RNAS REMEDIATION PRODUCTS
6712 West River Road, Brooklyn Center, MN 55430
(763) 585.6191 www.RNASinc.com

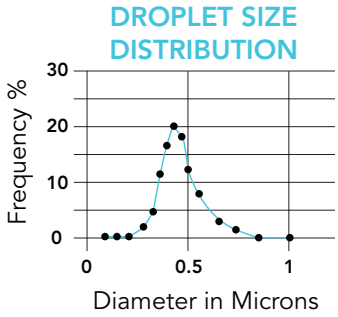
www.rnasinc.com

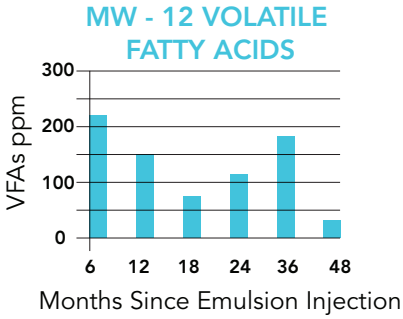
USDA CERTIFIED BIOBASED PRODUCT
PRODUCT 97%

Newman Zone

A Balance Of Fast And Slow Release Electron Donors

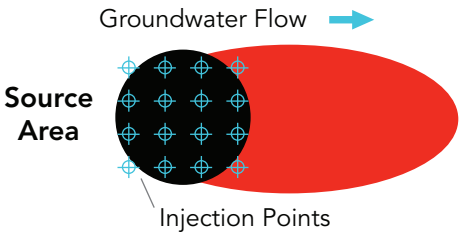
Newman Zone® is an electron donor for enhancing the in situ anaerobic bioremediation of chlorinated solvents, nitrated explosives (RDX, HMX, TNT), selected toxic metals (chrome VI), perchlorate and nitrate. Newman Zone® has both fast and slow-release electron donors. Lactate stimulates microbial growth within hours of injection and rapidly produces anaerobic conditions in the subsurface. Vegetable oil droplets are retained on soil particles and slowly ferment to hydrogen and volatile fatty acids which support anaerobic biodegradation for as long as five years after injection.

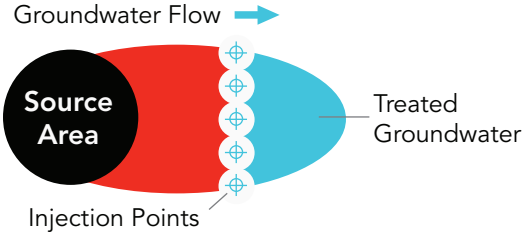




Application

Newman Zone® emulsions contain a minimum of 50 percent vegetable oil by volume in concentrated form. The emulsion is usually diluted to 5 percent or less oil by volume prior to injection. After dilution the emulsion has a low viscosity similar to water allowing it to be applied by direct push injections, injection wells, water circulation systems and even direct application to source area excavations prior to backfilling. Common treatment configurations include an injection grid used to treat contaminant source areas and bio-barriers to treat dissolved plumes.





Benefits – The Smallest Emulsion Droplet Size in the Industry

Newman Zone® is an oil-in-water emulsion consisting of oil droplets between 0.15 and 0.60 microns in size with a median size of 0.30 microns. Our uniquely small oil droplet size maximizes mobility in silt and clay soils and allows for excellent stability when blended with oxygen scavengers, buffers and other amendments prior to injection. The large droplet emulsions provided by other companies can result in oil/water separation, limited distribution or reduced soil permeability.

Experience – Over a Decade of Results From Millions of Pounds Delivered!

Newman Zone® was the first factory produced small droplet emulsified oil product on the market. Since the first production run in 2002 we have delivered millions of pounds of emulsion to thousands of sites around the world.

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Product Content

Chemical Name	CAS Number	Composition (%wt)
Soybean Oil (food grade)	8001-22-7	>46%
Sodium-L-Lactate	867-56-1	4%
Sodium Bicarbonate (buffered formulations only)	144-55-8	1%
Food Additives / Emulsifiers / Preservatives	Proprietary	<10%
Water		Balance

Product Characteristics

Parameter	Unit	Specification
Density	g/cm^3	0.99
Particle Size	µm	0.15 - 0.60
Flash Point	°F	>540 (closed cup)
Appearance		White opaque liquid

Packaging

Newman Zone® is available in 5-gallon pails (40 pounds net) and 275-gallon totes (2,100 pounds net). For large projects bulk emulsion can be delivered in either iso-tanks or food grade tanker truck loads.

Storage

The small droplet Newman Zone® emulsion is kinetically stable and pasteurization prevents microbial spoilage. We keep inventory in chilled storage where the shelf-life can exceed five years. Newman Zone® can be stored on-site for 2-4 months without refrigeration. Avoid freezing conditions. Temperatures that average below 25 degrees Fahrenheit may result in frozen emulsion.

Safety

No protective equipment is necessary under normal use conditions. All ingredients consist of food or food grade additives.