DENTAL MODEL

3D printing resin for dental models

Version 1.3 2019/06/11

The following instruction is intended exclusively for dental professionals, such as dentists, oral maxillofacial surgeons and dental technicians to print dental models. For safety datasheets, please visit www.enlightenmaterials.com for more information.

Introduction

DENTAL MODEL is a monomer-based acrylic resin for the printing of dental models with high flexural strength, low shrinkage and excellent cytocompatibility using high resolution 3D printers. It is developed by ENLIGHTEN MATERIALS Co., Ltd.

Applications

DENTAL MODEL can be used for DLP, SLA and LCD 3D printers.

Contraindication

DENTAL MODEL should not be used to print intraoral prosthesis, such as crowns and bridges.

Storage and transportation

DENTAL MODEL resin should be stored and transported in the original package at room temperature in a dark area, preferably not exceeding 25°C. The expiry date of the resin is shown on the label. Do NOT use the resin if the expiry date is exceeded. After the printing the resin, the resin left in the resin tank of a 3D printer should NOT be mixed and stored with the unused resin. It should be stored in another light-proof container.

Procedures for printing and post-processing

Please read the safety data carefully before using DENTAL MODEL. Shake DENTAL MODEL well in the original packaging for 1 minute before using it. It is recommended to wear nitrile gloves when using DENTAL MODEL until post-curing procedure is completed.

1. Printing

Pour DENTAL MODEL resin into the resin tank of a 3D printer, and import the STL files into the 3D printer

for printing.

2. Washing

Remove the printed DENTAL MODEL from the build platform and soak in IPA (isopropanol) or 95% ethanol to remove the extra resin. Use an ultrasonic cleaner if necessary. Please be aware that IPA and ethanol must NOT be placed directly in the tank of the ultrasonic cleaner.

3. Drying

Ensure the printed model clean. Do not remain liquid resin or ethanol.

4. Post-Curing

For post-curing, the curing energy and curing time depends on the post-curing unit. For example, a good surface hardness and biocompatibility can be achieved by 15 minutes of post-curing using Formlabs FormCure curing box at 405nm at 60°C.

Sterilization

In general conditions, sterilization of DENTAL DENTAL MODEL is not necessary because it is not a medical device. However, in the conditions where sterilization is required, sterilization of the printed DENTAL MODEL using 70% ethanol is recommended. Do NOT use autoclave for sterilization.

Material Properties

Property	Value
Flexural Strength	>1875 MPa
Flexural Modulus	>92.4 MPa
Hardness	>75 Shore D
Viscosity	0.771 Pa·s

Biocompatibility testing (According to EN-ISO 10993-5:2009)

Sample	Received Date	Result 1: Morphology	Result 2: MTT assay	Average	Cytotoxicity
DENTAL MODEL	2018.03.30	0	0	0	None

Cytotoxicity: 0 = None, 0~1 = Slight, 1~2 = Mild, 2~3 = Moderate, 3~4 = Severe.

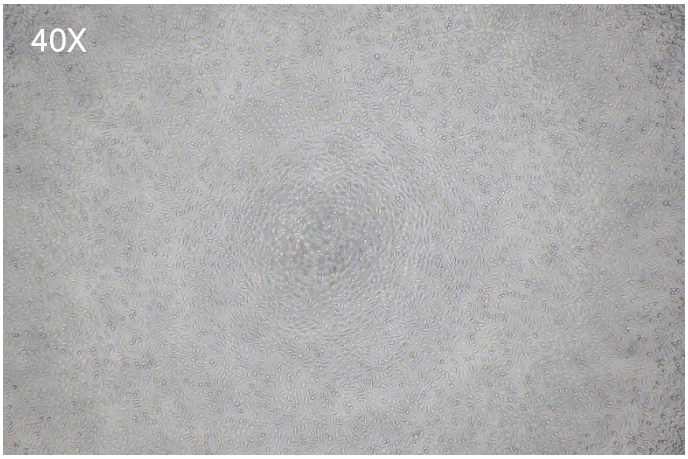
Extraction medium condition

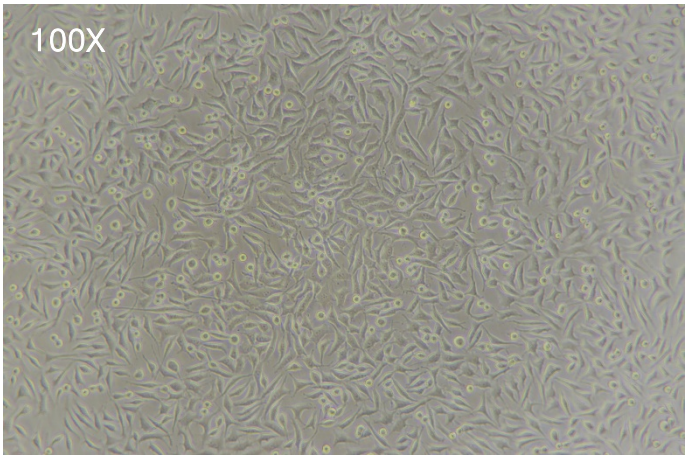
Sample	Received	Surface	Volume of	Extration

	Date	Area (cm^2)	Extraction Medium (ml)	Temp (℃)
DENTAL MODEL	2018.03.28	6	2	37

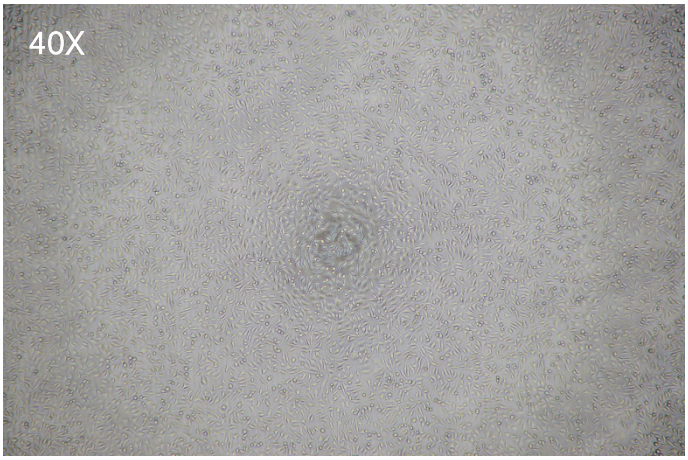
Qualitative morphological grading

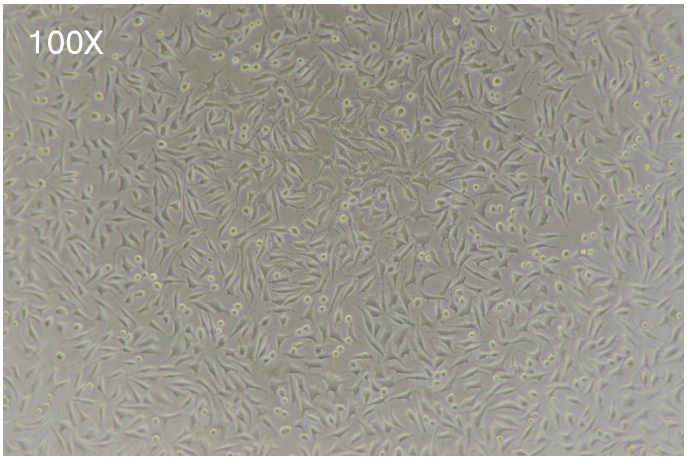
1. DENTAL MODEL (0)



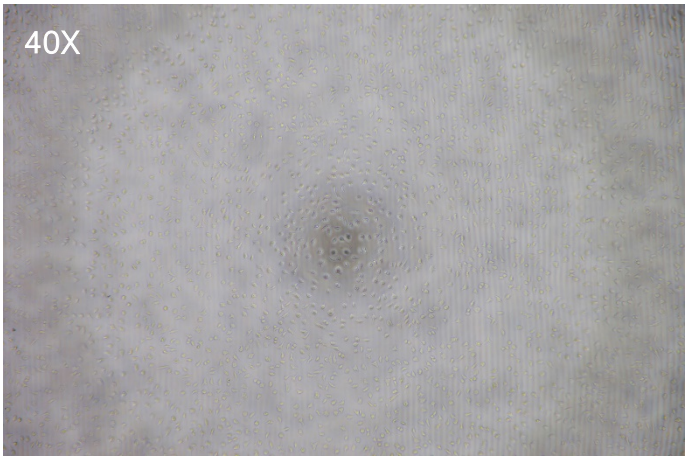


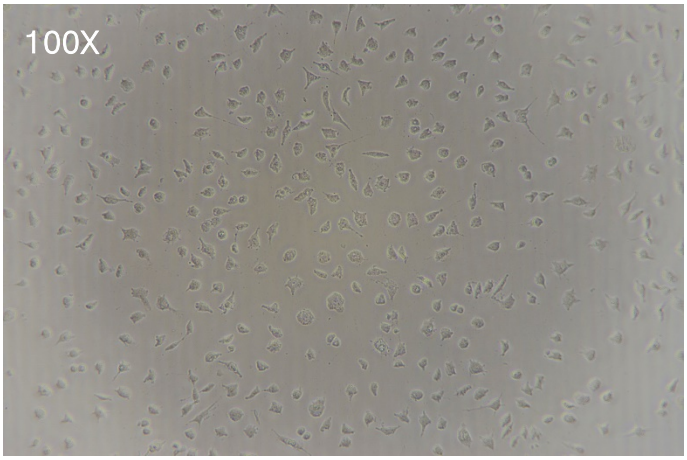
2. Negative Control (0)



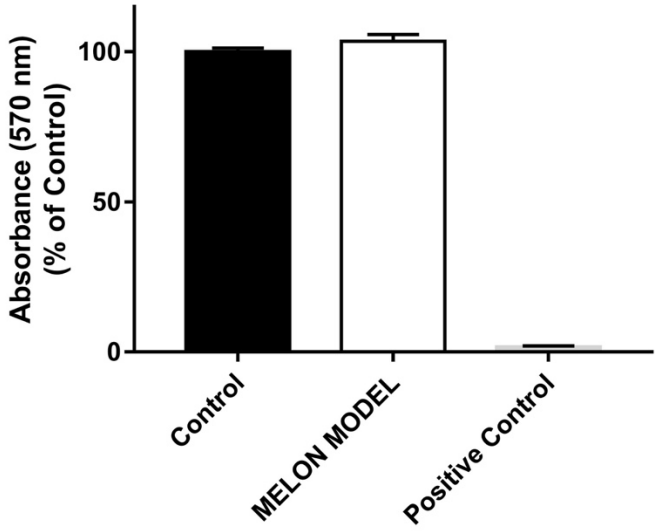


3. Positive Control (4)





MTT cytotoxicity test



MTT test grading

Sample	Cytotoxicity (%)	MTT test grading
DENTAL MODEL	-3.43%	0
Positive Control	98.35%	4

Grade: < 10% = 0 10~30% = 1 30~50% = 2 50~70% = 3 > 70% = 4

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