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(54) **Cleaning composition**

(57) A cleaner composition is disclosed that removes brake dust, dirt, and grime, and yet is a no-harm composition (does not promote corrosion of metals).

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Description**BACKGROUND**

5 **[0001]** To effectively remove brake dust, automotive wheel cleaners have historically been acidic or alkali in nature. These automotive wheel cleaners may remove brake dust but they also have the potential to damage a wheel, especially when a metal surface is uncoated or if a coating has been damaged and the metal has become exposed. Acidic wheel cleaners are extremely good at removing brake dust but can only be used on coated wheels. If there is any damage to a wheel coating, a wheel is uncoated, or a wheel is made from materials such as chrome, acidic cleaners cannot be used since acid promotes corrosion of metals. Additionally, acidic cleaners have to be applied carefully to avoid contact with tires, bodywork, and/or friction components. The present disclosure relates to cleaning compositions, and particularly to automotive wheel cleaners.

SUMMARY

15 **[0002]** A cleaner composition is disclosed that removes brake dust, dirt, and grime, and yet is a no-harm composition (does not promote corrosion of metals). In a specific application, the cleaner composition removes brake dust, dirt, and grime from automotive wheels. In an embodiment, a cleaner composition comprises water, a chelator, an anionic surfactant, and a fatty alcohol. In an embodiment, a cleaner composition comprises water, a chelator (e.g., EDTA), a fatty alcohol (e.g., tridecyl alcohol), ammonium lauryl sulfate, sodium lauryl ether sulfate, and a blend of alcohol ethoxylate and alkylglucoside. In an embodiment, a cleaner composition is non-acidic. In an embodiment, a cleaner composition does not contain sodium hydroxide (i.e., "sodium hydroxide free"). In an embodiment, a cleaner composition is non-acidic, sodium hydroxide free and does not promote corrosion on metal surfaces.

DETAILED DESCRIPTION

25 **[0003]** General cleaners struggle to remove brake dust that has been left on an automotive wheel for any length of time. Thus, specialist wheel cleaners are usually required. Described herein is a cleaning composition comprising a blend of surfactants and chelators, which does not promote corrosion on metal surfaces. A cleaning composition described herein provides efficacy without causing damage to surfaces. Cleaner compositions disclosed herein are effective and do not contain acids or bases (e.g., sodium hydroxide) that cause damage to uncoated wheels. Such a cleaner can be used on a variety of wheel surfaces, including both coated and uncoated wheels. Cleaner compositions disclosed herein can be applied to any surface and left for a period of time without causing damage to a surface (e.g., wheel, wheel cover, tire, bodywork, brake, etc.), effectively being a "no-harm" cleaner. Acidic cleaners cannot be used on anything other than coated wheels where the coating is undamaged. A cleaner composition disclosed herein can be used on any surface. A surface can be aluminum, painted aluminum, painted steel, chrome, stainless steel, or coated aluminum.

30 **[0004]** Most alkali cleaners have similar issues due to a reliance on corrosive materials such as sodium hydroxide to remove brake dust. Generally, non-acid/alkali cleaners are very poor at removing brake dust and only remove very light soiling.

35 **[0005]** In an embodiment, a cleaner composition comprises water, a chelator, an anionic surfactant, and a fatty alcohol. In an embodiment, a cleaner composition comprises water, a chelator (e.g., EDTA), a fatty alcohol (e.g., tridecyl alcohol), ammonium lauryl sulfate, sodium lauryl ether sulfate, and a blend of alcohol ethoxylate and alkylglucoside. In an embodiment, a cleaner composition is non-acidic. In an embodiment, a cleaner composition does not contain sodium hydroxide (i.e., "sodium hydroxide free"). In an embodiment, a cleaner composition is non-acidic, sodium hydroxide free and does not promote corrosion on metal surfaces.

40 **[0006]** In an embodiment, a cleaner composition includes about 30% to about 92% water. In an embodiment a cleaner composition includes about 30% to about 90%, about 30% to about 85%, about 30% to about 80%, about 30% to about 75%, about 30% to about 70%, about 30% to about 65%, about 30% to about 60%, about 30% to about 55%, about 30% to about 50%, about 30% to about 45%, about 30% to about 40%, about 35% to about 92%, about 40% to about 92%, about 45% to about 92%, about 50% to about 92%, about 55% to about 92%, about 60% to about 92%, about 65% to about 92%, about 70% to about 92%, about 75% to about 92%, about 80% to about 92%, about 85% to about 92%, about 35% to about 90%, about 40% to about 90%, about 45% to about 90%, about 50% to about 90%, about 55% to about 90%, about 60% to about 90%, about 65% to about 90%, about 70% to about 90%, about 75% to about 90%, about 80% to about 90%, about 85% to about 90%, about 35% to about 85%, about 40% to about 85%, about 45% to about 85%, about 50% to about 85%, about 55% to about 85%, about 60% to about 85%, about 65% to about 85%, about 70% to about 85%, about 75% to about 85%, about 35% to about 80%, about 35% to about 75%, about 35% to about 70%, about 35% to about 65%, about 35% to about 60%, about 35% to about 55%, about 35% to about 50%, about 35% to about 45%, about 40% to about 80%, about 40% to about 75%, about 40% to about 70%, about

40% to about 65%, about 40% to about 60%, about 40% to about 55%, about 40% to about 50%, about 45% to about 80%, about 45% to about 75%, about 45% to about 70%, about 45% to about 65%, about 45% to about 60%, about 45% to about 55%, about 45% to about 50%, about 50% to about 80%, about 50% to about 75%, about 50% to about 70%, about 50% to about 65%, about 50% to about 60%, about 55% to about 80%, about 55% to about 75%, about 55% to about 70%, about 55% to about 65%, about 55% to about 60%, about 60% to about 80%, about 60% to about 75%, about 60% to about 70%, about 60% to about 65%, about 65% to about 80%, about 65% to about 75%, about 65% to about 70%, about 70% to about 80%, or about 75% to about 80% water.

[0007] In an embodiment, a cleaner composition includes about 5% to about 30% of a chelator. In an embodiment a cleaner composition includes about 5% to about 25%, about 5% to about 20%, about 5% to about 15%, about 5% to about 10%, about 10% to about 30%, about 10% to about 25%, about 10% to about 20%, about 10% to about 15%, about 15% to about 30%, about 15% to about 25%, about 15% to about 20%, about 20% to about 30%, about 20% to about 25%, or about 25% to about 30% of a chelator. In an embodiment, a cleaner composition includes about 5%, about 6%, about 7%, about 8%, about 9%, about 10%, about 11%, about 12%, about 13%, about 14%, about 15%, about 16%, about 17%, about 18%, about 19%, about 20%, about 21%, about 22%, about 23%, about 24%, about 25%, about 26%, about 27%, about 28%, about 29%, or about 30% of a chelator. The chelator can be ethylenediamine-tetraacetic acid (EDTA), nitrilotriacetic acid (NTA), diethylenetriaminepentaacetic acid (DTPA), or phosphonates.

[0008] In an embodiment, a cleaner composition comprises an anionic synthetic detergent. In an embodiment, a cleaner composition includes ammonium lauryl sulfate. In an embodiment, a cleaner composition includes about 1% to about 10%, about 1% to about 9%, about 1% to about 8%, about 1% to about 7%, about 1% to about 6%, about 1% to about 5%, about 1% to about 4%, about 1% to about 3%, about 1% to about 2%, about 2% to about 10%, about 3% to about 10%, about 4% to about 10%, about 5% to about 10%, about 6% to about 10%, about 7% to about 10%, about 8% to about 10%, about 9% to about 10%, about 2% to about 9%, about 3% to about 9%, about 4% to about 9%, about 5% to about 9%, about 6% to about 9%, about 7% to about 9%, about 8% to about 9%, about 2% to about 8%, about 3% to about 8%, about 4% to about 8%, about 5% to about 8%, about 6% to about 8%, about 7% to about 8%, about 2% to about 7%, about 3% to about 7%, about 4% to about 7%, about 5% to about 7%, about 6% to about 7%, about 2% to about 6%, about 3% to about 6%, about 4% to about 6%, about 5% to about 6%, about 2% to about 5%, about 3% to about 5%, about 4% to about 5%, about 2% to about 4%, about 2% to about 3% ammonium lauryl sulfate. In an embodiment, a cleaner composition can be about 1%, about 2%, about 3%, about 4%, about 5%, about 6%, about 7%, about 8% about 9%, or about 10% ammonium lauryl sulfate.

[0009] In an embodiment, a cleaner composition includes a fatty acid alcohol, which can be a tridecyl alcohol. In an embodiment, a cleaner composition includes about 1% to about 10%, about 1% to about 9%, about 1% to about 8%, about 1% to about 7%, about 1% to about 6%, about 1% to about 5%, about 1% to about 4%, about 1% to about 3%, about 1% to about 2%, about 2% to about 10%, about 3% to about 10%, about 4% to about 10%, about 5% to about 10%, about 6% to about 10%, about 7% to about 10%, about 8% to about 10%, about 9% to about 10%, about 2% to about 9%, about 3% to about 9%, about 4% to about 9%, about 5% to about 9%, about 6% to about 9%, about 7% to about 9%, about 8% to about 9%, about 2% to about 8%, about 3% to about 8%, about 4% to about 8%, about 5% to about 8%, about 6% to about 8%, about 7% to about 8%, about 2% to about 7%, about 3% to about 7%, about 4% to about 7%, about 5% to about 7%, about 6% to about 7%, about 2% to about 6%, about 3% to about 6%, about 4% to about 6%, about 5% to about 6%, about 2% to about 5%, about 3% to about 5%, about 4% to about 5%, about 2% to about 4%, about 2% to about 3% of a fatty acid alcohol, which can be a tridecyl alcohol. In an embodiment, a cleaner composition can be about 1%, about 2%, about 3%, about 4%, about 5%, about 6%, about 7%, about 8%, about 9%, or about 10% of a fatty acid alcohol, which can be a tridecyl alcohol.

[0010] In an embodiment, a cleaner composition includes sodium lauryl ether sulfate. In an embodiment, a cleaner composition includes about 1% to about 10%, about 1% to about 9%, about 1% to about 8%, about 1% to about 7%, about 1% to about 6%, about 1% to about 5%, about 1% to about 4%, about 1% to about 3%, about 1% to about 2%, about 2% to about 10%, about 3% to about 10%, about 4% to about 10%, about 5% to about 10%, about 6% to about 10%, about 7% to about 10%, about 8% to about 10%, about 9% to about 10%, about 2% to about 9%, about 3% to about 9%, about 4% to about 9%, about 5% to about 9%, about 6% to about 9%, about 7% to about 9%, about 8% to about 9%, about 2% to about 8%, about 3% to about 8%, about 4% to about 8%, about 5% to about 8%, about 6% to about 8%, about 7% to about 8%, about 2% to about 7%, about 3% to about 7%, about 4% to about 7%, about 5% to about 7%, about 6% to about 7%, about 2% to about 6%, about 3% to about 6%, about 4% to about 6%, about 5% to about 6%, about 2% to about 5%, about 3% to about 5%, about 4% to about 5%, about 2% to about 4%, about 2% to about 3% of sodium lauryl ether sulfate. In an embodiment, a cleaner composition can be about 1%, about 2%, about 3%, about 4%, about 5%, about 6%, about 7%, about 8% about 9%, or about 10% of sodium lauryl ether sulfate.

[0011] In an embodiment, a cleaner composition includes a blend of alcohol ethoxylate and an alkylglucoside. In an embodiment, a cleaner composition includes about .1% to about 5%, about .1% to about 4%, about .1% to about 3%, about .1% to about 2%, about .1% to about 1%, about .5% to about 5%, about .5% to about 4%, about .5% to about 3%, about .5% to about 2%, about .5% to about 1%, about 1% to about 5%, about 1% to about 4%, about 1% to about

3%, about 1% to about 2%, about 2% to about 5%, about 2% to about 4%, about 2% to about 3%, or about 3% to about 5%, about 3% to about 4% of a blend of alcohol ethoxylate and an alkylglucoside. In an embodiment, a cleaner composition can be about 0.1%, about 0.2%, about 0.25%, about 0.3%, about 0.4%, about 0.5%, about 0.6%, about 0.7%, about 0.75%, about 0.8%, about 0.9%, about 1%, about 2%, about 3%, about 4%, or about 5%, of a blend of alcohol ethoxylate and an alkylglucoside.

[0012] In an embodiment, a cleaner composition includes a buffering agent. In an illustrative embodiment, a cleaner composition includes a low weight percentage of a buffering agent to reduce the pH. Buffering agents include, but are not limited to, citrates, acetic acid, and the like. In an embodiment, a cleaner composition includes about 1.0 wt% to about 0.01 wt%, about 0.75 wt% to about 0.01 wt%, about 0.50 wt% to about 0.01 wt%, about 0.25 wt% to about 0.01 wt%, about 0.1 wt% to about 0.01 wt%, about 0.09 wt% to about 0.01 wt%, about 0.08 wt% to about 0.01 wt%, about 0.07 wt% to about 0.01 wt%, about 0.06 wt% to about 0.01 wt%, about 0.05 wt% to about 0.01 wt%, about 0.04 wt% to about 0.01 wt%, about 0.03 wt% to about 0.01 wt%, about 0.02 wt% to about 0.01 wt%, about 1.0 wt% to about 0.05 wt%, about 0.75 wt% to about 0.05 wt%, about 0.50 wt% to about 0.05 wt%, about 0.25 wt% to about 0.05 wt%, about 0.1 wt% to about 0.05 wt%, about 0.09 wt% to about 0.05 wt%, about 0.08 wt% to about 0.05 wt%, about 0.07 wt% to about 0.05 wt%, or about 0.06 wt% to about 0.05 wt% of a buffering agent. In an embodiment, a cleaner composition includes about 1.0 wt%, about 0.75 wt%, about 0.5 wt%, about 0.25 wt%, about 0.1 wt%, about 0.09 wt%, about 0.08 wt%, about 0.07 wt%, about 0.06 wt%, about 0.05 wt%, about 0.04 wt%, about 0.03 wt%, about 0.02 wt%, or about 0.01 wt% of a buffering agent (e.g., citric acid). In an embodiment, a cleaner composition is non-acidic.

[0013] Alkylglucosides (also known as alkylpolyglucosides) is a term for the complex reaction products obtainable by an acid-catalyzed reaction of glucose or starch and alcohol (Fischer reaction). The composition of alkylglucosides is determined mainly by the reaction ratio of glucose to alcohol. A main component of the alkylglucosides is the alkylmonoglucoside, a mixture of alkyl- α -D- and alkyl- β -D-glucopyranoside and small amounts of the corresponding glucofuranoside. Corresponding alkyldiglucosides (isomaltosides, maltosides, etc.), alkyloligoglucosides (maltotriosides, maltotetraosides, etc.), and oligomeric or polymeric glucose are also present, in varying amounts. Alkylglucosides may be monoglucosides or polyglucosides or mixtures thereof. An alkylglucoside unit can be characterized by the formula R-O-S, where S is a saccharide group, and R is a saturated or mono- or polyunsaturated branched or linear alkyl group having 4-24 carbon atoms. In the literature, the long-chain alkylglucosides are also referred to as fatty alkylglucosides (derived from the corresponding fatty alcohols). The saccharide units are derived from the following sugar units: fructose, glucose, mannose, galactose, telose, gulose, allose, altrose, idose, arabinose, xylose, lyxose and/or ribose, and mixtures thereof. The group S is usually derived from glucose units, so that the products are consequently referred to as glucosides. The degree of polymerization of the alkylglucosides is generally 1.1-8, preferably 1.3-2. In industrial production, the alkylglucosides are generally obtained as approximately 50-70% strength aqueous concentrates. Depending on the preparation process, they contain small amounts of butylglucoside, unreacted alcohols or fatty alcohols, carbohydrates or oligocarbohydrates. Commercially available alkylglucosides include, but are not limited to, Henkel APG-300CS; AG 6206 (a C₆ alkylglucosid, Akzo-Nobel); AG 6202 (a C₈ alkylglucoside, Akzo-Nobel); or AG 6210 (a C₈-C₁₀ alkylglucoside, Akzo-Nobel).

[0014] Additionally, non-active agents can be added to enhance various properties of a cleaning composition. Optionally, thickening agents, such as polyacrylic acids, clay, xanthan gums, alginates, other natural gums, and the like, may be added. The purpose of these materials is to enhance the viscosity and thereby provide better cling of the cleaning composition.

[0015] Propellants may also be used so that a cleaning composition can be applied as an aerosol. Suitable, propellants include compressed air, nitrogen, and hydrocarbon and chlorinated fluorocarbon propellants.

[0016] In an embodiment, a cleaner composition is an effective wheel cleaner against soil and brake dust. In an embodiment, a cleaner composition does not damage surfaces. In an embodiment, a cleaner composition does not damage surfaces related to an automobile or truck, such as a surface of a wheel, tire, bodywork, brake, etc. In illustrative embodiments, a cleaner composition can be left on a surface for at least 24 hours without causing corrosion.

[0017] The following paragraph describes exemplary embodiments of the invention:

In an embodiment, a cleaner composition includes about 30-92 wt% water, about 5-35 wt% EDTA, about 1-10 wt% fatty alcohol (e.g., tridecyl alcohol), about 1-10 wt% ammonium lauryl sulfate, about 1-10% sodium lauryl ether sulfate, and about 0.1-5 wt% of a blend of alcohol ethoxylate and alkylglucoside. In another embodiment, a cleaner composition includes about 50-75 wt% water, about 15-30 wt% EDTA, about 1-6 wt% fatty alcohol (e.g., tridecyl alcohol), about 3-5 wt% ammonium lauryl sulfate, about 2-5% sodium lauryl ether sulfate, and about 0.1-5 wt% of a blend of alcohol ethoxylate and alkylglucoside (e.g. Berol DGR81). In another embodiment, a cleaner composition includes about 50-75 wt% water, about 20-25 wt% EDTA, about 2-5 wt% fatty alcohol (e.g., tridecyl alcohol), about 4 wt% ammonium lauryl sulfate, about 3-4% sodium lauryl ether sulfate, and about 0.5-5 wt% of a blend of alcohol ethoxylate and alkylglucoside. In another embodiment, a cleaner composition includes about 57 wt% water, about 25 wt% EDTA, about 5 wt% fatty alcohol (e.g., tridecyl alcohol), about 4 wt% ammonium lauryl sulfate, about 4%

sodium lauryl ether sulfate, and about 4-5 wt% of a blend of alcohol ethoxylate and alkylglucoside.

[0018] It will be understood that any of the above exemplary embodiment may additionally comprise 0.01-0.1 wt% of a buffer (e.g. citric acid monohydrate). Suitably, when a buffer is used, it is present in a quantity of 0.03-0.07 wt%. More suitably, when a buffer is used, it is present in a quantity of 0.04-0.06 wt%.

[0019] In a particular embodiment, a cleaner composition includes about 65-75 wt% water, about 17-23 wt% EDTA, about 1-3 wt% fatty alcohol (e.g., tridecyl alcohol), about 3-5 wt% ammonium lauryl sulfate, about 2-4% sodium lauryl ether sulfate, and about 0.3-0.7 wt% of a blend of alcohol ethoxylate and alkylglucoside. Optionally, this cleaner composition may include 0.03-0.07 wt% of a buffer (e.g. citric acid monohydrate).

[0020] In an embodiment, a method of cleaning a surface includes applying a cleaner composition as disclosed herein to a surface. In an embodiment, the cleaner composition is applied via brush. In an embodiment, the cleaner composition is applied by spraying on to a surface. In an embodiment, the cleaner composition is sprayed on to the surface and further comprises scrubbing the surface with a brush. In an embodiment, a method comprises applying a cleaner composition as disclosed herein to an automotive wheel surface and further comprises rinsing the wheel or scrubbing the wheel about 0.5, 1, 2, 3, 4, 6, 8, 10, 12, 18, or 24 hours after application of the cleaner composition. In an embodiment, the surface is an automotive wheel surface. In an embodiment, the surface is a damaged wheel. In an embodiment, the surface is an uncoated wheel.

EXAMPLES

Example 1: Formulation I

[0021]

Component	wt%
Water	70.45
EDTA	20.0
Ammonium lauryl sulfate (Texapon® ALS IS)	4.0
Tridecyl alcohol (Berol® 048)	2.0
Mixture of alcohol ethoxylate and alkylglucoside (Berol® DGR81)	0.50
Sodium lauryl ether sulfate	3.0
Citric acid monohydrate	0.05

Example 2: Formulation II

[0022]

Component	wt%
Water	57.500
EDTA	25.000
Ammonium lauryl sulfate (Texapon® ALS IS)	4.000
Tridecyl Alcohol (Berol® 048)	5.000
Mixture of alcohol ethoxylate and alkylglucoside (Berol® DGR81)	4.500
Sodium Lauryl ether Sulfate	4.000

Example 3: No-Harm Testing

[0023] Formulation I disclosed herein and three commercially available acidic cleaners (collectively "the cleaners") were subjected to "no-harm" testing for 24 hours on three surfaces (chrome, aluminium, and steel). The other products contained various harsh chemicals such as caustic soda, sodium hydroxide, phosphoric acid or hydrochloric acid. These

products also contain surfactants at various levels and thickeners to improve cling.

Methods

5 **[0024]** The cleaners were applied with a pastry brush to three different surfaces-chrome, aluminum, and steel. One gram of cleaner was applied to the chrome surfaces, and 10 g of cleaner was applied to the aluminum and steel surfaces. Following an overnight incubation, each surface was washed with water at low pressure and inspected for damage.

Results

10 **[0025]** Formulation I did not damage any of the three surfaces, while the commercially available acidic products caused considerable corrosive damage to the surfaces. Specifically, the acidic commercially available products tarnished the chrome surfaces and corroded both the steel and aluminium surfaces.

15 **Example 4: Cleaning Effectiveness**

[0026] Formulation I (Example 1) was tested against 3 commercially available products in to assess the cleaning effectiveness of an alloy wheel.

20 Methods

25 **[0027]** Each automotive wheel (a BMW 5 series alloy wheel) was rinsed to remove loose soil with a sprayer on low pressure. Ten grams of three commercially available products and Formulation I (collectively "the products") were applied. Formulation I was sprayed on the wheel and the commercially available products were applied according to package instructions (e.g., spray, via pastry brush) to a section of the automotive wheel. Formulation I was left for two minutes, scrubbed, and washed off. A hose was used to wash the products off. Once a section was cleaned, the pastry brush was rinsed and dried before moving onto the next product. The wheels were then rinsed with a sprayer on low pressure. Each wheel was visually inspected and graded in terms of dirt removal.

30 Results

35 **[0028]** Two products removed 100% of the dirt, grime, and dust on the wheel--Wonder Wheels® Super Alloy Wheel Cleaner and Formulation 1 (both scoring 5 out of 5 on a 1 to 5 scale). The Wonder Wheels® product is highly acidic and limited in regards to application as discussed above. The other two commercially available wheel cleaners scored a "2" and a "3" according to the same 1 to 5 scale.

Example 5: Drip Testing

40 **[0029]** Formulation I (Example 1) was tested against 14 commercially available products in drip testing. Testing was performed by dripping 2.5 g of product down a wheel and visually assessing the wheel after rinsing.

Methods

45 **[0030]** Each automotive wheel was rinsed to remove loose soil with a sprayer on low pressure. Fourteen commercially available products and Formulation I (collectively "the products") were applied (2.5 g) to an automotive wheel (BMW 5 series alloy wheel) via a pipette. Application occurred over 15 seconds while maintaining a constant application rate. Following application of the products, the wheels were left undisturbed from two minutes and not agitated. After two minutes following the completion of the product application, the wheels were rinsed with a sprayer on low pressure. Each wheel was visually inspected and graded in terms of dirt removal.

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Results

55 **[0031]** The best performing product on the drip test was Wonder Wheels® Super Alloy Wheel Cleaner. This product is highly acidic and limited in regards to application as discussed above. Formulation I had the second best results (removed 99% of the dirt) and the best results as compared to 9 other "no-harm" commercially available wheel cleaners.

Claims

1. A cleaner composition comprising:
- 5 a) water;
 b) a chelator;
 c) a fatty alcohol;
 d) ammonium lauryl sulfate;
 e) sodium lauryl sulfate; and
10 f) a blend of alcohol ethoxylate and alkylglucoside.
2. The cleaner composition according to claim 1, wherein the chelator is selected from the group consisting of ethylenediaminetetraacetic acid (EDTA), nitrilotriacetic acid (NTA), diethylenetriaminepentaacetic acid (DTPA), and phosphonates.
- 15 3. The cleaner composition according to claim 2, wherein the chelator is EDTA.
4. The cleaner composition according to any one of claims 1 to 3, wherein the fatty alcohol is tridecyl alcohol.
- 20 5. The cleaner composition according to any one of claims 1 to 4 further comprising a buffering agent.
6. The cleaner composition according to any one of claims 1 to 5 further comprising a thickening agent.
7. The cleaner composition according to claim 6, wherein the thickening agent is selected from the group consisting of a polyacrylic acid, clay, xanthan gum, and alginate.
- 25 8. The cleaner composition according to any one of claims 1 to 7 further comprising a propellant.
9. The cleaner composition according to claim 8, wherein the propellant is selected from the group consisting of compressed air, nitrogen, hydrocarbon propellant, and chlorinated fluorocarbon propellant.
- 30 10. A cleaner composition comprising:
- a) about 30 to 92 wt% water;
35 b) about 5 to 35 wt% chelator;
 c) about 1 to 10 wt% fatty alcohol;
 d) about 1 to 10 wt% ammonium lauryl sulfate;
 e) about 1 to 10 wt% sodium lauryl sulfate; and
 f) about 0.1 to 5 wt% a blend of alcohol ethoxylate and alkylglucoside.
- 40 11. The cleaner composition according to any one of claims 1 to 10, wherein the composition is sodium hydroxide free.
12. The cleaner composition according to any one of claims 1 to 11, wherein the composition is non-acidic.
- 45 13. A method of cleaning a surface comprising:
- a) applying the cleaner composition according to any one of claims 1 to 12 to the surface; and
 b) rinsing or scrubbing the surface after application of the cleaner composition.
- 50 14. The method of claim 13, wherein the surface is an automotive wheel surface.
15. The method of claim 14, wherein the automotive wheel surface is uncoated or damaged.
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EUROPEAN SEARCH REPORT

Application Number
EP 15 15 3365

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2005/197277 A1 (GALLAGHER LAURIE A [US] ET AL) 8 September 2005 (2005-09-08) * paragraphs [0004], [0027]; claims 36-44; examples *	1-15	INV. C11D1/83 C11D3/20 C11D3/33 C11D3/36 C11D11/00
A	US 2007/298992 A1 (HASINOVIC HIDA [US] ET AL) 27 December 2007 (2007-12-27) * paragraphs [0002], [0045]; claims; examples *	1-15	
A	US 2013/137618 A1 (WOOD BARBARA [US]) 30 May 2013 (2013-05-30) * paragraph [0002]; claims *	1-15	
A	US 5 707 957 A (YIANAKOPOULOS GEORGES [BE] ET AL) 13 January 1998 (1998-01-13) * claims; examples *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			C11D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 May 2015	Examiner Péntek, Eric
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	

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20-05-2015

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005197277 A1	08-09-2005	NONE	
US 2007298992 A1	27-12-2007	AU 2006203489 A1 CA 2589791 A1 US 2007298992 A1	10-01-2008 21-12-2007 27-12-2007
US 2013137618 A1	30-05-2013	NONE	
US 5707957 A	13-01-1998	AR 006131 A1 AU 2206097 A CO 4780047 A1 US 5707957 A WO 9732967 A1	11-08-1999 22-09-1997 26-05-1999 13-01-1998 12-09-1997

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82