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Remarks:
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(54) Method for washing glass articles in a household dishwashing machine

(57) The present invention realtes to a method for washing glass articles in a household dishwashing machine.

According to the invention, the method for washing glass articles in a household dishwashing machine having a washing tub and heating means for heating water, comprises the following steps: (A) Supplying water to the washing tub; (B) Heating the water in the washing tub up to a predetermined temperature through said heating means; (C) Spraying the water on the articles to be washed; (D) Adding a washing agent to the water for forming a washing liquor only after the water has reached said predetermined temperature, and (E) Spraying the washing liquor on the articles, wherein the water heating phase is completed, i.e. the water in the washing tub is heated up to said predetermined temperature, without spraying water on articles.

EP 2 329 756 A1

Description

[0001] The present invention relates to a method for washing glass articles in a household dishwashing machine.

[0002] It is known in the art that a repetitive and frequent washing of glass articles in an automatic washing machine damages said articles. Such damages, that consists in a progressive alteration of the glass structure, are prevalently caused by the time during which the glass articles are exposed to a alkaline environment at high temperature. The alkaline environment is generated by the detergent used for washing, therefore damages caused to the glass matrix depend on the time in which a washing agent solved in hot water acts on the articles to be washed. However, the speed with which glass articles are damaged and the entity of said damages depends not only on glass type and its quality but also on how high is the temperature of the washing liquor during the washing phase.

[0003] In conventional washing processes normally carried out in household dishwashers of known type, after having supplied a set amount of water to the washing tub, a dosed amount of detergent is added to said water for forming a washing liquor that is heated up to reach a predetermined temp erature. The detergent can be rapidly solved in water thanks to the progressive heating of the liquor and thanks to the agitation induced by spraying the liquor on the glass articles while the heating phase is running.

[0004] This process, which is preliminary to the effective washing phase, causes the glass articles to be exposed to an alkaline environment for a time which is substantially equal to the entire time required to the machine for cleaning the articles.

[0005] In glassware washing machines for professional use detergent is normally added to water that is supplied in a "hot" state by a water heater displaced near the washing machine or inside the latter. Such water heater is provided in order to ensure that a sufficient amount of hot water is always ready to be used for carrying out a washing cycle. This allows the user to perform promptly an automatic washing when needed. In such kind of washing machine damages to glassware are limited because the detergent is kept in contact with glass for a short time. However, in order to obtain such advantage a water heater must be associated to the washing machine and this causes the machine itself to be cumbersome and difficult to be installed in a kitchen of a house where spaces are limited.

[0006] The aim of the present invention is therefore to solve the noted problems and thus providing a method for washing glass articles in a household dishwashing machine that reduces the glass damages.

[0007] Another object of the present invention is to provide a method for washing glass articles in a household dishwashing machine that can be performed in already existing dishwashing machine.

[0008] Advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objects and advantages of the invention may be realised and attained as particularly pointed out in the appended claim.

[0009] The method for washing glass articles according to the present invention can be carried out in a household dishwashing machine comprising a process controlling unit that has been programmed for performing the steps that will be described further on. For this reason in an already existing household dishwashing machine the control unit can be reprogrammed or substituted in order to adapt the machine to perform the washing method disclosed in the present Application.

[0010] Apart from a suitably programmed control unit, the household dishwashing machine is structurally well known. It substantially comprises a washing tub containing movable racks adapted to receive articles to be washed, in particular glassware. Heating means are provided within said tub for heating water drained for the main water supply through a pump. Spraying means are disposed in the tub for dispersing water with or without a washing agent on the articles to be washed.

[0011] According to the present invention, an amount of water is supplied to the washing tub by means of a pump and a conduit connected to the water net. The amount of water is heated to a temperature whose value is predetermined depending on the kind of washing cycle the user wants to perform. While the heating phase is running, the water contained in the tub is sprayed on the articles to be washed in order to wet them and to remove food or liquid remains from them. However, if desired, the water heating phase can be completed, i.e. the water in the washing tub is heated up to a predetermined temperature, without spraying water on articles. This is the case when an articles pre-wash with hot water without detergent is desired.

[0012] Only when the water in the tub has reached the predetermined temperature set in accordance with the washing program, a washing agent is added to the hot water for forming a washing liquor that is sprayed on the articles for washing them.

[0013] In this way the articles to be washed are kept in contact with the alkaline environment generated by the addition of a detergent to the water only during the time effectively dedicated to the washing procedure. With the present method, articles to be washed, in particular glassware, are therefore prevented from being exposed to aggressive conditions during the water heating phase like happens in a washing process of known type.

[0014] Naturally all the operational commands to the operative parts of the dishwashing machine are given by a process controlling unit suitably programmed.

[0015] Conclusively it can be stated that the method for washing glass articles disclosed herein reduced the

damaging effects of the washing agent on glassware whose life is therefore advantageously extended.

Claims

1. Method for washing glass articles in a household dishwashing machine having a washing tub and heating means for heating water, said method being **characterised by** comprising the following steps: (A) Supplying water to the washing tub; (B) Heating the water in the washing tub up to a predetermined temperature through said heating means; (C) Spraying the water on the articles to be washed; (D) Adding a washing agent to the water for forming a washing liquor only after the water has reached said predetermined temperature, and (E) Spraying the washing liquor on the articles, wherein the water heating phase is completed, i.e. the water in the washing tub is heated up to said predetermined temperature, without spraying water on articles.

2. Method according to claim 1, that is carried out in a household dishwashing machine comprising a process controlling unit that has been programmed for performing the steps of said method.

3. Method according to claim 1 or 2, wherein the heating means are provided within the washing tub.

4. Method according to claim 3, wherein water is heated that is drained from the main water supply through a pump.

5. Method according to one of the preceding claims, wherein an amount of water is supplied to the washing tub by means of a pump and a conduit connected to the water net.

6. Method according to claim 6, wherein the amount of water is heated to a temperature whose value is predetermined depending on the washing cycle.

7. Method according to one of the preceding claims comprising an articles pre-wash with hot water without detergent.

8. A dishwashing machine having a process controlling unit programmed to carry out the method of one of claims 1 to 7.

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EUROPEAN SEARCH REPORT

Application Number
EP 10 01 2267

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	12 April 2011	Martin Gonzalez, G

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
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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
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 01 2267

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