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(54) **Use of sulphamic acid in an acidic composition for improved skin mildness**

(57) The present invention is the use of sulphamic acid in a liquid acidic composition comprising another acid, for improved skin mildness.

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DescriptionField of the Invention

5 The present invention is related to acidic hard-surfaces compositions, especially limescale removing compositions.

Background of the Invention

Hard-surfaces cleaning compositions based on acids including strong acids and/or weak acids are known in the art.
 10 For instance limescale removing compositions are mainly based on strong and/or weak acids. However, such limescale removing compositions are perceived by the consumers as being amongst the most irritant detergent compositions. Indeed, many consumers suffer from skin irritation when using such compositions.

Particularly, when using such acidic compositions the hands of the user are prone to irritation. This occurs when the compositions are used neat and also when used in diluted form.

15 It is believed that the acids may attack the uppermost layer of the epidermal of the skin and alter the natural pH of the skin. This results in the decrease of the elasticity of the skin. The skin also becomes more sensitive, resulting in dryness and coarseness of the skin. In addition the skin may become inflamed and become red and sore and itchy.

An object of the present invention is to improve skin mildness and reduce skin irritation of acidic compositions, especially acidic limescale removing compositions. Another object is to provide acidic limescale removing compositions
 20 which are milder to skin while exhibiting excellent limescale removing performance.

The present invention overcomes these problems by the use of sulphamic acid in liquid acidic compositions suitable for descaling hard-surfaces. Indeed, it has now been found that by adding sulphamic acid, in a liquid composition comprising acids which are otherwise known to be irritant to the skin such as maleic acid, the skin mildness of said composition is improved. Indeed, less skin irritation is perceived by the user when its skin comes into contact with said composition.
 25 position.

Limescale compositions comprising sulphamic acid are known in the art. EP-A-666 305 discloses acidic limescale removing compositions comprising maleic acid and a second acid like sulphamic acid. EP-A- 66 305 fails to disclose that sulphamic acid when added in a liquid acidic composition allows to improve the skin mildness of said composition and/or to reduce the skin irritation of said composition.
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Summary of the Invention

The present invention is the use of sulphamic acid in a liquid acidic composition comprising another acid, for improved skin mildness.
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Detailed Description of the Invention

An essential ingredient in the present invention is sulphamic acid. Sulphamic acid may be added in the compositions according to the present invention in its acid form or as an alkali metal salts thereof. Thus sulphamic acid may be
 40 added for example as sulphamate. Sulphamic acid is commercially available under the trade name of Sulphamic acid by Albright & Wilson or Nissan chemicals.

According to the present invention the compositions comprise from 0.1% to 20% by weight of the total composition of sulphamic acid, preferably from 0.1% to 10% and more preferably from 0.1% to 5%.

The compositions according to the present invention are acidic compositions. They are thus preferably formulated
 45 at a pH of from 0.1 to 4.5, more preferably of from 0.1 to 3 and most preferably of from 0.3 to 2.

Another essential ingredient of the compositions according to the present invention is another acid or mixtures thereof. By "another acid" it is meant herein any strong and/or weak organic or inorganic acids with the exception of said sulphamic acid. Any strong and weak acid known to thus skilled in the art may be used herein. The compositions according to the present invention are designed for removing limescale or soils comprising limescale as an essential
 50 component. Thus the compositions according to the present invention comprise as said other acid, a limescale removing inorganic acid such as sulphonc acid derivatives including alkyl sulphonc acids such as methanesulphonc acid and aryl sulphonc acids such as benzene sulphonc acid, toluene sulphonc acid or cumene sulphonc acid, as well as hydrochloric acid, nitric acid, phosphoric acid and sulphuric acid, or a limescale removing organic acid such as maleic acid or citric acid, or mixtures thereof.

55 Particularly suitable limescale removing acid to be used according to the present invention is maleic acid. Maleic anhydride is equally convenient for use in the compositions according to the present invention. Indeed maleic anhydride is generally cheaper than maleic acid and it is transformed into the acid form when incorporated in an aqueous medium.

The compositions according to the present invention comprise from 0.01% to 45% by weight of the total composition of said other acid or mixtures thereof, preferably from 1% to 25% and more preferably from 4% to 18%.

According to the present invention said other acid and said sulphamic acid are preferably present in the compositions herein in a weight ratio of said other acid to said sulphamic acid of from 400 to 0.1, more preferably of from 40 to 0.5 and most preferably of from 10 to 0.5.

According to the present invention the compositions may further comprise a number of additional ingredients.

Suitable optional ingredients include surfactants like nonionic, anionic, zwitterionic, amphoteric and/or cationic surfactants. Preferably the compositions comprise from up to 40% by weight of the total composition of said surfactant, or mixtures thereof, preferably from 0.05% to 10%, more preferably from 0.1% to 8% and most preferably from 0.1% to 3%.

Suitable nonionic surfactants to be used herein are alkoxyated alcohol nonionic surfactants which can be readily made by condensation processes which are well known in the art. However, a great variety of such alkoxyated alcohols, especially ethoxylated and/or propoxylated alcohols is also conveniently commercially available. Surfactants catalogs are available which list a number of surfactants, including nonionics.

Accordingly, preferred alkoxyated alcohols for use herein are nonionic surfactants according to the formula $RO(E)_e(P)_pH$ where R is a hydrocarbon chain of from 2 to 24 carbon atoms, E is ethylene oxide and P is propylene oxide, and e and p which represent the average degree of respectively ethoxylation and propoxylation, are of from 0 to 24. The hydrophobic moiety of the nonionic compound can be a primary or secondary, straight or branched alcohol having from 8 to 24 carbon atoms. Preferred nonionic surfactants for use in the compositions according to the invention are the condensation products of ethylene oxide with alcohols having a straight alkyl chain, having from 6 to 22 carbon atoms, wherein the degree of ethoxylation is from 1 to 15, preferably from 5 to 12. Such suitable nonionic surfactants are commercially available from Shell, for instance, under the trade name DobanolR or from BASF under the trade name LutensolR. These nonionics are preferred because they have been found to allow the formulation of a stable product without requiring the addition of stabilizers or hydrotopes. When using other nonionics, it may be necessary to add hydrotopes such as cumene sulphonate or solvents such as butyldiglycolether.

Suitable anionic surfactants for use herein are according to the formula R_1SO_3M wherein R_1 represents a hydrocarbon group selected from the group consisting of straight or branched alkyl radicals containing from 6 to 24 carbon atoms and alkyl phenyl radicals containing from 6 to 15 carbon atoms in the alkyl group. M is a salt forming cation which typically is selected from the group consisting of sodium, potassium, ammonium, and mixtures thereof.

Other suitable anionic surfactants can be represented by the water-soluble salts of an alkyl sulfate or an alkyl polyethoxylate ether sulfate wherein the alkyl group contains from 6 to 24 carbon atoms, and preferably from 1 to 30 ethoxy groups for the alkyl polyethoxylate ether sulfates.

Suitable cationic surfactants to be used herein include derivatives of quaternary ammonium, phosphonium, imidazolium and sulfonium compounds. Preferred cationic surfactants for use herein are according to the formula $R_1R_2R_3R_4N^+X^-$, wherein X is a counteranion, R_1 is a C8-C20 hydrocarbon chain and R_2 , R_3 and R_4 are independently selected from H or C1-C4 hydrocarbon chains. In a preferred embodiment of the present invention, R_1 is a C12-C18 hydrocarbon chain, most preferably C14, C16 or C18, and R_2 , R_3 and R_4 are all three methyl, and X is halogen, preferably bromide or chloride, most preferably bromide. Examples of cationic surfactants are stearyl trimethyl ammonium bromide (STAB), cetyl trimethyl ammonium bromide (CTAB) and myristyl trimethyl ammonium bromide (MTAB).

In one embodiment of the present invention where it is desirable to give some viscosity to the compositions of the present invention the surfactant is a mixture of a nonionic surfactant as described hereinbefore together with a cationic surfactant as described hereinbefore. Said compositions comprise from 0.5% to 15% by weight of the total composition of said mixture of surfactant.

The compositions according to the present invention are liquid compositions. Said liquid compositions are preferably but not necessarily formulated as aqueous compositions. Accordingly, the aqueous compositions according to the present invention comprise from 10% to 95% by weight of the total composition of water, preferably from 50% to 90%, most preferably from 70% to 90%.

According to the present invention the compositions may also comprise a number of other additional ingredients such as perfumes, colorants, bactericide, thickeners, dyes, chelants, pigments, solvents, stabilizers, corrosion inhibitors and the like.

The present invention may be further illustrated by the following examples.

Examples

The following compositions which further illustrate the present invention were made by mixing the listed ingredients in the listed proportions (Weight %). All these compositions were found to be particularly mild to the skin when used both under neat and diluted conditions.

Ingredients: (% by weight)	Compositions							
	1	2	3	4	5	6	7	/
Maleic acid	10	10	14	14	6	/	10	/
Sulphamic acid	2	2	2	2	1	1	0.5	/
Citric acid	/	/	/	/	/	/	/	0.5
Formic acid	/	/	/	/	/	3	/	10
Dobanol [®] 91-8	2.2	3	/	/	2.5	7	1	/
Lutensol [®] A07*	/	3	3	0.3	/	/	1	3
Waters & Minors	-----up to 100-----							

20 Claims

1. The use of sulphamic acid in a liquid acidic composition comprising another acid, for improved skin mildness.
2. The use according to claim 1, wherein said composition is aqueous and has a pH of from 0.1 to 4.5, preferably of from 0.1 to 3 and more preferably of from 0.3 to 2.
3. The use according to any of the preceding claims wherein said sulphamic acid is present at a level of from 0.1% to 20% by weight of the total composition, preferably of from 0.1% to 10% and more preferably of from 0.1% to 5%.
4. The use according to any of the preceding claims wherein said other acid is a weak or strong organic or inorganic acid or mixtures thereof, preferably selected from the group of sulphonc acid derivatives, alkyl sulphonc acids, aryl sulphonc acids, hydrochloric acid, nitric acid, phosphoric acid, sulphuric acid, maleic acid, citric acid or mixtures thereof and more preferably is maleic acid.
5. The use according to any of the preceding claims wherein said composition comprises from 0.01% to 45% by weight of the total composition of said other acid or mixtures thereof, preferably from 1% to 25% and more preferably from 4% to 18%.
6. The use according to any of the preceding claims, wherein in said composition said other acid and said sulphamic acid are present in a weight ratio of said other acid to said sulphamic acid of from 400 to 0.1, preferably of from 40 to 0.5 and more preferably of from 10 to 0.5.
7. The use according to any of the preceding claims, wherein said composition comprises optional ingredients selected from the group of anionic surfactants, cationic surfactants, nonionic surfactants, zwitterionic surfactants, amphoteric surfactants, perfumes, colorants, bactericide, thickeners, dyes, chelants, pigments, solvents, stabilizers, corrosion inhibitors or mixtures thereof.



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EUROPEAN SEARCH REPORT

Application Number
EP 95 87 0128

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.6)
A	US-A-3 909 437 (ALEXANDER GEORGE B ET AL) * claims *	1-7	C11D3/34 C11D3/20 C11D7/08
A	EP-A-0 130 786 (ECONOMICS LAB) * the whole document *	1-7	
A	US-A-3 650 964 (SEDLIAR RONALD M ET AL) * claims 1,14 *	1-7	
A	GB-A-1 240 469 (ATLAS PRESERVATIVE COMPANY LTD) * claims 1-3 *	1-7	
A	US-A-3 349 036 (A.W.CAMPBELL ET AL.) * claims *	1-7	
A	FR-A-1 483 146 (BORG HOLDING A.G) * claims *	1-7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			C11D A61K
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
BERLIN		6 May 1996	Pelli Wablat, B
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