Candidate's answer

European Patent Office
European Patent application…..

Dear Sirs
In response to the communication pursuant Art 94(3) and Rule 71(1) EPC, we hereby file amended claims 1-7 to replace the claims currently on file.

1. Basis for amendments (Art 123(2) EPC)

The claims are amended as follows. Basis for the amendments may be found in the specification as filed as follows:

Claim 1: Original claim 1 has been amended by limiting to the composition comprises a cellulose ether as the binder and by including 0.1-0.5 wt% of a cross-linking agent. Basis for this may be found on page 3, lines 2-3 and page 3, lines 3-5, respectively. Further, claim 1 has been limited to specify that lead composition comprises a metal oxide. Basis for this may be found on page 2, lines 28-29.

Claim 2: The claim specifies hexagonal boron nitride or mica in an amount of 25-45% by weight. Basis may be found on page 2, lines 29-31 in combination with page 2, line 4-5, where it is indicated that all percentages in the application is by weight.

Claim 3: The claim specifies a specific lead composition. Basis may be found on page 2, paragraph [006].

Claim 4: The claim specifies that the lubricant is stearic acid. Basis may be found on page 3, line 14.

Claim 5: The claim specifies that the lubricant is calcium stearate. Basis may be found on page 3, line 15.

Claim 6: Claim 6 has been amended to specify a drying temperature of 110-150 °C. Basis may be found in original claim 3 in combination with page 4, lines 5-7, where it is mentioned that the temperature must be at least 110 °C when a cross-linking agent is present.

Claim 7: Basis may be found in paragraph [001].

Thus, it is submitted that the new claims as a whole are allowed under Art 123(2) EPC.

2. Clarity

Previous claim 2 has been deleted to overcome the clarity objection made by the Examining Division in the Communication. Instead a new claim on a specific composition has been inserted, claim 3. This claim is clear and concise and the sum of the components does not exceed 100%.
Therefore, objection to lack of clarity in the Communication should no longer apply to the new claims.

3. Novelty

D1 relates to child-friendly coloured pencils. D1 discloses that the lead for the pencils are made by blending a filler, a binder, a dispersant, a lubricant and a pigment.
D1 further discloses a specific combination of ingredients having:

40-70% filler
5-10% binder
0.5-2.0% dispersant
10-40% lubricant
0.2-30% pigment
0.1-0.5% bittering agent

the percentages being in weight.

Further, D1 discloses that the filler may be hexagonal boron nitride aluminium oxide, titanium oxide or mica or mixtures of these fillers.

D1 does not disclose that the lead composition may comprise a cross-linking agent.

Thus, independent claim 1 is novel over D1, since the claim specifies that the composition includes a cross-linking agent, which is not disclosed in D1, which just uses a binder.

Claims 2-5 are dependent of claim 1 and therefore these claims are also novel by definition (Guideline C-IV-11-12)

Claim 6 relates to a process of preparing the lead composition of claim 1. Since the product is novel over D1, the process of claim 6 which leads to the novel product is also novel by definition (according to T119/82 and guideline C-IV 11.12).

Claim 7 relates to a coloured pencil comprising the novel lead composition according to claims 1-5. This claim is therefore also novel by definition, since the lead composition is novel (guideline C-IV.11.12)

Document D2 discloses coloured pencils having a lead composition of filler, binder, dispersant, lubricant and a pigment. The document discloses that the binder used is a cross-linked methyl cellulose. However, D2 only describes mica as a filler. D2 does not describe the use of hexagonal boron nitride or metal oxides as filler.

Claim 1 is novel over D2, since the claim specifies that the composition comprises a metal oxide. This is not disclosed in D2, which only describes mica as the filler.

Claims 2-5 are dependent of claim 1, and is therefore also novel by virtue of the dependency. (guideline C-IV.11.12)

Claim 6 specifies a method of producing the lead composition of claim 1. Since the composition is novel over D2, the process of claim 6 for manufacture of the novel composition is also novel over D2 by definition (Guideline C-IV 11.12 and T 119/82)

Claim 7 which relates to the use of the novel lead composition is also novel over D
definition (guideline C-IV-11.12)

For these reasons, we consider that the novelty objections against the previous claim set have been overcome with the present claim set.

4. Inventive step

The present invention relates to a lead composition for coloured pencils.

D1 is the closest prior art, since it describes the same purpose as the present application, namely producing coloured pencils which will produce easily erasable marks on paper.

Further, D1 relates to the same technical field as the present invention, namely coloured pencils.

Moreover, D1 has a number of technical features in common with the present invention making D1 a promising starting point, i.e. requiring a minimum of structural modifications to arrive to the claimed invention.

Document D2 also discloses a composition for lead and to coloured pencils. However, D2 is silent about the problem of producing coloured pencils which may be easily erasable on paper. Therefore, D2 is considered to be less relevant.

The technical difference between the present invention according to claim 1 and the disclosure of D1 is that claim 1 specifies that the composition comprises a cross-linking agent.

D1 does not describe anything of a cross-linking agent which may react with the binder. In D2 is just used a binder.

The technical effect conferred by adding a cross-linking agent to the lead composition is that the cross-linking agent reacts with the binder and increases the hardness of the lead. This results in leads which can be better erased from a paper.

Starting from the closest prior art according to D1, the objective technical problem to be solved by the present invention was to provide coloured pencils which will produce pencils which are better/improved to erase marks.

At the same time all the other good properties of the lead composition, known from D1, are retained, such as good writing properties and the percentages of leads which had to be rejected due to breakage or warping is low.

The above technical problem is solved by the cross-linking agent in the lead composition as set out in claim 1.

The cross-linking agent reacts with the binder and increases hardness of the le
lead is to soft it will penetrate into the structure of a paper and thus more difficul
erased from the paper.
Thus, by producing leads that are harder, an improvement in erasing marks from a paper is achieved.

In this respect, reference is made to the description as filed, page 3, lines 7-8 and to page 1, lines 23-27. Further, reference is made to the experimental data contained in example 3 where it can be seen that the use of Cellink 34b (which is a hydroxypropyl cellulose binder containing the cross-linking agent, benzaldehyde) provides the result of the eraser test to be 5, indicating that a mark is very easy to erase. In contrary, if a cross-linking agent is not used, the eraser test only gives 4, thus less easy to erase.

The solution to the problem is by no way obvious or trivial, since it cannot be found in D1.

D1 provides no disclosure or suggestion that erasing of marks can be improved by adding a cross-linking agent.

Thus, the solution to the problem are not obvious from D1 when considered alone and therefore involves an inventive step, which solves the problem posed.

D2 discloses a lead composition comprising a cross-linking agent. However, D2 does not mention anything about adding the cross-linking agent to to increase the hardness of the lead and thus improve erasing of marks. In contrary, the cross-linking agent in D2 is added to increase the drying time of the lead composition.

Thus, it would not be obvious for a skilled person in the art to combine the teachings of D1 and D2 and come up with the present invention according to claim 1.

Claim 1 is therefore not obvious from D1 when considered in combination with D2.
Dependent claims 2-5 are inventive by virtue of their dependency on claim 1.

Claim 6, which relates to the process of manufacturing lead compositions according to claim 1-5 is also inventive because a process is inventive insofar the products produced by the process is inventive (T119/82, guideline C-IV-11.12)

The coloured pencils according to claim 7 is also inventive by definition (guideline C-IV-11.12)

5. Concluding remarks

With reference to the communication, it is submitted that all the objections raised has been met and the Examiner is therefore asked to reconsider the application favourably.
As a precaution, oral proceedings are requested under Article 116 EPC if the Examiner is considering refusal of the application.

Yours sincerely

Claim 1 Pencil lead composition comprising a cellulose ether as binder, a dispersant, a pigment and a lubricant, at least 20% by weight of hexagonal boron nitride or mica, a metal oxide and 0.1-0.5 wt% of a cross-linking agent.

Claim 2 Pencil lead according to claim 1, wherein the amount of hexagonal boron nitrit or mica is 25-45% by weight.

Claim 3 Pencil lead composition according to claim 1, wherein the composition comprises
hexagonal boron nitride or mica: 25-35%
metal oxide: 15-45%
cellulose ether: 5-10%
dispersant: 1.0-1.5%
lubricant: 10-20%
pigment: 0.2-30%
cross-linking agent: 0.1-0.5%,
wherein the percentages are by weight,
with the proviso that the sum of the metal oxide, hexagonal boron nitride and mica contents is 50-70%..

Claim 4 Pencil lead according to any of claims 1-3, wherein the lubricant is stearic acid.

Claim 5 Pencil lead according to any of the claims 1-3, wherein the lubricant is calcium stearate.

Claim 6 A method for making a pencil lead with a composition according to claim 1 comprising the steps of kneading together all of the ingredients with a minimum of water to make a paste, extruding the paste to make the leads and drying the extruded leads at a temperature of 110-150 °C for 1-4 hours.

Claim 7 Coloured pencils comprising the pencil lead composition according to any of claims 1-5.

EXAMINATION COMMITTEE I

Candidate No.

Paper B (Chemistry) 2010 - Marking Sheet

Category		Maximum possible	Marks awarded	
			Marker	Marker
Claims	Product	35	35	35
	Method	5	5	5
	Other claims	5	2	1
	Dependent claims	5	3	3
Arguments	Amendments	12	10	11
	Novelty	10	8	9
	Inventive Step	28	20	21
Total		**100**	**83**	**85**

Examination Committee I agrees on 84 marks and recommends the following grade to the Examination Board:

☒ PASS (50-100)

☐ COMPENSABLE FAIL (45-49)

☐ FAIL (0-44)

01 July 2010

Chairman of Examination Committee I