

Title (en)

Water insoluble encapsulated enzymes protected against deactivation by halogen bleaches.

Title (de)

Wasserunlösliche, eingehüllte Enzyme, geschützt gegen die Deaktivierung durch Halogenbleichmittel.

Title (fr)

Enzymes encapsulées insolubles dans l'eau protégées contre la désactivation par des agents de blanchiment halogénés.

Publication

EP 0286773 B1 19940810 (EN)

Application

EP 88100045 A 19880105

Priority

US 4019187 A 19870417

Abstract (en)

[origin: EP0286773A2] A composition capable of releasing active enzyme into an aqueous, active chlorine containing media which in a first aspect comprises an enzyme core encapsulated with an initial coating of a time-release substance, a first coating of a bleach-neutralizing substance and a second coating of a time-release substance. In a second aspect, the composition comprises an enzyme encapsulated in a time-release substance designed to delay release of the enzyme in dissolution for a first-time delay, and a bleach-neutralizing substance, present as either a core material and/or a first coating on a diluent core, which is encapsulated in a time-release substance designed to delay release of the bleach-neutralizing substance into solution for a second-time delay; the first-time delay being longer than the second-time delay so that the bleach-neutralizing substance will be released and completely neutralize all active chlorine present in the solution before the enzyme is released. In a third aspect, the composition comprises an enzyme core encapsulated with a time-release substance, a diluent core encapsulated with a first coating of a bleach-neutralizing substance and a second coating of a time-release substance, and a bleach-neutralizing substance core encapsulated with a time-release substance. The invention further includes a cleaning composition which is particularly effective in warewashing which comprises one of the encapsulated enzyme-containing compositions described above, chlorine bleach, and at least one additional detergent component.

IPC 1-7

C11D 3/386; **C11D 3/395**

IPC 8 full level

C11D 3/386 (2006.01); **C11D 3/395** (2006.01); **C11D 17/00** (2006.01); **C12N 9/96** (2006.01); **D06L 3/06** (2006.01)

CPC (source: EP KR)

C11D 3/386 (2013.01 - KR); **C11D 3/38672** (2013.01 - EP); **C11D 17/0039** (2013.01 - EP)

Cited by

US6730652B1; US5254287A; US5225102A; EP0415652A3; EP2557938A4; US5733763A; EP0723006A3; WO2012169997A1; WO0063341A1; WO9009440A1; WO2011093770A1; WO2017102477A1; WO2018183662A1; WO9009428A1; EP0809687B2

Designated contracting state (EPC)

AT BE CH DE ES FR GB GR IT LI NL SE

DOCDB simple family (publication)

EP 0286773 A2 19881019; **EP 0286773 A3 19900321**; **EP 0286773 B1 19940810**; AT E109822 T1 19940815; AU 8317487 A 19881020; BR 8801839 A 19881122; CA 1305082 C 19920714; DE 3850991 D1 19940915; DE 3850991 T2 19941215; DK 8288 A 19881018; DK 8288 D0 19880108; ES 2060609 T3 19941201; FI 880456 A0 19880201; FI 880456 A 19881018; JP 2588927 B2 19970312; JP S63296690 A 19881202; KR 880012755 A 19881129; KR 970001229 B1 19970204; NO 880372 D0 19880128; NO 880372 L 19881018; NZ 223135 A 19891027

DOCDB simple family (application)

EP 88100045 A 19880105; AT 88100045 T 19880105; AU 8317487 A 19871231; BR 8801839 A 19880415; CA 557618 A 19880128; DE 3850991 T 19880105; DK 8288 A 19880108; ES 88100045 T 19880105; FI 880456 A 19880201; JP 9327388 A 19880415; KR 880004349 A 19880416; NO 880372 A 19880128; NZ 22313588 A 19880108