

TECHNICAL DATA SHEET

UHMWPE Rod - Medical Grade

(Purity: 99.9%, Diameter: 35mm, Length: 500mm)

Stock No: NHS01-00004, CAS: 9002-88-4

Product	:	UHMWPE Rod
Stock No	:	NHS01-00004
CAS	:	9002-88-4
Purity	:	99.9%
Grade	:	Medical
Diameter	:	35mm
Length	:	500mm
Molecular Formula	:	(CH ₂ C ₅₂) _n
Molecular weight	:	4 million
Form	:	Solid
Colour	:	White

Material Properties	Specification	Standard	Units
Average molecular weight	approx. $5 * 10^6$		g/mol
Elongation Stress F (150/10)	>0.2		(Mpa)
Viscosity number (VN)	> 2000		(ml/g)
Density	927 – 944	ISO 1183	(kg/m ³)
Water absorption at 23° C until saturation	< 0,01	ISO 62	(%)

Mechanical Properties	Specification	Standard	Units
Tensile stress at yield	> 21	ISO 527	(MPa)
Tensile stress at break	> 35	ISO 527	(MPa)
Elongation at break	> 300	ISO 527	(%)
Tensile modulus	approx. 720	ISO 527	(MPa)
Impact strength	no break	ISO 179	(kJ/m ²)
Notched impact strength	> 180	ISO 11542-2	(kJ/m ²)
Ball indentation hardness	30 – 35	ISO 2039-1	(N/mm ²)
Shore-Hardness D, 15 s value	60 – 65	ISO 868	(-)

Thermal properties	Specification	Standard	Unit
Melting point DSC, 10 K/min	130 – 135	ISO 3146	(°C)
Vicat softening point	80	ISO 306	(°C)
Thermal expansion between 23 and 80° C	2 * 10 ⁻⁴	ISO 11359	(K-1)
Heat deflection temperature	42	ISO 75, Teil	(°C)
Thermal conductivity	approx. 0,4	ISO 52612	(W/[m*K])

Electrical properties	Specification	Standard	Unit
Relative permittivity at 100 Hz	2,1	IEC 60250	(-)
Dissipation factor at 100 Hz	3,9 * 10 ⁻⁴	IEC 60250	(-)
Volume resistivity	> 10 ¹⁴	IEC 60093	(Ohm*m)
Surface resistivity	> 10 ¹³	IEC 60093	(Ohm)
Dielectric strength	45	IEC 60243	(kV/mm)

Physiological properties

Food conformances according to

	Specification
EU Directive 2002/72/EC	Yes
FDA Regulation 21CFR177.1520	Yes
FDA Regulation 21CFR178.2010	N/A
FDA Regulation 21CFR178.3297	N/A

Sterilisation

	Specification
Etyhlene oxide	Yes
Gas plasma	Yes
Gamma (inert atmosphere)	Yes
Superheated steam 121/134° C	No/No

Conformances

	Specification
USP Class VI	Yes
Cytotoxicity	Yes
Drug Master File – DMF	10916-EU
Drug Master File – DMF	10904-USA
Device Master File – MAF	588
ISO 5834-2	Type 1
ASTM F 648	Type 1

Main Inspect Verifier

Date of Print

Version

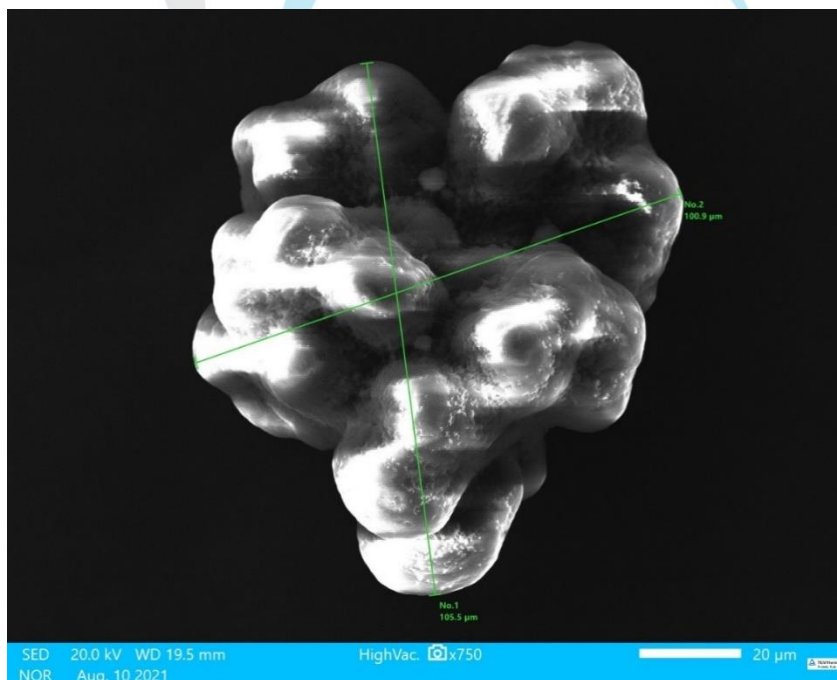
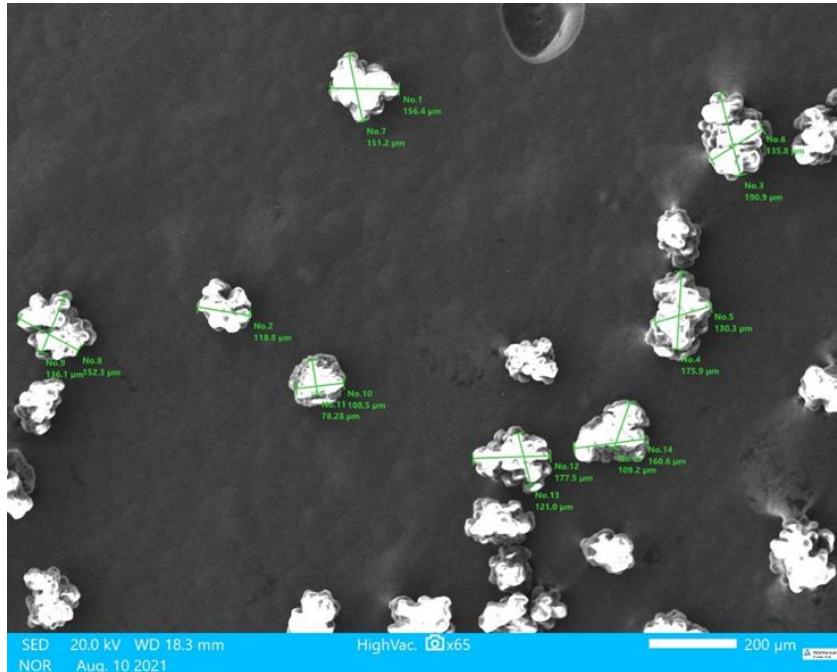
Manager QC

October 2021

1

Note: Product Specification are subject to amendment and may change over time

Scanning Electron Microscope (SEM) Analysis: Item: UHMWPE Powder



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Regd office: Plot #: 123, Industrial Area (Ph-2), Panchkula -134113 HR (INDIA)

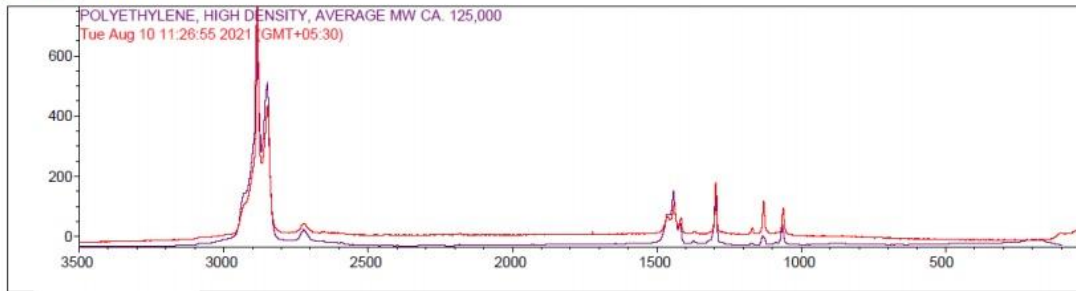
Tel: +91-9815 85 9815, 9815 50 9815 | **✉** sales@nanoshel.com, nanoshelhealthcare@gmail.com

RAMAN ANALYSIS OF UHMWPE

Item: UHMWPE Powder

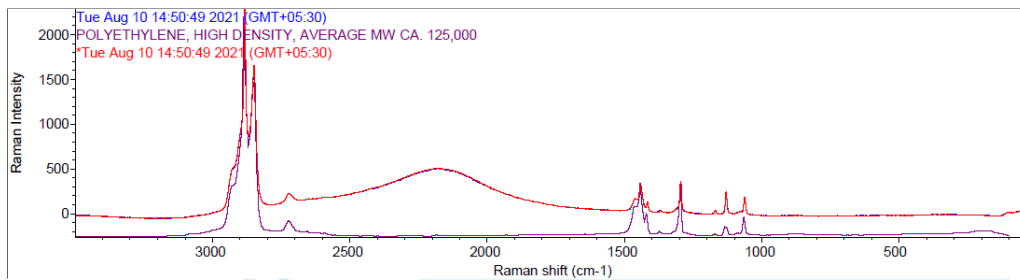
Raman Analysis:

Item: UHMWPE Powder



Result: The powder is identified as high density Polyethylene (HDPE)

Item: UHMWPE Extruded Bar



Result: The extruded bar is identified as high density Polyethylene (HDPE), with broadening observed between 2000-2400 cm-1.

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UHMWPE
— RODS —
Medical Grade

NANOSHEL HEALTHCARE PVT. LTD.

Manufacturing Unit:

I Hub B1, Ground Floor, Andhra Pradesh
Medtech Zone Ltd, Survey No 480/2, Nadupuru
Village Pedagantyada Mandal, Visakhapatnam,
Andhra Pradesh, 530031 (India)



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Nanoshel Healthcare Pvt. Ltd.

*Manufacturers of UHMWPE Rods and Medical Implants



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