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## Candidate's answer

### Response to the Official Communication

1. Amendments  
New claims 1-8 are submitted to replace original claims 1-6.

#### Claim 1

New claim 1 corresponds to original claim 1, except that the following additional features have been included:

The thickener has now been restricted to a diurea thickener, which is supported by original claims 1 and 4.

Furthermore, now two additives are necessary at least. On page 3, line 9 of the description, a combination of two or more additives is specifically disclosed.

Finally, DTP and DTC of claim 1 have been restricted to those metal salts that are oil soluble, of DTP and DTC. This amendment was introduced in response to the objection of the Examining division (see communication) and is disclosed on page 3, line 3 of the description. Furthermore, DTC and DTP are added in parenthesis to clarify the use in later claims.

Claims 2 and 3 correspond to original claims 2 and 3, except that claim 2 has been amended to reflect the change in claim 1, that at least two different additives are now required.

Claim 4 relates to the specific embodiment of examples 5-7 and is further supported in original claims 1 and 2.

New claim 5 corresponds to former claim 4 and has been restricted to diurea thickeners, so that the dependencies now relate to claims 1-4.

New claim 6 is dependent on claim 5 and defines the specific amine used as disclosed on pages 2, lines 18-20 and from page 4, line 20 to page 5, line 2 of the application as filed and the specific isocyanate used.

New claim 7 relates to the use of a grease composition comprising a lubricant base oil, a diurea thickener and one or more oil soluble metal salt(s) of DTP or DTC. This use is supported on page 1, lines 26-28, page 3, lines 19-21 and in the examples, where it was shown that the inclusion of a Diurea thickener reduces noise and vibrations.

Finally, new claim 8 corresponds to original claim 6, except that it has been restricted to grease compositions comprising a diurea thickener as disclosed in original claims 1 and 4 and the metal salts, again, are all oil-soluble (p.3, l.3).

In light of the above amendments, I respectfully submit the claims 1-8 are in accordance with Article 123(2) EPC.

2. Clarity and Sufficiency (Article 83 + 84 EPC)

Since the metal salts claimed have been restricted to oil-soluble metal salts as requested by the Examining division in the Communication, the objection regarding the lack of this essential feature should no longer apply to the new claims.

The abbreviations DTP and DTC have been added in parentheses to claim 1 regarding dialkyl dithiophosphoric acid (DTP) and dialkyl dithiocarbamic acid (DTC), respectively, to ensure that the use of this abbreviation in later claims is clear. The terms DTP and DTC are known abbreviations, as is seen from Document D2 (p.1, l.30), for example, that would be known to the skilled person.

3. Novelty

Document D1 relates to a thickened lubricant oil for wrist watches comprising an antiwear additive. The use of at least two different additives, as included in new claim 1 is not disclosed in D1, so that claim 1 and dependent claims 1-4 are novel over D1. Furthermore, D1 does not disclose a method of making a grease composition according to claims 5 and 6 or the use of a grease composition to reduce noise and vibration of a constant velocity joint of claim 7.

Finally, no constant velocity joint is disclosed in D1, so that claim 8 is novel over D1.

Thus, the objection raised against former claims 1-4 under Article 54(2) EPC no longer applies to new claims 1-8 in light of D1.

Regarding D2, the new claims are novel as D2 does not disclose the use of a diurea thickener in grease compositions, a method of making such a composition, the use of such a composition or a constant velocity joint filled with such a composition.

Thus, new claims 1-8 are novel over D2 in light of the inclusion of the diurea thickener into the grease composition, so that they comply with Art. 54 (2) EPC.

4. Inventive Step

Furthermore, new claims 1-8 are inventive in the sense of Art. 56 EPC as will be demonstrated below using the problem-solution approach.

Having regard to the claims, document D2 is considered the closest prior art, since it relates to the same technical field as the present application. Specifically, both D2 and the present application relate to grease compositions for constant velocity joints of vehicles, contrary to D1, which relates to grease compositions for watches.

The technical difference between the grease compositions of claims 1-8 and D2 is the use of a diurea thickener in the composition.

The technical effect conferred by this difference is that the grease compositions of claims 1-8 result in very low noise and no vibration when used in constant velocity joints as evidenced by examples 5-7 of the present application.

Starting from the closest prior art according to document D2, the objective technical problem underlying the present invention was to provide grease compositions for constant velocity joints that reduce the noise and vibrations of these joints, while retaining the other critical properties of such grease compositions, specifically low friction and good wear properties of the known grease compositions.

The above objective problem is solved by the inclusion of diurea thickeners as set out in the claims. In this respect reference is made to the experimental data contained in the application and specifically to examples 5-7.

The above technical problem is therefore solved by the compositions according to claims 1-4.

D1 provides no suggestion that a decrease in noise and vibration can be achieved by including diurea thickeners as defined in claim 1. Therefore, no suggestion, let alone a teaching was given to the skilled person that noise reduction and vibration reduction could be achieved by including a diurea thickener.

The same argument also applies to D1, since this document is completely silent on noise reduction or vibration reduction in constant velocity joints.

While the possibility of including diurea thickeners into grease compositions to increase stability is suggested in D1, there is no specific incentive to include it into a grease composition to reduce noise and vibrations at all, and in any case D1 relates to a somewhat different technical area and provides no pointer or incentive to the present invention.

For the above reasons it is submitted that the skilled person, in light of D2 alone or with D1, and faced with the problem of noise and vibration reduction in constant velocity joints would not have considered the use of a different thickener, specifically a diurea thickener, promising. The solution of the objective technical problem is therefore inventive in the sense of Art. 52(1) and 56 EPC.

Annex  
Claims 1-8

## Claims

1. Grease composition comprising lubricating base oil, a diurea thickener and at least two different additives, characterised in that the additives are selected from oil-soluble metal salts of:
  - (i) dialkyl dithiophosphoric acid (DTP), and
  - (ii) dialkyl dithiocarbamic acid (DTC).
2. Grease composition according to claim 1 wherein the metal salt salts of dialkyl dithiophosphoric acid and the metal salts of dialkyl dithiocarbamic acid ~~is~~ are one or more of MoDTP, ZnDTP, MoDTC or ZnDTC.
3. Grease composition according to claims 1 or 2 also comprising triphenylphosphite (TPP).
4. Grease compositions according to claims 1 to 3, wherein the additives are MoDTC and ZnDTP.
5. Method of making a grease composition according to ~~claim 4~~ claims 1 to 4 comprising
  - a) ~~reacting a hydroxycarboxylic acid or a mixture of of hydroxycarboxylic acids and dicarboxylic acids in lubricating base oil with lithium hydroxide while heating to form a grease or reacting an aromatic isocyanate compound with an alkyl, aryl or cycloalkylamine in a lubricating base oil while heating and reacting to form a grease, and~~
  - b) adding the additives to the grease comprising the thickener and milling the grease for a sufficient period of time in order to obtain a homogenous grease composition.
6. The method of claim 5, wherein the amine is octylamine, aniline, cyclohexylamine or a mixture of aniline and cyclohexylamine in equal amounts and the isocyanate is diphenylmethane-4, 4'diisocyanate (DMI).
7. The use of a grease composition comprising a lubricating base oil, a diurea thickener and at least one additive, characterised in that the additive is selected from oil soluble metal salts of DTP and oil soluble metal salts of DTC to reduce the noise and vibration of a constant velocity joint.
8. A constant velocity joint filled with a grease composition comprising a lubricating base oil, a diurea thickener and at least one additive, characterised in that the additive is selected from oil soluble metal salts of DTP and oil soluble metal salts of DTC.