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## **Candidate's answer**

8<sup>th</sup> March 2006

European Patent Office  
D-80298 München

Dear Sirs

Re: European Patent Application No. xxxxxxxx.x  
Applicant: xxxxxx

I refer to the communication pursuant to Article 96(2) dated DD MM YYYY in connection with the above captioned application.

In response to the objections raised, the validity of which are not conceded, the applicant wishes to replace the claims presently on file with amended claims 1 to 7 without prejudice to the later filing of one or more divisional applications in respect of the excised subject matter. Accordingly, amended claims 1 to 7 are attached.

### **1.0 Basis for Amendment**

Amended claim 1 finds basis in original claim 1 wherein the protective colloid has been limited to polymers and copolymers containing acrylic acid monomer units; basis for this limitation can be found at page 3 lines 22-23 of the description. Furthermore, a disclaimer has been introduced to disclaim the novelty-destroying part of the disclosure of D2. The allowability of this disclaimer is in accordance with G1/03 and G2/03; D2 is a 54(3) document and that which is disclaimed is no more than the novelty-destroying part of the disclosure (see D2 claim 2 wherein the alternative protective colloid styrene

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maleic anhydride (which is outside the scope of amended claim 1 in the absence of the disclaimer) has been deleted, for basis in D2 for the disclaimer).

Amended claim 2 finds basis in original claim 2 and description page 2 lines 28-29.

Amended claim 3 finds basis in the description at page 2 lines 30-32.

Amended claim 4 finds basis in the description at page 2 lines 32-33.

Amended claim 5 finds basis in the description at page 3 lines 23-24.

Amended claim 6 finds basis in original claim 3 which has been limited in scope commensurate with the limitation of the microcapsules as claimed in amended claim 1.

Amended claim 7 finds basis in original claim 4 which has been limited in scope commensurate with the limitation of the microcapsules as claimed in amended claim 1.

Since all the features of the amended claims are directly and unambiguously derivable from the application as filed or disclaimed in accordance with G1/03 and G2/03, it is submitted that there is no contravention of Article 123(2).

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## 2.0 Novelty

### 2.1

D1 discloses microcapsules with an aminoplast resin and protective colloid containing shell. The protective colloids used in accordance with the invention as disclosed in D1 are water soluble polymers selected from styrene-maleic anhydride copolymers, polyvinyl alcohol, carboxymethyl cellulose, starches and modified starches (see D1 page 2 lines 24 to 24 (*sic*)).

D1 does not disclose the conserved feature of the present invention as claimed in amended claim 1 that the protective colloid is a polymer or copolymer containing acrylic acid monomer units.

Claim as amended is therefore novel over D1.

As discussed above, the novelty-destroying part of the disclosure of D2 has been disclaimed. Amended claim 1 is therefore novel over D2.

### 2.2

Since claims 2 to 5 are dependent on claim 1 and include all its features, they are therefore also novel over D1 and D2.

### 2.3

Since the microcapsules of claim 1 are novel, their use (T642/94) and process for preparing them must be novel (T169/88, T119/82). Therefore amended claims 6 and 7 are novel.

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### 3.0 Inventive Step

#### 3.1

D2 is comprised in the state of the art, in accordance with Articles 54(3) and (4). D2 is therefore not relevant to the question of inventive step for the present application.

D1 is the closest prior art.

The technical difference between D1 and the invention as claimed in claim 1 is that the protective colloid is a polymer or copolymer containing acrylic acid monomer units.

The technical effect of this difference is that the microcapsules have a particularly narrow size distribution and particularly uniform shell porosity resulting in capsules that release the herbicide at a predictable and controlled rate.

The objective technical problem solved by the invention as claimed in claim 1 is the provision of microcapsules which release the herbicide at a more predictable and controlled rate (see description page 1 lines 19 to 21).

The present invention solves the problem by providing microcapsules with a protective colloid which is a polymer or copolymer containing acrylic acid monomer units in the resin shell. These colloids result in microcapsules with a particularly narrow size distribution and a particularly uniform shell porosity resulting in release of the herbicide at a predictable and controlled rate (see description page 3 lines 24-27, page 1 lines 19 to 21 and Example 1 & 2).

There is no suggestion in D1 that the protective colloids disclosed therein could be replaced with a polymer or copolymer containing acrylic acid monomer units leading to improved controlled release properties since D1 provides no pointer to the latter. Therefore the improvements obtained using these polymers or copolymers must be surprising to the skilled person.

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Claim 1 is therefore inventive.

### 3.2

Since claims 2 to 5 are dependent on claim 1, amended claims 2 to 5 are also inventive.

### 3.3

Since the microcapsules of claim 1 are inventive, their use and process for preparing them must be inventive. Therefore amended claims 6 and 7 are inventive.

## Claims

1. Microcapsules having an average diameter of 1-100 micrometers consisting of a core of a herbicide dissolved in a water-immiscible organic solvent and an aminoplast resin shell containing a protective colloid wherein the protective colloid is a polymer or copolymer containing acrylic acid monomer units; provided that when the herbicide is a thiocarbamate and the aminoplast resin is a melamine formaldehyde, the protective colloid is not an acrylamide-acrylic acid copolymer.
2. Microcapsules according to claim 1 wherein the herbicide is a thiocarbamate or an acetamide.
3. Microcapsules according to claim 2 wherein the herbicide is selected from S-ethyl diisobutylthiocarbamate, S-ethyl-N-cyclohexyl-N-ethylthiocarbamate, and S-ethyl hexahydro-1H-azepine-1-carbothioate.

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4. Microcapsules according to claim 2 wherein the herbicide is 2-chloro-N-ethoxymethyl-6-ethylacet-o-toluidide.
  5. Microcapsules according to claim 1 wherein the protective colloid is an acrylic acid-styrenesulphonic acid copolymer.
  6. A process for forming the microcapsules of claim 1 consisting of the following steps:
    - a) dissolving the herbicide in a water immiscible organic solvent;
    - b) forming a aqueous solution of a pre-polymer of aminoplast resin shell material and the protective colloid;
    - c) mixing the herbicide solution from step a) with the aqueous solution from step b) with rapid stirring to form an emulsion of droplets of the herbicide solution in the aqueous solution;
    - d) adjusting the pH of the emulsion to a value between 3 and 4 to polymerise and precipitate the shell material around the droplets; and
    - e) separating the microcapsules.
  7. The use of the microcapsules of claims 1 or 2 as controlled-release herbicides.