

Title (en)  
Acidic hard surface cleaner.

Title (de)  
Saurer Reiniger für harte Oberflächen.

Title (fr)  
Agent de nettoyage acide pour surfaces dures.

Publication  
**EP 0336878 B1 19950510 (EN)**

Application  
**EP 89730026 A 19890207**

Priority  
US 15483788 A 19880210

Abstract (en)  
[origin: EP0336878A2] An acidic aqueous cleaner, preferably in micro-emulsion form, which is of a pH in the range of one to four and is useful for cleaning hard surfaced items, such as bathtubs, sinks, tiles and porcelains, and even some such items which are not acid resistant, such as those of a European enamel known as zirconium white enamel, comprises synthetic organic detergent, such as a mixture of anionic and nonionic detergents, e.g., sodium paraffin sulfonate, higher fatty alcohol ethoxylate sulfate and higher fatty alcohol or phenol ethoxylate, carboxylic acid, e.g., mixture of succinic, glutaric and adipic acids, and phosphonic acid, e.g., aminotris(methylenephosphonic acid) in an aqueous medium. Preferably a phosphoric acid is present to further improve protection of such European enamel surfaces. The acidic cleaner is useful to remove soap scum, lime scale and grease from surfaces the mentioned items without adversely affecting such surfaces, and removals of the scum, scale and grease is easy, being effected by applying the microemulsion to the surface to be cleaned, followed by wiping it off. Although the cleaned surfaces may be rinsed that is not necessary and the surfaces will be left clean and shiny after wiping, even without rinsing, or with minimal rinsing. In the described emulsions the carboxylic acid components effectively remove soap scum and lime scale, the detergents remove greasy soils and promote effective contact between the acid and the surfaces to be treated, and the combination of phosphoric and phosphonic acids prevents acidic attack of the dicarboxylic acids on the surface being cleaned, with the phosphoric acid increasing protective action of the phosphonic acid component.

IPC 1-7  
**C11D 3/20; C11D 3/36**

IPC 8 full level  
**C11D 3/20** (2006.01); **C11D 3/36** (2006.01); **C11D 17/00** (2006.01)

CPC (source: EP)  
**C11D 3/2082** (2013.01); **C11D 3/364** (2013.01); **C11D 17/0021** (2013.01)

Cited by  
EP0666304A1; TR27813A; EP0609383A4; US5294364A; US5472629A; EP0589761A1; EP0411708A3; US5192460A; GR900100578A; TR26026A; US7605114B2; WO9603491A1; WO9521239A1; WO9740133A1; WO9732968A1; WO9521238A1; WO9514763A1; WO9514764A1; WO2024031507A1; EP0670883B2

Designated contracting state (EPC)  
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DOCDB simple family (publication)  
**EP 0336878 A2 19891011; EP 0336878 A3 19900919; EP 0336878 B1 19950510**; AR 242256 A1 19930331; AT E122383 T1 19950515; AU 2987489 A 19890810; AU 625056 B2 19920702; BR 8900594 A 19891010; CA 1332338 C 19941011; DE 68922522 D1 19950614; DE 68922522 T2 19950914; DK 175385 B1 20040920; DK 65289 A 19890811; DK 65289 D0 19890210; MX 170213 B 19930811; NO 174430 B 19940124; NO 174430 C 19940504; NO 890559 D0 19890209; NO 890559 L 19890811; PT 89679 A 19891004; PT 89679 B 19940429

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**EP 89730026 A 19890207**; AR 31319689 A 19890210; AT 89730026 T 19890207; AU 2987489 A 19890210; BR 8900594 A 19890210; CA 590542 A 19890209; DE 68922522 T 19890207; DK 65289 A 19890210; MX 1486689 A 19890209; NO 890559 A 19890209; PT 8967989 A 19890210