79559

US006395112B1

(12) **United States Patent**

(10) Patent No.: **US 6,395,112 B1**

(45) Date of Patent: **May 28, 2002**

(54) **HYDROLYZABLE POLYMERS FOR EXPLOSIVE AND PROPELLANT BINDERS**

(75) Inventors:

(73) Assignee: **The United States of America as represented by the Secretary of the Navy, Washington, DC (US)**

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

(21) Appl. No.: **09/497,874**

(22) Filed: **Feb. 4, 2000**

(51) **Int. Cl.**[7] **C06B 45/10**

(52) **U.S. Cl.** 149/19.4; 149/19.92

(58) **Field of Search** 149/19.4, 19.92

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,002,830 A		10/1961	Barr	52/5
3,380,672 A	*	4/1968	Lista	149/19.4
3,586,551 A		6/1971	Nolan	149/2
4,018,636 A		4/1977	O'Neill et al.	149/19.4
4,156,700 A		5/1979	Tremblay et al.	260/837 R
4,293,352 A	*	10/1981	Lee et al.	149/19.4
4,456,493 A	*	6/1984	Barnes et al.	149/19.4
4,458,064 A	*	7/1984	Chatterjee	528/501
4,524,102 A	*	6/1985	Hostettler	528/52
H351 H	*	10/1987	Kim et al.	149/19.4
4,799,980 A	*	1/1989	Reed	149/19.4
4,988,397 A	*	1/1991	Adolph et al.	149/19.3
5,525,171 A		6/1996	Finck et al.	149/19.6

* cited by examiner

Primary Examiner—Michael J. Carone
Assistant Examiner—Aileen J. Baker
(74) *Attorney, Agent, or Firm*—Mark Homer

(57) **ABSTRACT**

A degradable polymer has an ester component adjacent to a poly(oxyethylene) component in the polymer chain. The hydrophilic nature of the poly(oxyethylene) draws water close to the ester in the polymer chain, which increases the rate of hydrolysis of the ester. The degradable polymer is useful as a binder in for explosive and propellant compositions.

17 Claims, No Drawings