(74) *Attorney, Agent, or Firm*—The Webb Law Firm, P.C.

(57) **ABSTRACT**

Disclosed is a method of preparing a biocide having improved durability of its biocidal activity as well as disinfection efficiency at an initial stage, comprising the steps of: (a) preparing stabilized alkali or alkaline earth metal hypochlorite having a pH at least 11 by mixing a chlorine oxidant including alkali or alkaline earth metal hypochlorite with a stabilizer in an alkali solution; (b) preparing a bromide ion source; and (c) adding the bromide ion source prepared in step (b) into the stabilized alkali or alkaline earth metal hypochlorite prepared in step (a). Also, a method of controlling the growth of microorganisms using a biocide prepared by the method of the present invention is disclosed.

3 Claims, No Drawings