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(54) **Acidic hard surface cleaner.**

(57) 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 microemul-

sion 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.



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	FR-A-1 529 466 (MONSANTO) * Page 7, left-hand column; abstract * ----	1	
A	FR-A-2 143 860 (J.A. BENCKISER) * Claims * ----	1	
A	US-A-4 501 680 (H.W. ASZMAN et al.) * Claims * ----	1	
A	GB-A-2 106 927 (COLGATE-PALMOLIVE) * Claims * ----	1,8	
A	EP-A-0 040 038 (PROCTER & GAMBLE) * Claims * -----	7	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			C 11 D
Place of search THE HAGUE		Date of completion of the search 22-06-1990	Examiner GOLLER P.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			