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(54) **Cleaning composition**

Reinigungszusammensetzung

Composition de nettoyage

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(56) References cited:  
**US-A- 5 707 957      US-A1- 2005 197 277  
US-A1- 2007 298 992      US-A1- 2013 137 618**

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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. US 2005/0197277 A1 discloses an automotive cleaning formulation adapted to be applied to a wheel surface, comprising a cleaning composition and a brake dust barrier composition, said cleaning composition comprising water, sodium lauryl sulfate, a modified polycarboxylate copolymer, tetrasodium ethylenediaminetetraacetate (EDTA), an ethoxylated alcohol nonionic surfactant, and a buffering agent. US 2007/0298992 A1 describes a wheel and tire cleaning composition comprising a chelating agent, a scouring agent, an alcohol ethoxylate, a coupling agent, a hydrotrope, a polymer and water. The present disclosure relates to cleaning compositions, and particularly to automotive wheel cleaners.

**SUMMARY**

20 **[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**

30 **[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.

35 **[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.

40 **[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.

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

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

**[0007]** In an embodiment, a cleaner composition includes 5% to 30% of a chelator. In an embodiment a cleaner composition includes 5% to 25%, 5% to 20%, 5% to 15%, 5% to 10%, 10% to 30%, 10% to 25%, 10% to 20%, 10% to 15%, 15% to 30%, 15% to 25%, 15% to 20%, 20% to 30%, 20% to 25%, or 25% to 30% of a chelator. In an embodiment, a cleaner composition includes about 5%, 6%, 7%, 8%, 9%, 10%, 11%, 12%, 13%, 14%, 15%, 16%, 17%, 18%, 19%, 20%, 21%, 22%, 23%, 24%, 25%, 26%, 27%, 28%, 29%, or 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 1% to 10%, 1% to 9%, 1% to 8%, 1% to 7%, 1% to 6%, 1% to 5%, 1% to 4%, 1% to 3%, 1% to 2%, 2% to 10%, 3% to 10%, 4% to 10%, 5% to 10%, 6% to 10%, 7% to 10%, 8% to 10%, 9% to 10%, 2% to 9%, 3% to 9%, 4% to 9%, 5% to 9%, 6% to 9%, 7% to 9%, 8% to 9%, 2% to 8%, 3% to 8%, 4% to 8%, 5% to 8%, 6% to 8%, 7% to 8%, 2% to 7%, 3% to 7%, 4% to 7%, 5% to 7%, 6% to 7%, 2% to 6%, 3% to 6%, 4% to 6%, 5% to 6%, 2% to 5%, 3% to 5%, 4% to 5%, 2% to 4%, 2% to 3% ammonium lauryl sulfate. In an embodiment, a cleaner composition can be 1%, 2%, 3%, 4%, 5%, 6%, 7%, 8% 9%, or 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 1% to 10%, 1% to 9%, 1% to 8%, 1% to 7%, 1% to 6%, 1% to 5%, 1% to 4%, 1% to 3%, 1% to 2%, 2% to 10%, 3% to 10%, 4% to 10%, 5% to 10%, 6% to 10%, 7% to 10%, 8% to 10%, 9% to 10%, 2% to 9%, 3% to 9%, 4% to 9%, 5% to 9%, 6% to 9%, 7% to 9%, 8% to 9%, 2% to 8%, 3% to 8%, 4% to 8%, 5% to 8%, 6% to 8%, 7% to 8%, 2% to 7%, 3% to 7%, 4% to 7%, 5% to 7%, 6% to 7%, 2% to 6%, 3% to 6%, 4% to 6%, 5% to 6%, 2% to 5%, 3% to 5%, 4% to 5%, 2% to 4%, 2% to 3% of a fatty acid alcohol, which can be a tridecyl alcohol. In an embodiment, a cleaner composition can be 1%, 2%, 3%, 4%, 5%, 6%, 7%, 8%, 9%, or 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 1% to 10%, 1% to 9%, 1% to 8%, 1% to 7%, 1% to 6%, 1% to 5%, 1% to 4%, 1% to 3%, 1% to 2%, 2% to 10%, 3% to 10%, 4% to 10%, 5% to 10%, 6% to 10%, 7% to 10%, 8% to 10%, 9% to 10%, 2% to 9%, 3% to 9%, 4% to 9%, 5% to 9%, 6% to 9%, 7% to 9%, 8% to 9%, 2% to 8%, 3% to 8%, 4% to 8%, 5% to 8%, 6% to 8%, 7% to 8%, 2% to 7%, 3% to 7%, 4% to 7%, 5% to 7%, 6% to 7%, 2% to 6%, 3% to 6%, 4% to 6%, 5% to 6%, 2% to 5%, 3% to 5%, 4% to 5%, 2% to 4%, 2% to 3% of sodium lauryl ether sulfate. In an embodiment, a cleaner composition can be 1%, 2%, 3%, 4%, 5%, 6%, 7%, 8% 9%, or 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 .1% to 5%, .1% to 4%, .1% to 3%, .1% to 2%, .1% to 1%, .5% to 5%, .5% to 4%, .5% to 3%, .5% to 2%, .5% to 1%, 1% to 5%, 1% to 4%, 1% to 3%, 1% to 2%, 2% to 5%, 2% to 4%, 2% to 3%, or 3% to 5%, 3% to 4% of a blend of alcohol ethoxylate and an alkylglucoside. In an embodiment, a cleaner composition can be 0.1%, 0.2%, 0.25%, 0.3%, 0.4%, 0.5%, 0.6%, 0.7%, 0.75%, 0.8%, 0.9%, 1%, 2%, 3%, 4%, or 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 and, acetic acid. In an embodiment, a cleaner composition includes 1.0 wt% to 0.01 wt%, 0.75 wt% to 0.01 wt%, 0.50 wt% to 0.01 wt%, 0.25 wt% to 0.01 wt%, 0.1 wt% to 0.01 wt%, 0.09 wt% to 0.01 wt%, 0.08 wt% to 0.01 wt%, 0.07 wt% to 0.01 wt%, 0.06 wt% to 0.01 wt%, 0.05 wt% to 0.01 wt%, 0.04 wt% to 0.01 wt%, 0.03 wt% to 0.01 wt%, 0.02 wt% to 0.01 wt%, 1.0 wt% to 0.05 wt%, 0.75 wt% to 0.05 wt%, 0.50 wt% to 0.05 wt%, 0.25 wt% to 0.05 wt%, 0.1 wt% to 0.05 wt%, 0.09 wt% to 0.05 wt%, 0.08 wt% to 0.05 wt%, 0.07 wt% to 0.05 wt%, or 0.06 wt% to 0.05 wt% of a buffering agent. In an embodiment, a cleaner composition includes 1.0 wt%, 0.75 wt%, 0.5 wt%, 0.25 wt%, 0.1 wt%, 0.09 wt%, 0.08 wt%, 0.07 wt%, 0.06 wt%, 0.05 wt%, 0.04 wt%, 0.03 wt%, 0.02 wt%, or 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- $\alpha$ -D- and alkyl- $\beta$ -D-glucopyranoside and small amounts of the corresponding glucofuranoside.

**[0014]** 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 C<sub>6</sub> alkylglucosid, Akzo-Nobel); AG 6202 (a C<sub>8</sub> alkylglucoside, Akzo-Nobel); or AG 6210 (a C<sub>8</sub>-C<sub>10</sub> alkylglucoside, Akzo-Nobel).

**[0015]** 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 and other natural gums may be added. The purpose of these materials is to enhance the viscosity and thereby provide better cling of the cleaning composition.

**[0016]** 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.

**[0017]** 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 and, brakes. In illustrative embodiments, a cleaner composition can be left on a surface for at least 24 hours without causing corrosion.

**[0018]** The following paragraph describes exemplary embodiments of the invention:

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

**[0019]** 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%.

**[0020]** In a particular embodiment, a cleaner composition includes 65-75 wt% water, 17-23 wt% EDTA, 1-3 wt% fatty alcohol (e.g., tridecyl alcohol), 3-5 wt% ammonium lauryl sulfate, 2-4% sodium lauryl ether sulfate, and 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).

**[0021]** 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 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**

**[0022]**

**Example 1: Formulation I**

| Component                                 | wt%   |
|---|-------|
| Water                                     | 70.45 |
| EDTA                                      | 20.0  |
| Ammonium lauryl sulfate (Texapon® ALS IS) | 4.0   |

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(continued)

| Component   | wt%  |
|---|------|
| 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

| 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

**[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

**[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.

### 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.

#### Methods

**[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.

Results

5 [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**

10 [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

15 [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.  
20 Each wheel was visually inspected and graded in terms of dirt removal.

Results

25 [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

- 30
1. A cleaner composition comprising:
    - 35 a) water;
    - b) a chelator;
    - c) a fatty alcohol;
    - d) ammonium lauryl sulfate;
    - e) sodium lauryl sulfate; and
    - f) a blend of alcohol ethoxylate and alkylglucoside.
  - 40 2. The cleaner composition of 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.
  - 45 3. The cleaner composition of 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.
  5. The cleaner composition according to any one of claims 1 to 4 further comprising a buffering agent.
  - 50 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.
  - 55 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.

10. The cleaner composition according to claim 1 comprising:

- a) 30 to 92 wt% water;
- b) 5 to 35 wt% chelator;
- c) 1 to 10 wt% fatty alcohol;
- d) 1 to 10 wt% ammonium lauryl sulfate;
- e) 1 to 10 wt% sodium lauryl sulfate; and
- f) 0.1 to 5 wt% a blend of alcohol ethoxylate and alkylglucoside.

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.

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.

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.

### Patentansprüche

1. Reinigungszusammensetzung, umfassend:

- a) Wasser;
- b) einen Chelator;
- c) einen Fettalkohol;
- d) Ammoniumlaurylsulfat;
- e) Natriumlaurylsulfat; und
- f) eine Mischung als Alkoholethoxylat und Alkylglucosid.

2. Reinigungszusammensetzung nach Anspruch 1, wobei der Chelator ausgewählt ist aus der Gruppe bestehend aus Ethylendiamintetraessigsäure (EDTA), Nitrilotriessigsäure (NTA), Diethylentriaminpentaessigsäure (DTPA) und Phosphaten.

3. Reinigungszusammensetzung nach Anspruch 2, wobei der Chelator EDTA ist.

4. Reinigungszusammensetzung nach einem der Ansprüche 1 bis 3, wobei der Fettalkohol Tridecylalkohol ist.

5. Reinigungszusammensetzung nach einem der Ansprüche 1 bis 4, ferner umfassend eine Puffersubstanz.

6. Reinigungszusammensetzung nach einem der Ansprüche 1 bis 5, ferner umfassend ein Verdickungsmittel.

7. Reinigungszusammensetzung nach Anspruch 6, wobei das Verdickungsmittel ausgewählt ist aus der Gruppe bestehend aus Polyacrylsäure, Ton, Xanthan und Alginat.

8. Reinigungszusammensetzung nach einem der Ansprüche 1 bis 7, ferner umfassend ein Treibmittel.

9. Reinigungszusammensetzung nach Anspruch 8, wobei das Treibmittel ausgewählt ist aus der Gruppe bestehend aus Druckluft, Stickstoff, Kohlenwasserstoff-Treibmittel und chloriertem Fluorkohlenwasserstoff-Treibmittel.

10. Reinigungszusammensetzung nach Anspruch 1, umfassend:

- a) 30 bis 92 Gew.-% Wasser;
- b) 5 bis 35 Gew.-% Chelator;

- c) 1 bis 10 Gew.-% Fettalkohol;
- d) 1 bis 10 Gew.-% Ammoniumlaurylsulfat;
- e) 1 bis 10 Gew.-% Natriumlaurylsulfat; und
- f) 0,1 bis 5 Gew.-% eine Mischung als Alkoholethoxylat und Alkylglucosid.

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11. Reinigungszusammensetzung nach einem der Ansprüche 1 bis 10, wobei die Zusammensetzung frei von Natriumhydroxid ist.

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12. Reinigungszusammensetzung nach einem der Ansprüche 1 bis 11, wobei die Zusammensetzung säurefrei ist.

13. Verfahren zum Reinigen einer Oberfläche, umfassend:

- a) Auftragen der Reinigungszusammensetzung nach einem der Ansprüche 1 bis 12 auf die Oberfläche; und
- b) Spülen der Schrubben der Oberfläche nach dem Auftragen der Reinigungszusammensetzung.

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14. Verfahren nach Anspruch 13, wobei die Oberfläche eine Oberfläche eines Rads eines Kraftfahrzeugs ist.

15. Verfahren nach Anspruch 14, wobei die Oberfläche eines Rads eines Kraftfahrzeugs unbeschichtet oder beschädigt ist.

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### Revendications

1. Composition de nettoyage comprenant :

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- a) de l'eau ;
- b) un chélateur ;
- c) un alcool gras ;
- d) du laurylsulfate d'ammonium ;
- e) du laurylsulfate de sodium ; et
- f) un mélange d'alcool éthoxylé et d'alkylglucoside.

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2. Composition de nettoyage selon la revendication 1, le chélateur étant choisi dans le groupe constitué par l'acide éthylènediaminetétraacétique (EDTA), l'acide nitrilotriacétique (NTA), l'acide diéthylènetriaminepentaacétique (DTPA) et les phosphonates.

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3. Composition de nettoyage selon la revendication 2, le chélateur étant de l'EDTA.

4. Composition de nettoyage selon l'une quelconque des revendications 1 à 3, l'alcool gras étant de l'alcool tridécylique.

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5. Composition de nettoyage selon l'une quelconque des revendications 1 à 4, comprenant en outre un tampon.

6. Composition de nettoyage selon l'une quelconque des revendications 1 à 5, comprenant en outre un agent épaississant.

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7. Composition de nettoyage selon la revendication 6, l'agent épaississant étant choisi dans le groupe constitué par l'acide polyacrylique, l'argile, la gomme de xanthane et l'alginate.

8. Composition de nettoyage selon l'une quelconque des revendications 1 à 7, comprenant en outre un propulseur.

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9. Composition de nettoyage selon la revendication 8, le propulseur étant choisi dans le groupe constitué par l'air comprimé, l'azote, un propulseur hydrocarbure et un propulseur fluorocarbure chloré.

10. Composition de nettoyage selon la revendication 1, comprenant :

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- a) de 30 à 92 % en poids d'eau ;
- b) de 5 à 35 % en poids de chélateur ;
- c) de 1 à 10 % en poids d'alcool gras ;



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- d) de 1 à 10 % en poids de laurylsulfate d'ammonium ;
- e) de 1 à 10 % en poids de laurylsulfate de sodium ; et
- f) de 0,1 à 5 % en poids d'un mélange d'alcool éthoxylate et d'alkylglucoside.

5 **11.** Composition de nettoyage selon l'une quelconque des revendications 1 à 10, la composition étant sans hydroxyde de sodium.

**12.** Composition de nettoyage selon l'une quelconque des revendications 1 à 11, la composition étant non acide.

10 **13.** Procédé de nettoyage d'une surface comprenant les étapes consistant à :

- a) appliquer la composition de nettoyage selon l'une quelconque des revendications 1 à 12 sur la surface ; et
- b) rincer ou frotter la surface après application de la composition de nettoyage.

15 **14.** Procédé selon la revendication 13, la surface étant une surface de roue automobile.

**15.** Procédé selon la revendication 14, la surface de roue automobile étant sans revêtement ou endommagée.

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**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- US 20050197277 A1 [0001]
- US 20070298992 A1 [0001]