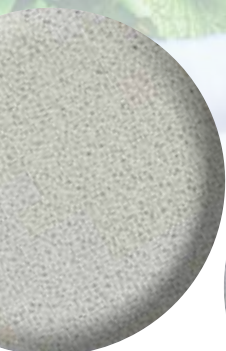
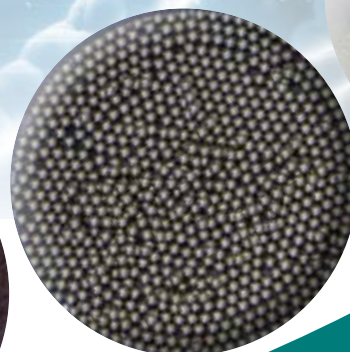


Molecular Biology

Lysing Matrix



**Lyse the Toughest,
Hardest and Most Difficult
Samples with ease!**



Lysing Matrix

**Uncompromised
Reliability,
Higher Yields of
Intact DNA, RNA &
Proteins**

FastPrep® Lysing beads and matrices make difficult-to-lyse samples easy. No matter how tough or resistant your samples are our bead beating tubes will effectively disrupt cell walls, providing the highest yields of nucleic acids and proteins in a matter of seconds. Sample lysis tubes from MP Biomedicals are highly reproducible with no cross-contamination. All lysing matrix tubes are standard sizes and fit just about any homogenizer on the market. We offer a wide variety of lysing beads and matrices to fit all sample types and applications.

- Optimal cell disruption for any sample.
- Size of the beads and composition optimized according to the sample.
- No cross contamination with closed Lysing Matrix tubes.
- Available in 2ml, 4.5ml, 15ml, 50ml tubes or 96 well plates.
- Fit any high-speed bead-beating homogenizers.
- Validated worldwide with 3,000+ Lysing Matrix specific publications.

FastPrep® sample tubes range from low to high impact breaking down any sample type whether the cell walls are hard and brittle or soft. Sample types include but are not limited to: human and animal and plant tissues; microorganisms like bacterial, yeast and fungi; plant, soil, fecal, plus insects and worms.

Impact-resistant lysis tubes with beads are available in 2 mL, 4.5 mL, 15 mL, 50 mL and 96-well format sizes and contain a wide variety of materials to meet your lysing, grinding, and homogenization needs. All matrix particles are produced to the highest quality standards to ensure optimum performance. The lysing matrix particles are then dispensed into the Lysing Matrix Tubes under a rigorous set of proprietary conditions allowing complete confidence for immediate use.

For optimal performance and results we recommend using in conjunction with our FastPrep-24™ 5G Homogenizer and FastPrep® Extraction Kits. Using this combination to easily grind, lyse and homogenize any sample type in seconds. Not only is it fast and efficient but can be dependable time over time.

FastPrep® Lysing Matrix tubes are very versatile, consisting of 16 unique sample tubes that fit any sample type! Whatever your sample, we have the solution. Our matrices contain properties that contribute to optimum success in your protocols. Various properties of a lysing matrix particle, whether inherent or selected, can yield a myriad of end-products depending on the dynamic qualities instilled in that particle by said properties. The inherent properties include the hardness, composition, and density, while the selected properties include the shape and the size.

www.mpbio.com/lysing matrix



Properties of Lysing Matrix

Size:

The smaller the particles used in the grinding media, the smaller the average particle size and the smaller the lowest-limiting particle size produced during pulverization. Matrix particle size should be selected based upon the size of the particles you wish to obtain in your lysate. For example, if your goal is to obtain intact and functional organelles, it's best to utilize a larger grinding media. Utilizing a smaller size matrix would be more conducive to lysing smaller structures, such as viral particles and endospores.

Shape:

The shape of the grinding media is a major determining factor in how cells are disrupted. Dull media, such as spherical beads, utilize cascade impaction (hammering) as the main force for cell lysis. Sharp and angular shaped media will primarily generate mechanical shear forces (chopping and cutting) which can quickly open difficult cell walls, grind fibrous or elastic animal tissue, or crack spores or oocytes. Shear forces are preferable when isolating stable molecules such as DNA, stable proteins, structural polysaccharides and small molecules or metabolites. RNA and certain easily denatured proteins can be quickly degraded by shear forces, so care needs to be taken when using angular media. For isolation of these molecules, smooth impactor grinding media can be much more forgiving.

Hardness, Density and Composition:

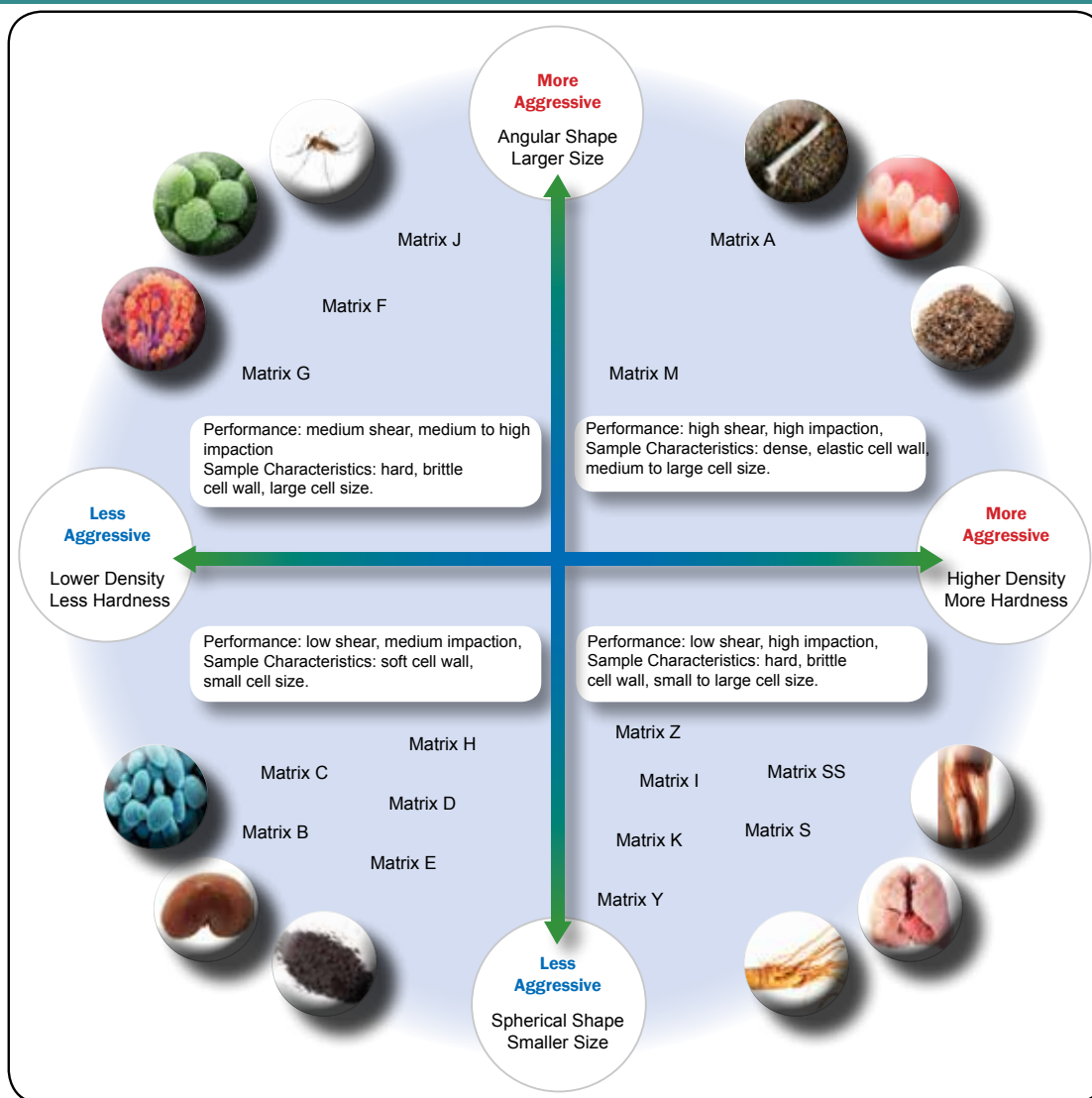
The composition determines two very important qualities: hardness and density, both of which are inherent physical properties derived from the molecular composition of the matrix particle. The hardness must be greater than that of the sample being pulverized, with higher hardness values being more effective at disrupting hard and brittle cell membranes. Density is defined as mass per unit volume, and by Newton's 2nd Law, $F=ma$ – it follows that a denser matrix particle will generate higher force and more effectively disrupt tough cell walls or hard samples with dense extracellular matrices (ie., seeds, spores, insects.) Hardness and density values help optimize lysis efficiency while preserving the integrity of the analytes of interest.

A Word About Knoop and Mohs:

Materials chosen for FastPrep® Lysing Matrix products are carefully selected based on several criteria. As discussed above, the hardness value is a key characteristic and is evaluated by standard assays, which are reported for each of our quality reagents. The Knoop hardness test defines mechanical hardness of brittle materials. A small indentation is made in the material surface using a diamond point applied with known force/time. The resulting indentation is measured using a microscope and scored with values from 100 to 1000, with increasing values being indicative of increased material hardness. The Mohs scale defines the scratch resistance of minerals, assessed as the ability of a harder material to scratch a softer material. Values range between 1 and 10, with talc being 1 and diamond 10. Hardness valuations used in engineering include Vickers and Rockwell, with higher numbers defining higher hardness.

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Choosing the Best Lysing Matrix



Lysing Matrix

Matrix Composition

● A	Garnet matrix and 1/4 inch ceramic beads
● B	0.1 mm silica spheres
● C	1 mm silica spheres
● D	1.4 mm ceramic spheres
● E	1.4 mm ceramic spheres, 0.1 mm silica spheres, and 4 mm glass beads
○ F	1.6 mm aluminum oxide particles, and 1.6 mm silicon carbide particles
● G	1.6 mm silicon carbide particles and 2 mm glass beads
● H	2 mm glass beads, and 2 mm yellow zirconium oxide beads

Lysing Matrix

Matrix Composition

○ I	2 mm yellow zirconium oxide beads and 4 mm black ceramic sphere
● J	2 mm yellow zirconium oxide beads and 1.6 mm aluminum oxide particles
● K	0.8 mm zirconium silicate beads
● M	1/4 inch ceramic beads
○ S	1/8 inch stainless steel beads
○ SS	6.35 mm stainless steel grinding balls
○ Y	0.5 mm diameter Ytria-stabilized zirconium oxide beads
○ Z	2 mm diameter Ytria-stabilized zirconium oxide beads

Ready-to-use Lysing Matrix

Lysing Matrix

Sample type		A	B	C	D	E	F	G	H	I	J	K	M	S	SS	Y	Z	
Animal & Human tissues																		
Soft tissues	Lung, Breast, Kidney, Heart, Intestine, Muscle, Spleen, Liver, Brain	x			x									x	x		x	
	Skin	x			x													
	Nail													x				
	Tail, Ear	x												x				
Unique samples	Artery	x			x												x	
	Hair													x				
	Bone	x										x	x	x	x			
	Tumor	x												x				
	Mammalian cell	x			x												x	
	Infected tissue (isolation of viruse)													x				
Microorganisms																		
Bacteria (gram+ and -)		x	x				x				x							
Yeast, Mold		x		x			x	x				x					x	
Bacterial & Fungal spore		x	x				x	x		x	x	x				x		
Algae		x		x				x									x	
Virus		x	x															
Environmental samples																		
Soil, Marine sediment, Rhizosphere, Manure, Compost, Sludge, Feces, Wastewater						x		x	x	x								
Plant tissues																		
Leave		x			x		x	x										x
Seed		x					x	x	x	x			x	x	x			
Root		x					x	x						x				
Needle		x					x	x					x	x				
Wood		x					x	x	x	x								
Stem, Flower		x			x		x	x										x
Insects & worms																		
Ticks, Fly		x			x					x	x							x
Nematode		x		x	x													x
Bee, Mosquitoe		x			x													x

Cat. No.	Description	Pack Size
116910050		50 x 2mL
116910100	Lysing Matrix A	100 x 2mL
116910500		500 x 2mL
116970025		25 x 4.5mL
116970050	Lysing Matrix A	50 x 4.5mL
116970100		100 x 4.5mL
116930005		5 x 15mL
116930025	Lysing Matrix A	25 x 15mL
116930050		50 x 15mL
116950010		10 x 50mL
116950050	Lysing Matrix A	50 x 50mL
116950100		100 x 50mL
116950500		500 x 50mL
116540427	Lysing Matrix A, bulk	500 gm
116980001	Lysing Matrix A	96-well Rack
116980010		10 x 96-well Racks
116911050		50 x 2mL
116911100	Lysing Matrix B	100 x 2mL
116911500		500 x 2mL
116971025		25 x 4.5mL
116971050	Lysing Matrix B	50 x 4.5mL
116971100		100 x 4.5mL
116931005		5 x 15mL
116931025	Lysing Matrix B	25 x 15mL
116931050		50 x 15mL
116951010		10 x 50mL
116951050	Lysing Matrix B	50 x 50mL
116951100		100 x 50mL
116951500		500 x 50mL
116540428	Lysing Matrix B, bulk	500 gm
116981001	Lysing Matrix B	96-well Rack
116981010		10 x 96-well Racks
116912050		50 x 2mL
116912100	Lysing Matrix C	100 x 2mL
116912500		500 x 2mL
116972025		25 x 4.5mL
116972050	Lysing Matrix C	50 x 4.5mL
116972100		100 x 4.5mL
116932005		5 x 15mL
116932025	Lysing Matrix C	25 x 15mL
116932050		50 x 15mL
116952010	Lysing Matrix C	10 x 50mL
116952050		50 x 50mL
116540432	Lysing Matrix C, bulk	500 gm
116982001	Lysing Matrix C	96-well Rack
116982010		10 x 96-well Racks

Cat. No.	Description	Pack Size
116913050		50 x 2mL
116913100	Lysing Matrix D	100 x 2mL
116913500		500 x 2mL
116973025		25 x 4.5mL
116973050	Lysing Matrix D	50 x 4.5mL
116973100		100 x 4.5mL
116933005		5 x 15mL
116933025	Lysing Matrix D	25 x 15mL
116933050		50 x 15mL
116953010		10 x 50mL
116953050	Lysing Matrix D	50 x 50mL
116953100		100 x 50mL
116953500		500 x 50mL
116540434	Lysing Matrix D, bulk	500 gm
116983001	Lysing Matrix D	96-well Rack
116983010		10 x 96-well Racks
116914050		50 x 2mL
116914100	Lysing Matrix E	100 x 2mL
116914500		500 x 2mL
116974025		25 x 4.5mL
116974050	Lysing Matrix E	50 x 4.5mL
116974100		100 x 4.5mL
116934005		5 x 15mL
116934025	Lysing Matrix E	25 x 15mL
116934050		50 x 15mL
116954010		10 x 50mL
116954050	Lysing Matrix E	50 x 50mL
116954100		100 x 50mL
116984001	Lysing Matrix E	96-well Rack
116984010		10 x 96-well Racks
116915050		50 x 2mL
116915100	Lysing Matrix F	100 x 2mL
116915500		500 x 2mL
116916050	Lysing Matrix G	50 x 2mL
116916100		100 x 2mL
116917050	Lysing Matrix H	50 x 2mL
116917100		100 x 2mL
116918050	Lysing Matrix I	50 x 2mL
116918100		100 x 2mL
116919050	Lysing Matrix J	50 x 2mL
116919100		100 x 2mL
116920050	Lysing Matrix K	50 x 2mL
116920100		100 x 2mL

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Cat. No.	Description	Pack Size
116923050		50 x 2mL
116923100	Lysing Matrix M	100 x 2mL
116923500		500 x 2mL
116939025	Lysing Matrix M	25 x 15mL
116939050		50 x 15mL
116959010	Lysing Matrix M	10 x 50mL
116959050		50 x 50mL
116925050		50 x 2mL
116925100	Lysing Matrix S	100 x 2mL
116925500		500 x 2mL
116938005		5 x 15mL
116938025	Lysing Matrix S	25 x 15mL
116938050		50 x 15mL
116941010		10 x 50mL
116941050	Lysing Matrix SS	50 x 50mL
116941100		100 x 50mL
116960050		50 x 2mL
116960100	Lysing Matrix Y	100 x 2mL
116960500		500 x 2mL
116977025		25 x 4.5mL
116977050	Lysing Matrix Y	50 x 4.5mL
116977100		100 x 4.5mL
116975005		5 x 15mL
116975025	Lysing Matrix Y	25 x 15mL
116975050		50 x 15mL
116976010	Lysing Matrix Y	10 x 50mL
116976050		50 x 50mL
116960001	Lysing Matrix Y	96-well Rack
116960010		10 x 96-well Rack
116961050		50 x 2mL
116961100	Lysing Matrix Z	100 x 2mL
116961500		500 x 2mL
116985025		25 x 4.5mL
116985050	Lysing Matrix Z	50 x 4.5mL
116985100		100 x 4.5mL
116978005		5 x 15mL
116978025	Lysing Matrix Z	25 x 15mL
116978050		50 x 15mL
116979010	Lysing Matrix Z	10 x 50mL
116979050		50 x 50mL
116961001	Lysing Matrix Z	96-well Rack
116961010		10 x 96-well Rack



Biopulverizer System I

Cat. No. 116750200

The perfect starter pack for new FastPrep Instrument owners.
Suitable for all sample types

Biopulverizer System II

Cat. No. 116850200

The perfect pack for processing difficult samples, such as skeletal muscle, pancreas, lung, heart, bone, seeds and spores.



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