

Gelatin Capsules: A cure for hundreds of Lab. Headaches.

Unique Properties:

Material: biodegradable, non-toxic, natural origin (protein), few inorganic impurities, FDA approved

Solubility: soluble in water and biological fluids; a soluble mold

Soluble in-vivo (orally, vaginally, rectally, subcutaneous and intraperitoneal implantation)

Insoluble in organics or oils

Delays reaction of one or more materials in a solution for 2-3 minutes.

Appearance: clear, transparent for easy inspection of contents, allows light (including UV) to pass through.

Opaque colors block light.

Temperature Stability: may be cooled to 5k and thawed to 298k. Store between 60-80 F & 40-60% RH.

Combustion: low heat of combustion

Novel Applications:

The examples below are only few of the variety of uses for capsules in laboratories like yours.

General Use	Examples	Procedure & Advantage of Capsule
Storage	Shells ¹ , Optics, Insects ² , Stones ³	Capsules are 100% biodegradable and made from a natural protein (gelatin), offer sample visibility and protection from moisture and O ₂ ; are free of volatile monomers; low cost.
Unit Dose container for reagents, etc.	Bacteria media ⁴ BOD Demand Test ⁵ Ph buffer ⁶ Free Chlorine Test ⁷	Capsules containing a measured quantity of reference material dissolve when added to water. Convenient, waste-free, closed system.
Analytical Test Method – Delayed Reaction	CaCO ₃ in soil ⁸ Can/Bottle Testing ⁹ Coulometric TCO ₂ ¹⁰	Capsule delays HCL reaction with soil until container is sealed Capsule containing NaCO ₃ added to a can/ bottle with H ₂ O which is sealed. Capsule dissolves and container is checked for resistance to gas pressure. Capsule delays reaction until container is sealed.
Fungicide	Utility Poles ¹¹	Capsule disintegrates in fungus infested utility pole and released MITC
Biological Pest Control	Parasite Growth Container ¹²	A worm and an agriculturally desirable parasite and placed in capsule; parasites infest worm and multiply; capsule containing parasites crushed and distributed in infested crops.
Soil Treatment	Biocaps 2.5 ¹³	Capsule disintegrates in soil to release natural fruit tree inoculants
Implantation Subcutaneous	BMP ¹⁴	Capsule container powdered BMP is surgically inserted at bone damage site and dissolves after incision is closed.
Analytical Testing – Combustion	Fuel Heat Content ¹⁵	Capsule has few impurities; can hold organic solvents; yields little heat during combustion; no loss of volatiles.
Disposable Test Tube	Brookfield Viscosity Testing	Paint is added to large capsule and viscosity is measured using a Brookfield.
Implantation Intraperitoneally	Simulation of surgical infections ¹⁶	Capsule containing infectious material is surgically inserted; capsule is found to moderate effect of infectious material so it causes a treatable infection and not fatal sepsis
Soluble Sample Container	Freon in Tobacco ¹⁷	Capsule filled with Freon aerated tobacco, holds Freon in tobacco until it is added to test solution where it dissolves and Freon released in measured.
Soluble Mold	Biological material embedding ^{18, 19}	Test sample placed in capsule and resin added. Capsule washed of after resin cures. Capsules: area an O ₂ barrier; allow UV light curing; dissolve of without causing stress to sample.

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