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Bio-manufactured lactide

生物制造丙交酯

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed and coordinated by the National Technical Committee for Standardization of Bio-based Materials and Degradable Products (SAC/TC380). This document was drafted by: Anhui Fengyuan Biotechnology Co., Ltd., Zhejiang Hisun Biomaterials Co., Ltd., Pulisi Biotechnology Co., Ltd. Technology Co., Ltd., COFCO Biomaterials (Yushu) Co., Ltd., Shenzhen Guanghua Weiye Co., Ltd., Jindan Bio-New Materials Co., Ltd., Shouguang Jinyuandong Modified Starch Co., Ltd., Yangzhou Huitong Technology Co., Ltd., Henan Longdu Tianren Biomaterials Co., Ltd., Sinopec (Dalian) Petrochemical Research Institute Co., Ltd., Ningbo Jialian Technology Co., Ltd., Hefei Hengxin Life Science and Technology Co., Ltd., Fuling Technology Co., Ltd., Guangdong Chongxi Environmental Protection Technology Co., Ltd., Huitong Beigong Biotechnology (Beijing) Co., Ltd., Beijing Technology and Business University, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Sichuan University, Nanjing Wurui Biodegradable New Materials Research Institute Co., Ltd., Dongguan Hongshengda Wei Technology Co., Ltd., Light Industry Plastic Processing Application Research Institute. The main drafters of this document are. Li Rongjie, Fu Song, Ji Chuanxia, Zhang Hongcai, Ma Gaoqi, Ruan Zhaolu, Li Rongqun, Yu Lihua, He Xiaoping, Luo Hu, Yang Yihu, Chen Rui, Shi Congliang, Liu Shanshan, Gao Shijun, Wu Zehua, Zhang Jiangang, Ruan Liuwen, Li Huiwen, Zhou Feng, Qiao Kai, Wang Xiong, Yan Deping, Hu Xinfu, Wei Jie, Jiang Suchen, Weng Yunxuan, Hu Jing, Zhang Qian, Diao Xiaoqian, Chen Xuesi, Bian Xinchao, Tian Guoqiang, Wang Yuzhong, Chen Changping, Mo Weijun, Sun Ying. Bioproduction of lactide

1 Scope

China's national standard for bio-manufactured lactide. Lactide is the cyclic dimer of lactic

acid and the monomer from which polylactic acid is made by ring-opening polymerisation - which is the route to PLA, the most widely produced bio-based and compostable plastic. The whole chain runs from sugar or starch through fermentation to lactic acid, then to lactide, then to polymer, and the lactide step is the one that determines whether the polymer is any good. Its purity requirements are severe: water, free acid and other impurities terminate the growing chains, so a lactide a fraction of a per cent off specification gives a polymer of low molecular weight with no useful mechanical properties. Its optical purity matters equally, since the ratio of L to D isomers determines whether the polymer crystallises and therefore its heat resistance - which is PLA's principal limitation.

This document specifies the product classification, technical requirements, inspection rules and labeling, packaging, transportation and storage of bio-produced lactide. Corresponding test methods. This document is applicable to the production of L-lactic acid or D-lactic acid produced by biological fermentation as raw materials, through oligomerization-cyclization depolymerization, lactic acid (ester) one-step cyclization L-lactide, D-lactide or endogenous lactide obtained by polymer cyclization and depolymerization and purification process Meso-lactide. The chemical structure is shown in Figure 1. Figure

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 191 Pictorial markings for packaging, storage and transportation

GB/T 601 Preparation of standard titration solutions for chemical reagents

GB/T 602 Preparation of standard solutions for determination of impurities in chemical reagents

GB/T 603 Preparation of preparations and products used in test methods for chemical reagents

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 19466.3 Plastics Differential Scanning Calorimetry (DSC) Part

3 Determination of melting and crystallization temperatures and enthalpies

GB/T 37191 Raw rubber - Determination of moisture content - Karl Fischer method

4 Product Categories

According to the chemical structure type of the product, it is divided into L-lactide, D-lactide and Meso-lactide.

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