

Title (en)

Enzyme stabilizing composition and the use thereof in stabilized enzyme containing built detergent compositions

Title (de)

Enzym-stabilisierende Zusammensetzung und deren Verwendung in stabilisierten Enzym enthaltenden verstärkten Waschmittelzusammensetzungen

Title (fr)

Composition stabilisante d'enzyme et son usage dans des compositions détergentes renforcées contenant l'enzyme stabilisée

Publication

EP 0451924 B1 19990210 (EN)

Application

EP 91200871 A 19910412

Priority

US 50954990 A 19900413

Abstract (en)

[origin: EP0451924A2] A three component enzyme stabilization system including boric acid, citric acid and calcium ions helps maintain the enzyme activity of aqueous built detergent compositions in accelerated aging (multiple freeze-thaw cycles). The preferred detergent compositions are "softergents" and also include a clay softener, a mixture of anionic, nonionic and amphoteric surfactants, and detergent builder(s).

IPC 1-7

C11D 3/386

IPC 8 full level

C11D 3/386 (2006.01)

CPC (source: EP)

C11D 3/38663 (2013.01)

Cited by

US5904736A; US6153576A; EP2430195A4; EP1585817A4; EP0580245A3; TR28471A; DE102008014760A1; US9845489B2; DE102014218507A1; US9999217B2; US9133424B2; DE102007041754A1; US7785618B2; DE102008010429A1; US7119054B2; WO9621716A1; WO2013090559A1; WO2022727A1; WO0224851A1; DE102007011236A1; US9725703B2; US6624132B1; US7553806B2; EP0583420B1; US6537958B1; US7795199B2; US7951767B2; US8211849B2; US10064404B2; US10772319B2; US11672247B2; US10568317B2; US11116205B2

Designated contracting state (EPC)

AT BE CH DE DK ES FR GB IT LI LU NL SE

DOCDB simple family (publication)

EP 0451924 A2 19911016; EP 0451924 A3 19920311; EP 0451924 B1 19990210; AT E176682 T1 19990215; AU 651090 B2 19940714; AU 7400791 A 19911017; BR 9101486 A 19911203; CA 2040202 A1 19911014; DE 69130880 D1 19990325; DK 0451924 T3 19990920; ES 2130131 T3 19990701; FI 911800 A0 19910412; FI 911800 A 19911014; GR 1001040 B 19930331; GR 910100154 A 19920730; HK 1014026 A1 19990917; IE 911245 A1 19911023; MX 173751 B 19940325; MY 105503 A 19941031; NO 911448 D0 19910412; NO 911448 L 19911014; NZ 237570 A 19930927; PT 97325 A 19920131; TR 25788 A 19930901; ZA 912598 B 19921230

DOCDB simple family (application)

EP 91200871 A 19910412; AT 91200871 T 19910412; AU 7400791 A 19910328; BR 9101486 A 19910412; CA 2040202 A 19910410; DE 69130880 T 19910412; DK 91200871 T 19910412; ES 91200871 T 19910412; FI 911800 A 19910412; GR 910100154 A 19910412; HK 98115361 A 19981224; IE 124591 A 19910412; MX 2528191 A 19910409; MY PI19910556 A 19910404; NO 911448 A 19910412; NZ 23757091 A 19910325; PT 9732591 A 19910411; TR 41591 A 19910415; ZA 912598 A 19910408