team medical supplies

gloveon

Avalon

BIODEGRADABLE
NITRILE EXAM GLOVES

BACKGROUND

The world currently produces over 300 million tonnes of plastic each year (APCO 2018; Emadian et al. 2017; Rujnić-Sokele et al. 2017), and creates over 30 million tonnes in plastic waste with 93% of it ending up in landfill or oceans (Emadian et al. 2017). Single use plastics are the single major contributor to plastic waste in terrestrial and marine environments, posing a serious threat to wildlife in these environments and general public health (Emadian et al. 2017; Narancic et al. 2018).

The long period of accumulation and persistence in the environment of non-biodegradable plastics allows them to enter the food chain, as well as release large amounts of carbon dioxide emissions into the atmosphere (Emadian et al. 2017).

With the majority of medical consumables and packaging ending up in landfill, new solutions are needed to reduce the impacts of this waste (Kale et al. 2007).

The switch to bioplastics represents a real opportunity for the health sector to help with this problem.

WHAT ARE BIOPLASTICS?

What is a bioplastic?

The term bioplastic is used to describe plastics that are either:

- **derived from renewable materials** like plant oil, starch and cellulose (also known as bio-based plastics) or;
- **plastics that are biodegradable** including conventional (fossil fuel) or bio-based.

Examples of bioplastics include biobased polyethylene (PE), polylactic acid (PLA), and polycaprolactone (PCL).

Bioplastics currently make up about 1% of the total production of plastics in the world (APCO 2018; Rujnić-Sokele et al. 2017)

What is biodegradable plastic?

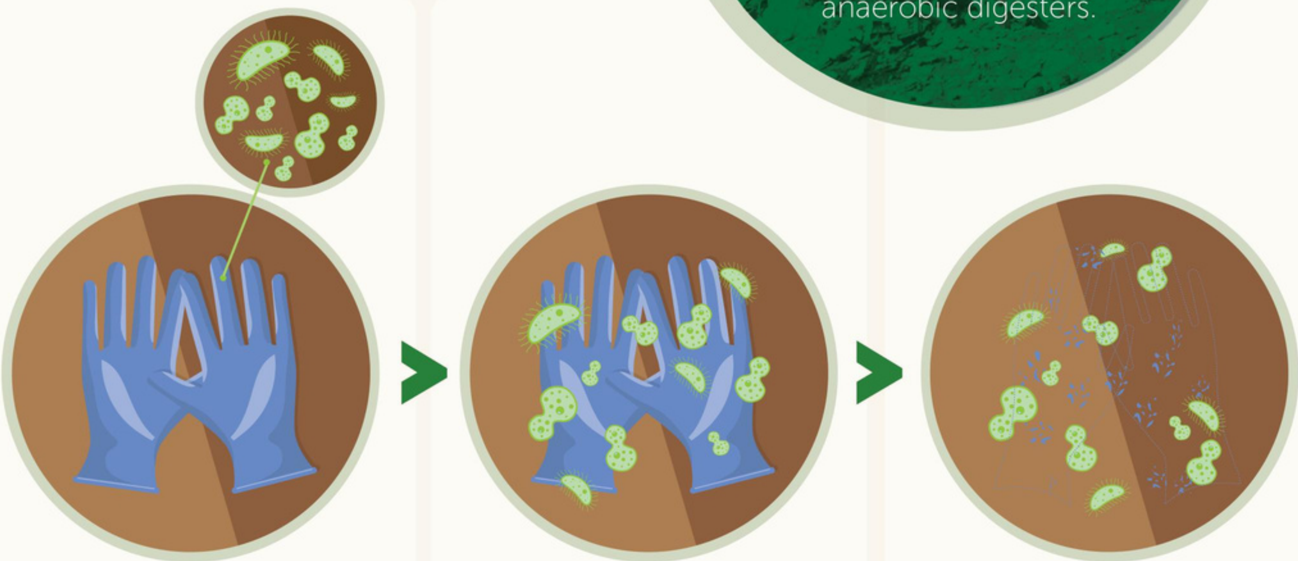
Biodegradable plastics are plastics that **degrade through interactions with microorganisms** such as bacteria, fungi and algae and are converted back into carbon dioxide and water over a period of months or years as opposed to decades or centuries.

GLOVEON AVALON BIODEGRADABLE TECHNOLOGY

Temperature, moisture, pH levels and oxygen content are all important environmental factors to consider when looking at the biodegradation of plastics (Emadian et al. 2017). GloveOn Avalon has been specially formulated to include an organic additive which attracts microbes found exclusively in landfill and anaerobic digester environments that break down their polymers naturally through mineralisation.

GloveOn Avalon gloves biodegrade up to **30% in <7 months** in landfill conditions.

GloveOn Avalon gloves biodegrade up to **90% in <1.5 years** in anaerobic digesters.



Gloves Exposed to Landfill Microorganism

When microbes identify a food source, they send out chemical signals to other microbes which then colonize on the glove and begin to consume it.

Gloves are Consumed by Microorganism

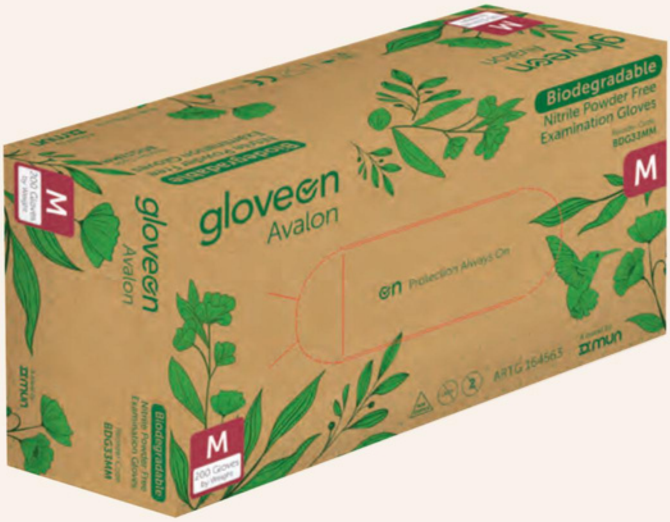
Over time, the glove is consumed through a natural process called mineralisation, leaving behind organic material such as inert humus, CO_2 and methane gas.

Gloves Biodegrade

90% biodegradation rate in 490 days.*

*Tested based on ASTM D5511.

Standard	Test	Result
ASTM D5526	To determine the degree and rate of anaerobic biodegradation of materials in accelerated landfill conditions. This is a long-term test that **replicates the landfill environment** of low heat, high pressure, limited oxygen, no light and low moisture.	30% biodegradation in 202 days.
ASTM D5511	To determine the degree and rate of anaerobic biodegradation of materials in high-solids anaerobic digestion conditions, which **replicates the anaerobic digester or landfill bioreactor environment.**	90% biodegradation in 490 days.



gloveon Avalon

BIODEGRADABLE NITRILE EXAM GLOVES

Powder Free, Standard Cuff

NON STERILE | LATEX | CE

	GloveOn® Avalon	
Length (mm)		
	≥ 230	
Thickness Measurements (mm)		
Palm (centre of Palm)	0.07 ± 0.02	
Finger (13mm ± 3mm from tip)	0.10 ± 0.02	
Physical Properties	**Before Ageing**	**After Ageing**
Tensile Strength (MPa)	≥ 18	≥ 16
Elongation (%)	≥ 500	≥ 400
Inspection Levels & AQL	**Inspection Level**	**AQL**
Watertightness	G1	1.5
Physical Dimensions	S2	4.0
Tensile Strength	S2	4.0
Visual Inspection (Major)	S4	2.5
Visual Inspection (Minor)	S4	4.0
Particulate Residue	N = 5	≤ 2mg/glove

Chemotherapy Drugs and Concentration (Tested for Resistance to Permeation by Chemotherapy Drugs as per ASTM D6978-05-Test Report PN 151891B - Rev 1)	Minimum Breakthrough Detection Time (minutes)
Carmustine (BCNU), 3.3mg/ml (3,300 ppm)	22.2 Minutes
Cisplatin, 1.0mg/ml (1,000 ppm)	>240 minutes
Cyclophosphamide (Cytoxan), 20.0mg/ml (20,000 ppm)	>240 minutes
Dacarbazine (DTIC), 10.0mg/ml (10,000 ppm)	>240 minutes
Doxorubicin Hydrochloride, 2.0mg/ml (2,000 ppm)	>240 minutes
Etoposide (Toposar), 20.00mg/ml (20,000 ppm)	>240 minutes
Fluorouracil, 50.0mg/ml (50,000 ppm)	>240 minutes
Methotrexate, 25.0mg/ml (25,000 ppm)	>240 minutes
Mitomycin C, 0.5mg/ml (500 ppm)	>240 minutes
Paclitaxel (Taxol), 6.0mg/ml (6,000 ppm)	>240 minutes
Thiotepa, 10.0mg/ml (10,000 ppm)	66.1 Minutes
Vincristine Sulfate, 1.0mg/ml (1,000 ppm)	>240 minutes

WARNING: Carmustine and Thiotepa, at the tested concentration, degraded Avalon nitrile glove at 22.2 minutes and 66.1 minutes, respectively. The safe use of gloves in chemotherapy treatment is solely the decision of clinicians authorised to make such decision.

REORDER CODE

BDG33XS X-SMALL
BDG33SS SMALL
BDG33MM MEDIUM
BDG33LL LARGE
BDG33XL X-LARGE

FEATURES

- Fingertip textured
- Powder free
- Not made with natural rubber latex
- Chemo drugs tested
- Lab chemical tested
- Ambidextrous
- Standard cuff
- Violet blue colour

PACKAGING

200 gloves per box for XS to L
180 gloves per box for XL
10 boxes per carton

REGULATORY COMPLIANCE

ARTG 164563, FDA 510(k), MDR 2017/745, REACH, ROHS Directive 2002/95/EC, EU 10/2011, EC 1935/2004, EU 2016/425

STANDARDS

ASTM D6319, ASTM D5151, ASTM D6124, ASTM D6978, ASTM D5526, ASTM D5511, EN ISO 374-1 (Type C), EN 374 part 2, 4 & 5, EN 16523-1, EN 420, EN 455 part 1, 2, 3 & 4, EN 1186, EN 13130, CEN/TS 14234, ISO 10993 part 5 & 10

MANUFACTURING ACCREDITATIONS

ISO 9001, ISO 13485, EN ISO 13485