INTERNATIONAL STANDARD

ISO 24329

First edition
2022-07

Low-protein natural rubber latex concentrate — Specification

Concentré de latex de caoutchouc naturel à faible teneur en protéines — Spécifications

Reference number
ISO 24329:2022(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 45, *Rubber and Rubber products*, Subcommittee SC 3, *Raw materials (including latex) for use in the rubber industry*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Natural rubber is one of the many excellent properties materials for the manufacture of specialized medical devices, household utensils and equipment in the industry. Water-resistance, insulation, plasticity, elasticity and environment make products from rubber trees have a lot of benefits. However, one component that exists in latex is the protein that has been shown to be the main cause of unwanted effects.

The allergy to natural rubber latex proteins is a significant occupational health hazard. Natural rubber products with high protein content can cause skin allergies when used in contact with humans, in addition to preserving the protein degradation also causes unpleasant odours. Therefore, the reduction of protein in natural rubber brings many benefits.

For latex, low proteins content will increase elasticity, reduce stress resistance, improve material flexibility, suitable for the production of products such as gloves, latex for footwear, etc. Natural rubber latex with low protein content is highly responsive in denaturing reactions, due to its low protein content, which makes it easier for denaturing agents to interact with the rubber surface. As the protein content decreases, the resistance of the rubber material increases and the ability of the water absorption decreases.

This document covers the specification of low protein natural rubber latex concentrate. The specification of low protein natural rubber is covered by ISO 24376. It proposes a grading system based on the origin of the natural rubber content and differentiated by the enzymatic and non-enzymatic processes applied for removal of the proteins.

Low-protein natural rubber latex concentrate — Specification

1 Scope

This document provides specifications for natural rubber latex concentrate which has low protein content [low protein natural rubber (LPNR) latex], as follows:

— LPNR latex: field latex or concentrated latex pretreated with deproteinising agent, centrifuged and preserved after concentration with ammonia only, with an alkalinity of at least a mass fraction of 0,6 % calculated with respect to the latex.

This document is applicable to medical rubber products and avoids the possibility of allergies.

This document covers requirements for LPNR latex, type HA (high ammonia), and LPNR latex, type LA (low ammonia).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 35, *Natural rubber latex concentrate — Determination of mechanical stability*

ISO 123, *Rubber latex — Sampling*

ISO 124, *Latex, rubber — Determination of total solids content*

ISO 125, *Natural rubber latex concentrate — Determination of alkalinity*

ISO 126, *Natural rubber latex concentrate — Determination of dry rubber content*

ISO 127, *Rubber, natural latex concentrate — Determination of KOH number*

ISO 506, *Rubber latex, natural, concentrate — Determination of volatile fatty acid number*

ISO 706, *Rubber latex — Determination of coagulum content (sieve residue)*

ISO 2005, *Rubber latex, natural, concentrate — Determination of sludge content*

ISO 7780, *Rubbers and rubber latices — Determination of manganese content — Sodium periodate photometric methods*

ISO 8053, *Rubber and latex — Determination of copper content — Photometric method*

ASTM D5712, *Standard test method for analysis of aqueous extractable protein in latex, natural rubber, and elastomeric products using them modified lowry method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp