MIM Frangible Energetic Projectiles For Medium Caliber Weapons

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&

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Contents:

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Introduction:

Advancing Training And Special Purpose Projectiles With Molded Projectile Technology

From

nP Technology, LLC

There Is A Better And More Versatile Way To Make These Than This…

(Fired And Unfired Traditional Target Practice Projectiles For Sale On The Internet)

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Introduction:

Advancing Training And Special Purpose Projectiles With Molded Projectile Technology

From

nP Technology, LLC

Features: Molded In Al Windscreen, MIM Brass Base Cup & Integral Drive Band, nP Nano-Frangible Projectile Body With Solid, Energetic Or "Special" Fillers…

Benefits: Reduced Surface Danger Area, Low Ricochet Risk, Improved Accuracy, Lower Molded Technology Production Cost Per Round, Energetic Provides (4) Impact Effect; Auditory, Visual, Thermal, IR…

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Introduction:

Colorado Springs, CO

Made In The USA

nP Technology LLC develops and manufactures small caliber projectiles in support of military, law enforcement, other government agencies, and commercial needs. **nP** specializes in rapid projectile R&D, developed and built on process-matched high volume molding systems, delivered ready-to-load.

"Supporting Our Warfighters With Projectile Technology"

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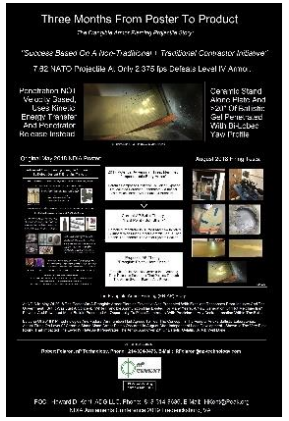
Introduction:

https://np-technology.com/



National Armaments Consortium Member: www.nptrf.com

US Army CCDC ARDEC ARL CRADA: Molded Projectile Technology
Armor Defeating FR-AP, Training, Energetic SOT, SRTA, Marking

NDIA Armaments, Small Arms, Guns & Missiles Committee Presenters

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Introduction:

Questions:

Does The Medium Caliber Community Need Performance Enhancement Of Existing Target Practice And Special Purpose Ammunition?

Is There Also A Need To Reduce Surface Danger Areas, To Produce Marking And Low Collateral Damage Projectiles?

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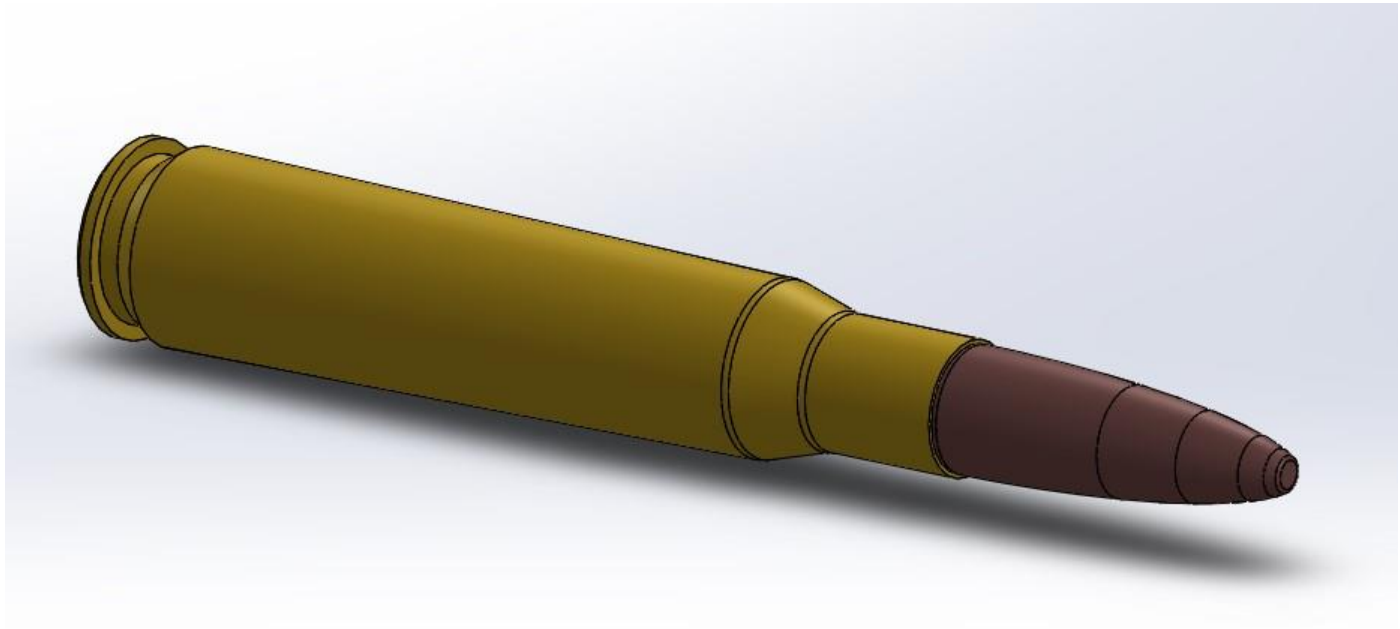
nP Technology Injection Molded Frangible Projectiles:

Consistent And Accurate Polymerized Nano-Particle Construction



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nP Technology Injection Molded Frangible Projectiles:

Consistent And Accurate Polymerized Nano-Particle Construction

Copper Or Brass Nano-Particles

Tungsten Nano-Particles

Iron Or Steel Nano-Particles

Metallic Powders May Be Blended To Achieve The Desired Cost, Weight And Performance

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nP Technology Injection Molded Frangible Projectiles:

With Molded-In Features For Aerodynamics And On-Target Effects










Ballistic And Penetrative Tips, Tracer Cups, Gas Checks And Semi-Jackets

Clockwise From Top Left: Winchester Silvertip, Benjamin Nosler Pellets, ALCO Bullets, Barnes TSX, CVDS Windscreens, US M80A1 Projectile, US 0.50 Spotting Round, Corbin Bullet Cups, Corbin Gas Checks, Swagedies.com Bullet Jackets

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nP Technology Injection Molded Frangible Projectiles:

The nP Technology "Cargo Round" Development:

Virtually Anything Can Be Inserted Into Molded In Cavities…

Molded Features May Include:

- Aerodynamic/Penetrative Tips
- Tracing Compound Inserts
- Brass Drive Band Base Cups
- Impact Fired Shaped Charges
- Solid Or Hollow Cavities
- Other…

Internal Payloads May Include:

- Chemical Or Metallic Powders
- Crystalline Incendiary Materials
- Solid Cores Of Any Material
- Target Marking Compounds
- Preformed Fragments
- Other…

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Training, Target Marking And Special Purpose Applications:

nP Technology *SOT: Visible 20mm Hits Without A Trace…*

Imgur Album F-16 Strafing Modified

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Training, Target Marking And Special Purpose Applications:

Existing 20mm TP Projectile Ricochet Or Long Surface Danger Hazard Resulted In This Projectile Being Found Off Base And Sold On The Internet.

Fired 20mm TP Projectile Analysis:

"High Potential For Frangible SOT Update Of Steel Body Projectiles"

Summary: Steel Body Is A Land Riding Projectile With No Visible Rifling Marks Indicating No Compression In Firing. Base And Tip Features Are Added In Additional Steps. High Potential For Frangible Molded Projectile Bodies With Molded In Base And Tip Features, SOT Effects.

Aluminum Tip Flash And Projectile Dust Impact Signatures Can Be Exceeded With Frangible Body SOT For Day/Night Firing Practice With Low Ricochet Potential.

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Training, Target Marking And Special Purpose Applications:

Worthpoint 20mm Cutaway, Worthpoint Cutaway Modified

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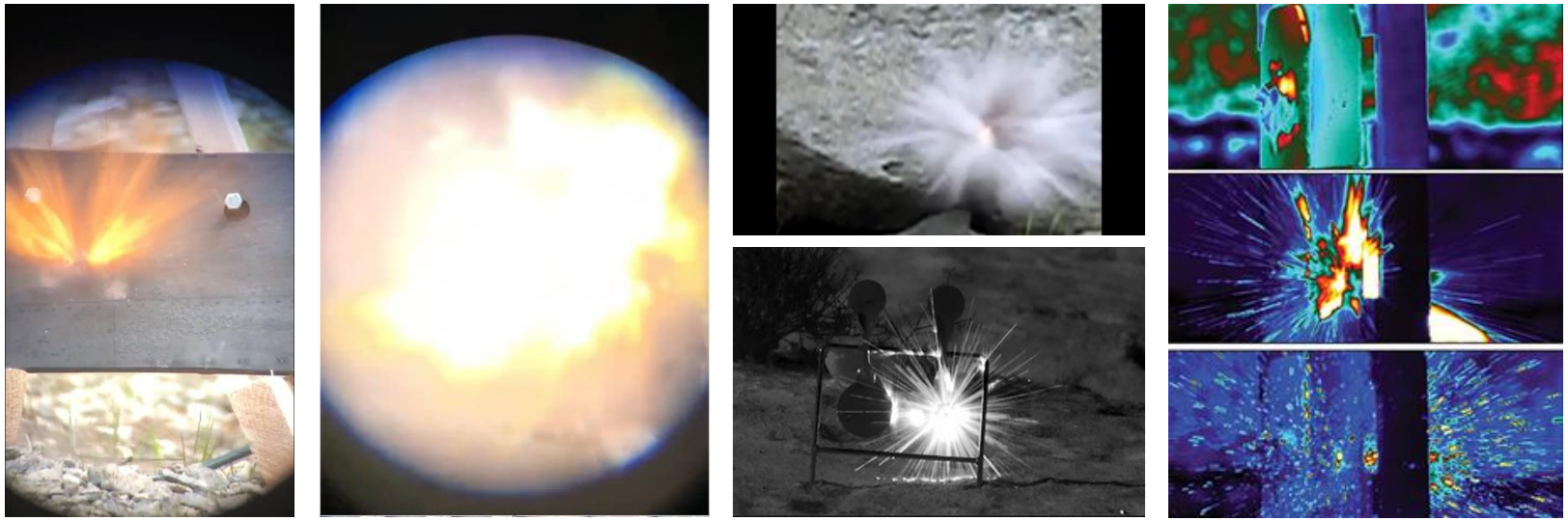
Training, Target Marking And Special Purpose Applications:

Impact Initiated Signature On Target Projectile:

Creating Four Significant Signature Effects Without A Fuse Or Primer…



Left To Right: 7.62x51mm SOT, 12.7x99mm SOT, 7.62x51mm SOT Stone, Frangible Thermal & Photonics Spectra IR

https://www.np-technology.com/50-cal-sot-demonstration/

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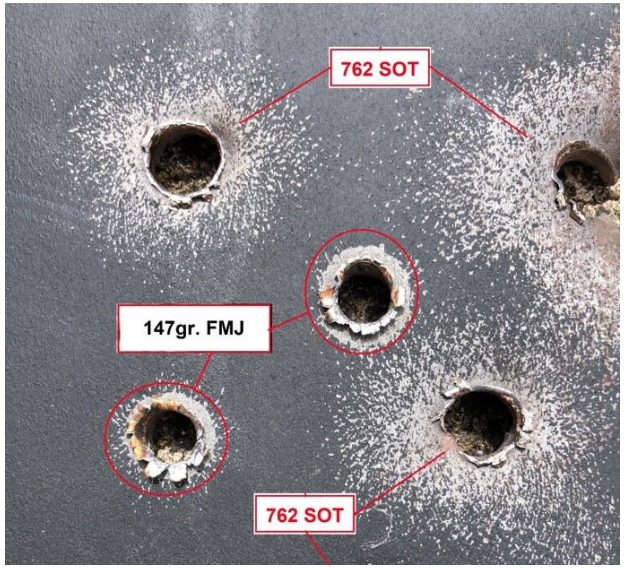
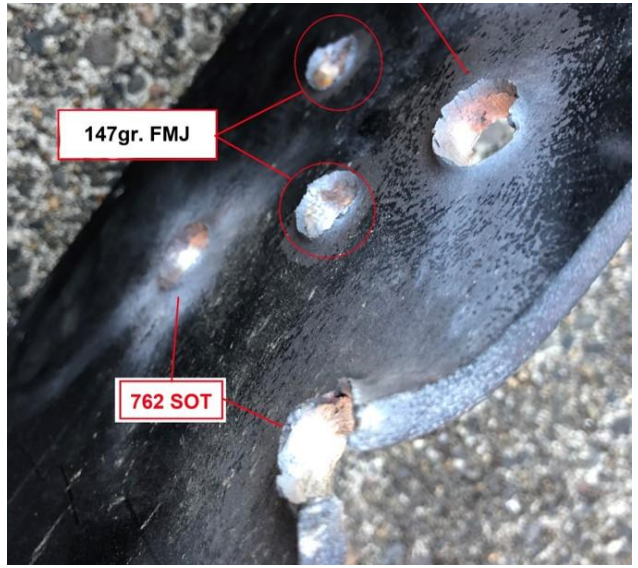
Training, Target Marking And Special Purpose Applications:

Impact Initiated Signature On Target Projectile:

And Greater Effect On Mild Steel Than Ball Ammunition…





Left To Right Above: 20% Larger Holes In ½" Mild Steel With Fragmenting SOT Projectile, Melted Steel And Blast Residue Around Penetrations vs. Bullet Jacket Material Shed From Core With FMJ, 7.62x51mm SOT, Blast And Spall Damage While Producing Four Impact Signatures Which Are Clearly Visible Day Or Night.

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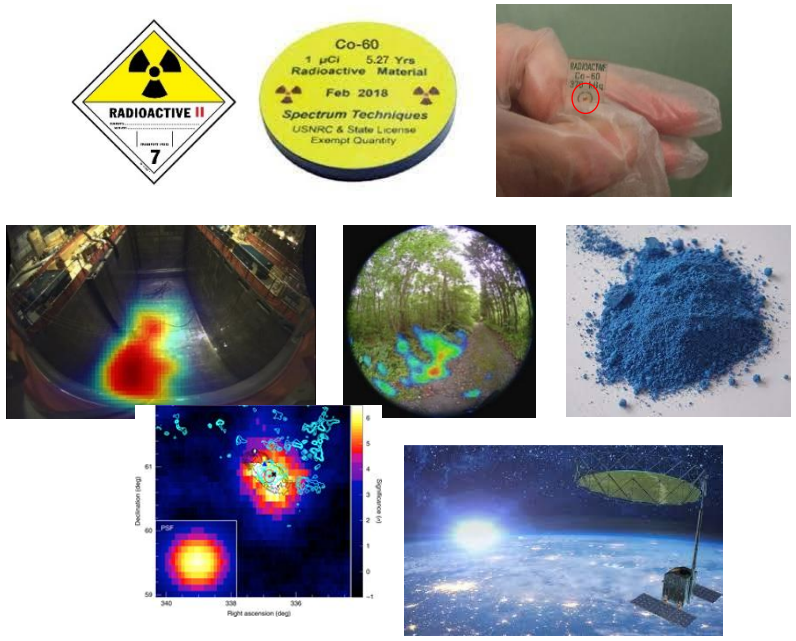
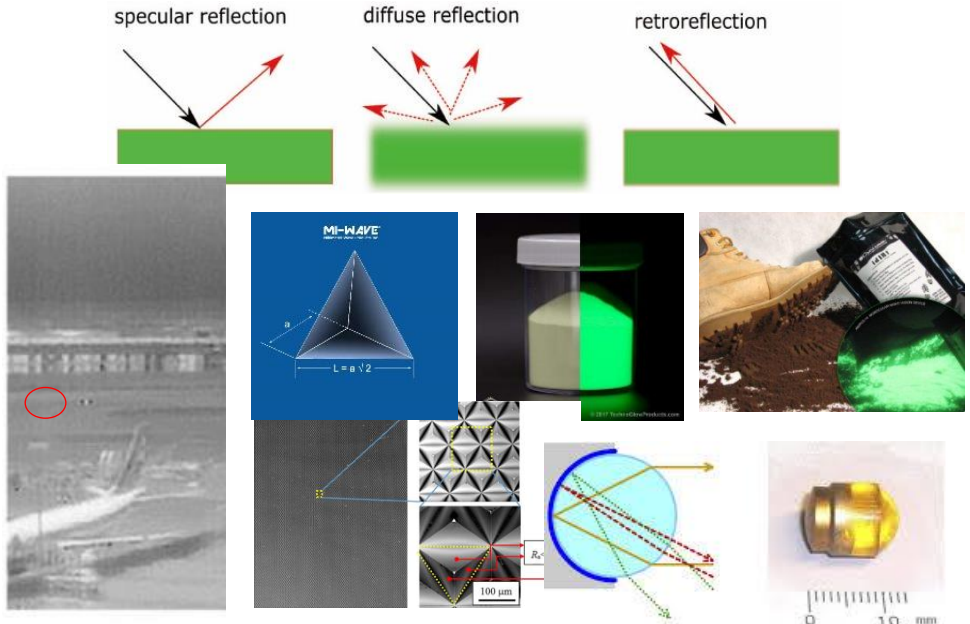
Training, Target Marking And Special Purpose Applications:

Virtually Anything Can Be Inserted Into Molded In Cavities:

Examples Of Radiological, Radar Reflective And Luminescent Payloads…



Clockwise From Upper Left: Spectrum Technologies Markers, Cobalt Powder, L-3 Satellite, Nature Gamma, PhysOrg, H3D Gamma Ray Camera Overlays.



Clockwise From Top: Wikipedia Light Behavior, Technoglow Powder, Cyalume Dirt, The Diva Dash Portal Retroreflectors, Researchgate Reflective Films, Mi-Wave Tetrahedral mm Wave Micro Radar Reflector, Heathrow Airport Radar Reflective Marking Image Journal Of Science.

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nP Technology Molded Projectile Pathway Into The Future:

Molded **nP Technology** Projectiles

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nP Technology Molded Projectile Pathway Into The Future:

Question: Which Process Seems (And Is) More Accurate And Affordable?

Small Arms Projectile Example:

Single Operation vs. Many Steps

Projectiles Drop From The Mold Ready To Load

Nosler Ballistic Tip Process Steps Outdoor Hub

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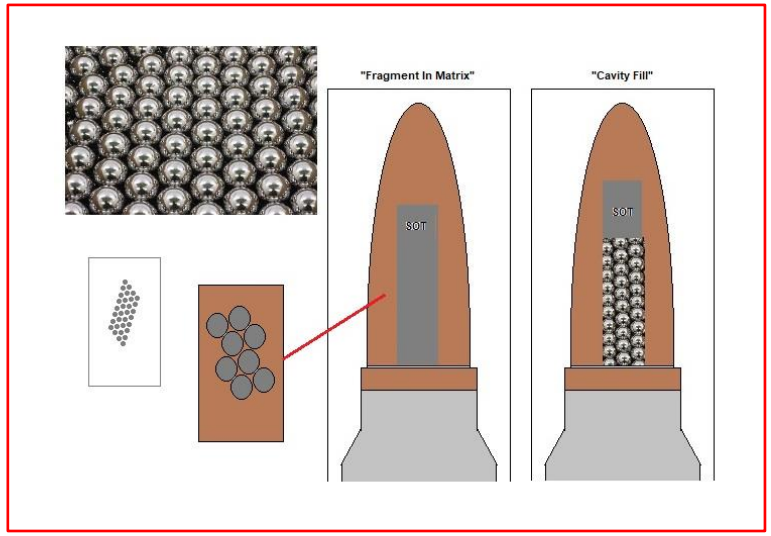
nP Technology Molded Projectile Pathway Into The Future:

Molded In Matrix Fragmenting & Fragmenting SOT Concepts:

Spherical Or Cylindrical Fragments Molded Into Central Cavities Or Directly Into The Projectile Body, With Or Without Energetics



AMR Capable: NDIA Presentation: 20mm AMR By David Armstrong NSWC Crane

https://ndiastorage.blob.core.usgovcloudapi.net/ndia/2009/infantrysmallarms/thursdaysessionxi8503.pdf

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nP Technology Molded Projectile Pathway Into The Future:

SOT-AP Special Combat Round:

IMAGES REMOVED: NOT FOR PUBLIC RELEASE

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Conclusions:

- Molded Projectiles For Medium Caliber Are As Valid A Concept As Those For Small Arms
- Molding Is A Lower Cost Alternative To Machining And Traditional Assembly Methods
- The 20mm Target Practice Projectile May Be Directly Replaced By A Molded Frangible Version With Very Low Ricochet Potential To Reduce Surface Danger Ranges
- The Potential Of Cargo Round Variants Based On **nP Technology** Patents Is Large…

Recommendations:

- Develop Molded Projectile Analogs To Target Practice And Special Purpose Rounds

Because They Can Be Made More Accurately And Economically By This Method…

- Develop Combat Rounds Which Are Enhanced By Molded And/Or Frangible Design

Imagine Projectiles Where The Body Isn't Just A Steel Tube, But Participates In The Action…

And Low Collateral Damage, Non-Fragmenting Explosive Or Frangible Solid Rounds…

"Molding Projectiles Gives Designers Freedom To Expand Their Concepts Beyond Machined Bodies And Drawn Jackets"

-Robert Folaron, CEO, nP Technology, ARL CRADA Participant

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TMI50BMG
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Credits:

The Testing And Demonstration Facilities Of:

Mr. Joby Hawkins

LTC Steve Brown, USA-Ret.

Secure Confidential Research And Development Location
For Defense Applications In Laurens, South Carolina

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