



HARMONIZED SYSTEM
REVIEW SUB-COMMITTEE

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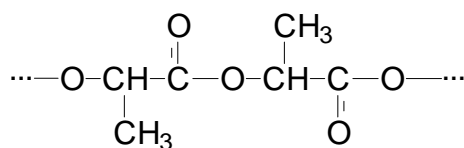
POSSIBLE AMENDMENT OF THE STRUCTURED NOMENCLATURE AND THE
EXPLANATORY NOTE TO HEADING 39.07 REGARDING POLY(LACTIC ACID)

(PROPOSAL BY THE US ADMINISTRATION)

(Item III.B.3 on Agenda)

I. BACKGROUND

1. On 24 April 2003, the Secretariat received the following new proposal from the US Administration.
2. "The US Administration would like to propose the insertion of a new 6-digit subheading in Chapter 39 for poly(lactic acid) (PLA), also referred to in the industry as polylactide. This polyester is obtained by fermenting sugar (generally from corn) to form lactic acid, which is converted to the cyclic dimer, "lactide", and polymerised to poly(lactic acid) by breaking the lactide ring. The repeating structure of polylactic acid is as follows :



3. These unique polymers are made from renewable natural resources (especially corn), not from fossil fuels. All the carbon in PLA comes from carbon dioxide in the atmosphere, which is processed by photosynthesis to form glucose in the plants. Their production uses less fossil energy resources and emits less carbon dioxide than the petrochemical-based products they are designed to replace.

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4. Furthermore, PLA is stable under normal conditions but degrades quickly in high temperature, high moisture and high microbial environments. It may be subjected to composting and anaerobic digestion and thus presents far less problems of waste disposal than other polymers.
5. PLA is used to produce textile fibres exhibiting low moisture absorption and high wicking; low flammability and smoke generation; high resistance to ultraviolet light; low index of refraction, providing excellent colouring characteristics; and lower specific gravity than many other fibres. Applications include sports and other apparel, carpeting, non-woven/fiberfill and household and industrial markets. PLA is also useful in coated paper, high-value films, rigid thermoformed containers, bottles and a variety of other packaging applications.
6. Industry representatives indicate that current production of PLA in the **United States** is about US\$ 300,000,000 per year; it is estimated that 80 to 90 percent of this amount is exported to markets in Europe and Asia. We understand that the **EU Combined Nomenclature** currently provides for temporary duty suspension on imports of PLA under heading 39.07. PLA is also currently produced in Asia and plans are being made for production facilities in other parts of the world. It is expected that world trade of PLA could eventually triple in the next decade.

Proposal

7. Given the current and projected world trade of PLA and the recognised environmental advantages of production from natural, renewable sources, and of the unique physical and chemical properties of PLA, coupled with its superior disposal characteristics, the **US** Administration proposes the following amendments to the Nomenclature and Explanatory Notes.

8. **Amendment to the Nomenclature :**

CHAPTER 39.

Heading 39.07. New subheading 3907.70.

Insert the following new subheading :

“3907.70 Poly(lactic acid) (polylactide)”.

9. **Amendments to the Explanatory Notes :**

CHAPTER 39.

Page 728. Heading 39.07. New subheading 3907.70.

Insert the following new subheading :

“3907.70 Poly(lactic acid) (polylactide)”.

Page 730. Heading 39.07. New item (d).

Insert the following new item (d) :

“(d) **Poly(lactic acid)**, also known as **polylactide**, produced from lactic acid obtained by fermenting glucose (e.g., from corn); the lactic acid is converted to a cyclic lactide dimer, the ring structure of which is opened during the final polymerisation step. Applications include stable textile fibres and packaging materials. When disposed of, degrades quickly in high temperature, high moisture and high microbial environments, i.e., may be degraded by composting or anaerobic digestion.”

II. SECRETARIAT COMMENTS

10. The proposal by the **US** Administration is aimed at separately identifying poly(lactic acid) (PLA) at subheading level under heading 39.07 and inserting a description of this commodity in the Explanatory Note to that heading.
11. Given the volume of trade indicated by the **US** Administration and recognising the environmentally friendly characteristics of PLA and its manufacture, the creation of a separate subheading for this product in the Harmonized System appears to be justifiable.
12. Based on the chemical structure, PLA can be regarded as a polymer having the following monomer unit $-\text{[OCH}(\text{CH}_3)\text{CO]}-$, which corresponds to the characteristics of polyesters of heading 39.07. The Secretariat is therefore of the view that PLA is classifiable in heading 39.07 (subheading 3907.99) of the current Nomenclature as an other polyester. Accordingly, the proposal of the **US** Administration would entail its transfer from subheading 3907.99 to new proposed subheading 3907.70.
13. In principle, the Secretariat agrees with the **US** proposal. However, it has some concerns about the use of the alternative name “polylactide” after the IUPAC name “poly(lactic acid)” in the text of proposed subheading 3907.70. Taking into account the fact that the subheading texts in Chapter 39 currently do not provide alternative names for polymers, it should be considered whether it would not be more appropriate to refer to the alternative name “polylactide” in the Explanatory Notes only.
14. As far as the proposed new Item (d) of the Explanatory Note to heading 39.07 is concerned, the Secretariat understands that the intention of the **US** Administration is to specify the environmentally friendly manufacturing method of PLA from corn and the use of PLA in textile and packaging applications. Nevertheless, it takes the view that the description of PLA in the Explanatory Notes should be more general and should also include a reference to other manufacturing methods.
15. According to Ullmann’s Encyclopaedia of Industrial Chemistry (Sixth Edition, Electronic release, Part “Lactic Acid”), lactic acid is produced on an industrial scale either by fermentation or by a synthetic method. The raw materials used in fermentation consist predominantly of hexoses or compounds which can be easily split into hexoses, e.g., sugars, molasses, sugar beet juice, sulphite liquors, whey, as well as rice, wheat and potato starches.

16. Furthermore, apart from the textile and packaging applications of PLA, Ullmann's Encyclopaedia also refers to the medical use of materials based on PLA, which are highly suitable for such transient functions in the body as absorbable sutures or drug delivery systems.
17. The statement in the last sentence of new Item (d) of the Explanatory Note to heading 39.07 that PLA "degrades quickly" without any quantification of the speed of degradation or a reference to a particular method for its determination appears to be quite subjective. The Secretariat therefore wonders whether it would not be preferable to omit the word "quickly" from the last sentence.
18. On the basis of the comments above, the Secretariat has prepared an alternative proposal for new Item (d) of the Explanatory Note to heading 39.07 which is reproduced in the Annex to this document together with the **US** proposal. The alternative name "polylactide" in the text of subheading 3907.70 and the term "quickly" in the last sentence of new Item (d) of the Explanatory Note to heading 39.07 in the **US** proposal have been placed in square brackets.

III. CONCLUSION

19. Taking into account the Note by the **US** Administration and the Secretariat's comments above, the Sub-Committee is invited to examine the proposed amendment of the structured nomenclature to heading 39.07 and the Explanatory Notes, as set out in the Annex to this document.

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