

# CERTIFICATE OF ANALYSIS

**Cellulase "Onozuka" R-10<sup>®</sup> from Trichoderma viride**  
 E.C. 3.2.1.4 • Produced by Yakult Pharmaceuticals Industry Co., Ltd.

**Cat.No.: 16419**  
**Contr.No.: 250259**

Parameter	Method	Specification	Result
Molecular weight		ca. 52 000	
Appearance		beige lyophilisate	corresponds
Activities (U/mg)	Cellulase	ca. 1	1.1
	Hemicellulase	ca. 1	corresponds
	Protease (DMC)	ca. 0.01	corresponds
	$\alpha$ -Amylase	ca. 0.8	corresponds
	Pectinase	ca. 0.4	corresponds
Minimum shelf life			14.03.2028
Storage (°C)			+2 to +8

## Unit definitions

### Cellulase

1 unit is the amount of enzymatic activity which catalyzes the liberation of 1  $\mu$ mol glucose from sodium carboxymethyl cellulose per minute at 40°C, pH 4.5.

### Hemicellulase

1 unit is the amount of enzymatic activity which liberates 1  $\mu$ mol of reducing groups from beechwood xylan per hour at 37°C, pH 5.5, calculated as xylose.

### Protease

1 DMC-unit is that amount of enzymatic activity which catalyzes the cleavage of 1  $\mu$ equivalent peptide bond from dimethylcasein per minute at 25°C, pH 7.0, expressed in terms of the appearance of new terminal amino groups.

### $\alpha$ -Amylase

1 unit is that amount of enzymatic activity which catalyzes the liberation of 1  $\mu$ equivalent of reducing groups from soluble starch (Zulkowsky) per minute at 25°C, pH 6.0, calculated as maltose.

### Pectinase

1 unit is that amount of enzymatic activity which catalyzes the liberation of 1  $\mu$ mol of reducing groups from pectic acid per minute at 25°C, pH 4.5, calculated as D-galacturonic acid.

We do not guarantee that the product can be used for a special application.  
 This document does not release you from performing the standard control upon receipt of incoming goods.

**SERVA Electrophoresis GmbH**  
**Quality Control**

**Printing date:** 18.03.2025

Dr. Judith Koch

Daniela Lux-Helmstetter

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