



# Future Force Capabilities

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# PM MAS

## Mission, Vision and Priorities

### Mission:

PM MAS develops, equips and sustains integrated lethal direct fire ammunition effects to enable joint and Allied warfighters overmatch in the battlefield

### Vision:

Innovative and dedicated hard-working professionals ensuring our warfighters prevail in battle and return home safely

### Objectives:

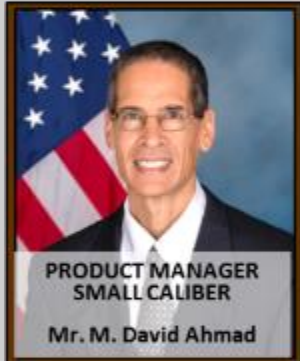
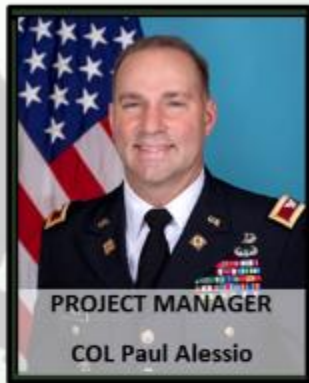
1. Develop and deliver reliable and timely ammunition to the warfighter
2. Inform and influence future capability requirements
3. Create opportunities to grow a multi-talented acquisition workforce/team
4. Shape and optimize the industrial base (organic and commercial)







# PM MAS Organization





# Family of Products

PM MAS develops, equips and sustains integrated lethal direct fire ammunition effects to enable joint and Allied warfighters overmatch in the battlefield

85 Products

## Small Caliber

557 PM-MAS Products Under Mgmt.



PRODUCTION

50 Products

## Medium Caliber



PRODUCTION

## Large Caliber

## Special Ammunition & Weapon Systems

22 Products



400 Products Managed



Development

PRODUCTION

PRODUCTION

Non NATO Munitions, Soviet Calibers

NOT TO SCALE





# PM MAS Support to Army Modernization Priorities

2

**Next Generation Combat Vehicle**

- 30mm Family of Ammunition
- 50mm Family of Ammunition
- 105mm Mobile Protected Firepower (MPF)
- 120mm Extended Line of Sight (ELOS)

3

**Future Vertical Lift**

- FMR of PGU-28 Anti-Personnel Family of Ammunition

5

**Air and Missile Defense**

- 30mm Multi Mode Proximity Air Burst (MMPA)

6

**Soldier Lethality**

- 6.8mm Family of Ammunition
- 7.62mm Advanced Armor Piercing (ADVAP)
- Precision Family of Ammunition

**Common Ammunition Themes**

- **Greater Lethality** -  
(Air Bursting, Larger Caliber)
- **Greater Range** -  
**Defeat Old & New Targets**  
(New: UAS, Defilade Targets)

STATUS
PROGRAM OF RECORD
CONCEPT DEV.
REQUIREMENTS DEV.
MID TIER ACQUISITION



# Challenges and Industry Participation

## ▪ Project Manager:

- Material Cost Price Increases
  - Affordable raw material and processing / forming
- Understanding of and communication of Minimum Sustaining Rates



## ▪ Small Caliber: Supply chain challenges driven by global supply shortages and increased prices on raw materials

- Commercial ammunition market demand constraining supply chain (e.g. key ammunition components)
- Shortages of energetic material constituents due to supply shortages from OCONUS sources
- Increased commodity costs stressing supply chain profitability and viability



## ▪ Medium Caliber:

- Cost reduction in proximity fuzes
- Increased throughput – liquid reserve batteries or other power options
- Circuit board miniaturizing for proximity and airburst fuzes
- Total Armament Systems Integration: weapon, ammunition, and fire control



## ▪ Large Caliber:

- 105mm tactical ammunition for MPF
- Continuing to push the envelope of 120mm KE capability
- Cost increases and materiel lead times



## ▪ Special Ammunition and Weapon Systems (SAWS):

- Affordable OCONUS produced Non-Standard Small/Medium/Large/Tank Caliber ammunition and Non-Standard Mortar Weapons Systems





# PdM Small Caliber Focus Areas

- **Implement Next Generation Squad Weapon 6.8mm Ammunition for System Fielding**
  - Produce projectiles for initial vendor production
  - Establish organic ammunition manufacturing capability at Lake City Army Ammunition Plant (LCAAP)
- **Develop and Field Improvements to Legacy Capabilities**
  - Lightweight Case
  - One-Way Luminescence
  - Reduced Range Ammunition
- **Maintain Production of Combat, Training Standard and Unique Ammunition**
  - Plan, Program, Budget and Execute Small Caliber Portfolio
  - Supports readiness for Army, Other Services and Allied Partners





# Small Caliber Developmental Program Overview

PROGRAM DESCRIPTION		2022				2023				2024				2025			
		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
<u><b>One Way Luminescence (OWL)</b></u> Significantly reduced signature preventing threat from tracing round back to shooter while providing Enhanced Performance Round (EPR) effects in the tracer	5.56mm	Development				Low Rate Production				Full Rate Production							
	7.62mm	Development				Low Rate Production				Full Rate Production							
<u><b>Lightweight Small Caliber Ammunition (LSCA)</b></u> Reduce Warfighter burden	.50 cal					Collaborating w/ USMC				Low Rate Production				Full Rate Production			
	7.62mm	Development				Low Rate Production				Full Rate Production							
<u><b>Reduced Range Ammo (RRA)</b></u> Reduce maximum range while maintaining tactically relevant training range	7.62mm	Development				Low Rate Production				Full Rate Production							
	.50 cal	Development				Low Rate Production				Full Rate Production							
<u><b>Lead-Free Primer</b></u> Elimination of lead in primers, reduced environmental remediation and personnel integration with energetics	Lead-Free Primer	Development				Low Rate Production				Full Rate Production							
<u><b>Precision Family of Ammunition</b></u> Provide family of sniper ammunition with improved accuracy, greater ranges, better lethality as well as a subsonic capability (FY22 Start)	Precision FoA	STRATEGY BEING DEVELOPED															

Development
Low Rate Production
Full Rate Production





# PdM Medium Caliber Focus Areas

## ■ Develop and Field Medium Caliber Capabilities per Cross Functional Teams (CFTs)

- 30mm Multi-Function Munition (Stryker and OMFV)
- 30mm APFSDS-T (Stryker and OMFV)
- 30mm Multi-Mode Proximity Airburst (M-SHORAD)
- 30mm for C-UAS (M-SHORAD and other Air Defense Platforms)
- 20mm for Future Vertical Lift (FARA)



## ■ Develop and Field Airburst/Counter-defilade Ammunition

- 40mm XM1176 HEDP-AB (Mk 19 Grenade Launcher)
- 40mm XM1166 HEAB (M320 Grenade Launcher)



## ■ Support Aviation Platform Munitions

## ■ Maintain Training Readiness

- Procurement of Legacy 40mm TP
- 40mm DNT Back on Track



Notional Photos



Being fielded to Stryker ICVVA1-30mm

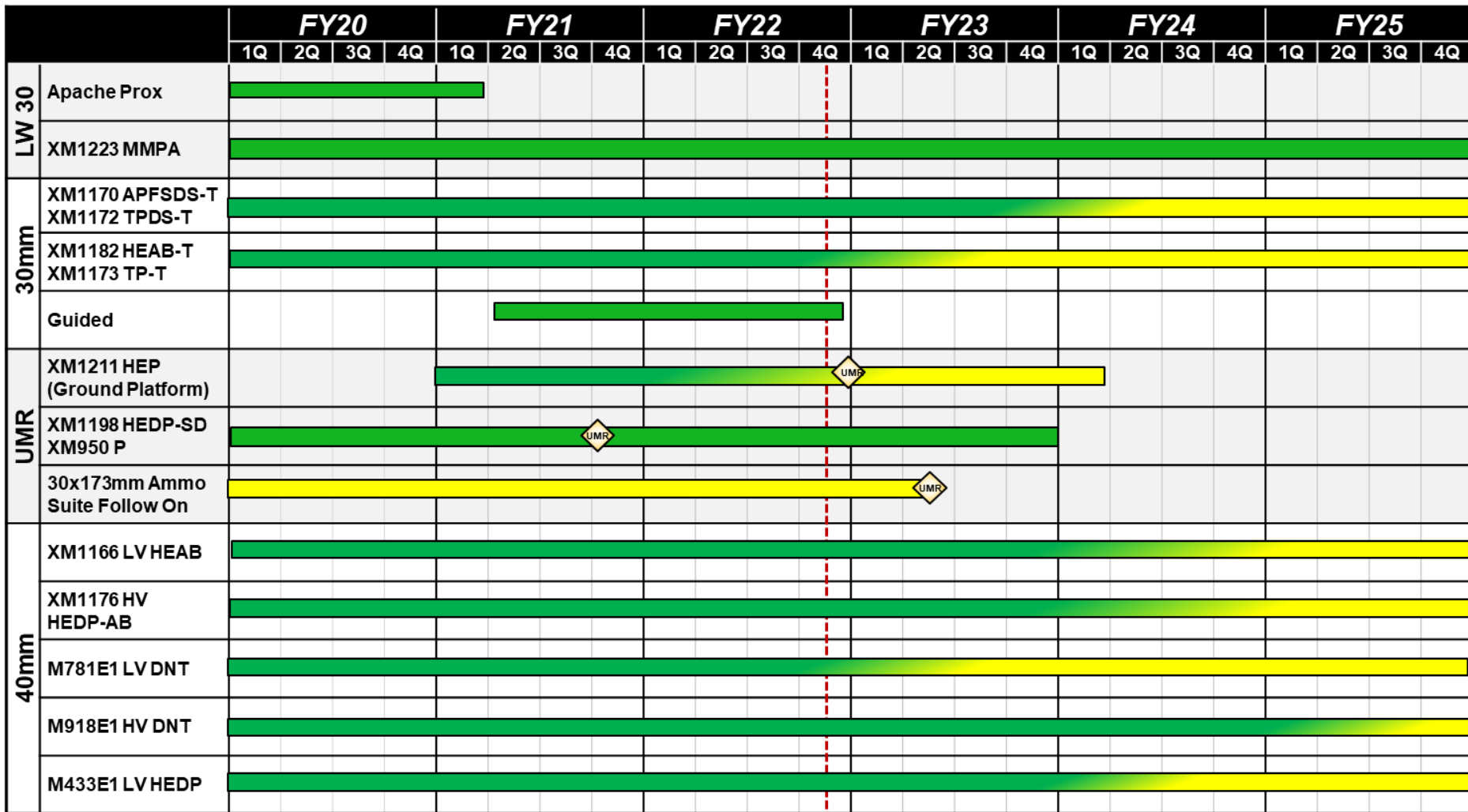


XM1176  
HEDP-AB





# Medium Caliber Development Program Overview



Development/Improvement    Production



# 40mm Airburst Capabilities

## 40mm High Velocity XM1176 HEDP-AB

40mm HV XM1176 HEDP-AB will provide Mk19 Mod 3 Grenade Machine Gun (GMG) an [airburst](#) capable cartridge with ability of achieving required [lethal effects](#) against enemy targets in the [open and in defilade](#) while maintaining the capability to [defeat unarmored and lightly armored vehicles](#)

M430A1 HEDP



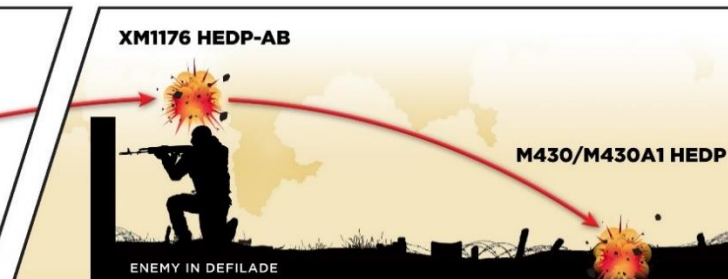
Remove PD Fuze & replace with AB Fuze

XM1176 HEDP-AB



Mk 19

Prime Contractor: Rheinmetall Day & Zimmermann Munitions (RDZM)



ENEMY IN DEFILADE

Legacy M430A1 Ballistic Trajectory Inhibits Engagement of Personnel Threats in Defilade

## 40mm Low Velocity XM1166 HEAB

40mm LV XM1166 HEDP-AB will provide M320 Grenadier a programmable [airburst](#) capable cartridge with the ability of achieving required [lethal effects](#) against enemy targets in the [open and in defilade](#)

### Programmable Airburst

#### **Advantages**

- Increased Lethality in open and counter-defilade
- User Adjustability (Burst Point and Function Modes)
- Expands types of targets that can be defeated by 40mm



Legacy M433 HEDP Ballistic Trajectory Inhibits Engagement of Personnel Threats in Defilade





# 30x173mm Family of Ammunition

*Provide desired required lethal effects, with greater accuracy at extended ranges, against light-to-medium armored vehicles, enemy personnel in the open, defilade position and within urban structures*

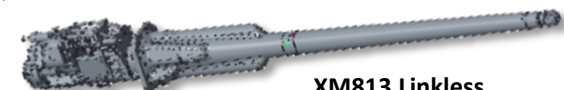
## ■ XM1182 High Explosive Airburst with Trace (HEAB-T)

- Multi-Mode for effectiveness across multiple engagement scenarios
  - Airburst (AB): defeat personnel targets in the open and in defilade
  - Point Detonate (PD): defeat unarmored vehicles
  - Point Detonate Delay (PDD): penetrate urban structures or trucks before detonating
  - Self Destruct (SD): reduces UXO hazards
- Advanced Warhead - increased fragmentation for larger lethal footprint and ability to penetrate urban structures
- Contact Set Programming – increased communication enabling full firing rate, two-way communications for increased reliability, and common USG defined programming



## ■ XM1170 Armor Piercing Fin Stabilized Discarding Sabot with Trace (APFSDS-T)

- DU penetrator replaces Tungsten-Nickel-Cobalt for improved penetration
  - Compliant with environmental guidance prohibiting use of cobalt
- Increased effectiveness at extended range
- Domestic steel cartridge case



XM813 Linkless Autocannon



Being fielded to Stryker ICVVA1-30mm



# 30X113mm for Ground Platforms

## FORCE PROTECTION



Light Materiel



Personnel

Counter-Defillade



Capability for Current  
& Future Light / Medium  
Weight Ground  
Platforms

## XM914 WEAPON SYSTEM

- 30X113mm Ammunition
- Single Feed
- Percussion Primed
- Link Fed



## AIR DEFENSE



UAS & Swarms



## 30X113mm AMMUNITION



**XM950 P**  
(Practice)



**XM1198 HEDP-SD**  
(High Explosive Dual Purpose  
Self Destruct)



**XM1211 HEP**  
(High Explosive Proximity)



**XM1223MMPA**  
(Multi-Mode Proximity Airburst)



# Challenges w/ Distributed Armament System Development

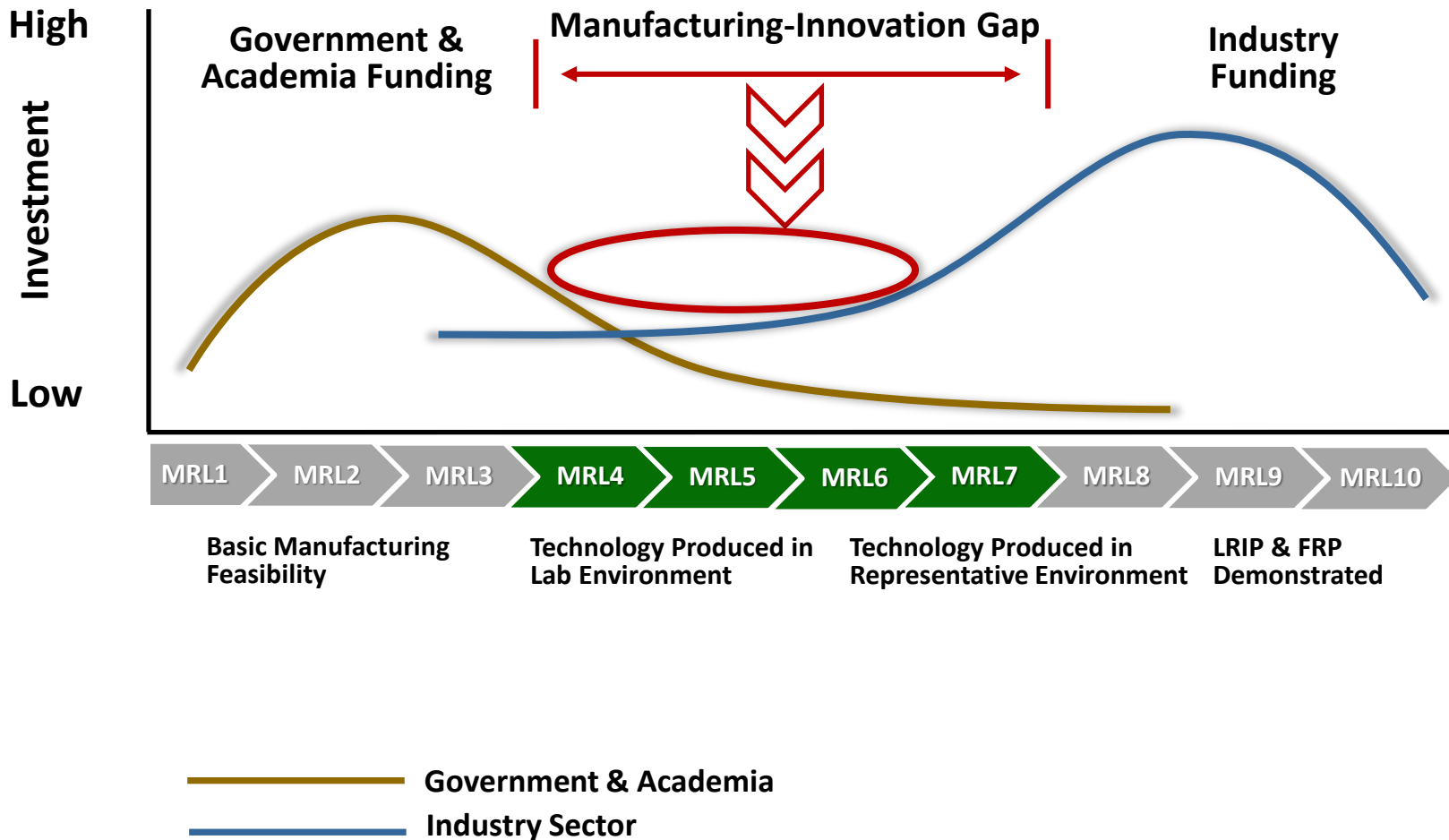
- **Independently Integrated Medium Caliber Weapons**
  - Multiple PMs integrating medium caliber weapons onto platforms
  - Increased risk for integration of ammunition, weapon, and fire control
- **Multiple Configuration Issues**
  - Unstable Medium Caliber Weapon System TDPs
  - Lack of TDP control leads to numerous weapon variants
- **Contractor Overseeing Change Control**
  - Platform OEM make weapon modifications without USG armament expertise
  - Ammunition qualification delays and issues due to uncontrolled weapon variants
- **Disjointed Armament System Development Resources**
  - Weapon, ammo, and fire control experts divided by org. boundaries
  - Future ammunition capabilities require armament system integration at beginning of program development







# Producibility





# PdM Large Caliber Focus Areas

## ■ M829A4 Production Year 6-9

- 3QFY24 Award
- Competition likely (limited to U.S. and Canada, Firm Fixed Price)
- Aerojet sustainment contract



M829A4

## ■ 120mm M1147 Advanced Multi-Purpose LRIP 1 First Article Acceptance Test (FAAT)

- LRIP resuming in 3QFY23



M1147 AMP



## ■ 50mm Family of Ammunition (FoA) development

- Capability Development Document (CDD) writing underway
- Conducting Design Engineering Tests (DET's) for each variant (AP, AB, TP)



XM1202 TP-T XM1203 AP/SDS-T XM1204 HEAB-T



# PdD SAWS Mission

## Mission:

Procure and deliver safe, reliable, and lethal Non-Standard Ammunition and armaments to fully equip the U.S. allies' and Joint Forces' warfighter to support the U.S National Security Strategy (NSS) and U.S. Agencies for the purpose of training and familiarization

## Vision:

Enable our coalition partners to fight the fight and  
Create a stable situation around the world



Over 400 Munitions and Weapon types managed  
Over \$1.8 Billion Contracted  
Over 1 Billion Rounds Delivered







# PdD SAWS Short List of Products

## ▪ Small Caliber

- AK-74: 5.45x39 (Blank, Ball, Tracer)
- Makarov: 9x18mm
- AK-47: 7.62x39mm (Blank, Ball, Tracer, Armor Piercing (AP))
- Sniper & PKM: 7.62x54mm (Blank, Ball, Tracer, AP)
- DsHK: 12.7x108mm (Blank, Ball, Tracer, AP)

## ▪ Medium Caliber

- 14.5mm (Ball, Tracer, AP, Armor Piercing Incendiary (API))
- 23mm (High Explosive (HE), High Explosive Incendiary (HEI), API, Armor Piercing Incendiary-Trace (API-T))
- 30mm (HE, HEI, API, API-T)

## ▪ Large Caliber

- 120mm IM HE-T
- 120mm KE-W
- 125mm (HEAT, APFSDS-T, Practice)
- 90mm (HESH-T, APFSDS-T, Practice)
- 100mm Hollow Charge

## ▪ Recoilless Rifle Ammunition

- 40mm HE Frag ((Rocket Propelled Grenade) (RPG))
- 40x70.5 to 106mm High Explosive Anti-Tank (HEAT) Thermobaric (RPG)
- 73mm ((Tripod stand mounted Rocket Propelled Grenade) (SPG-9))

## ▪ Under Barrel Grenade (VOG-25)

- 40mm HE FRAG
- 40mm HE Bounding
- 40mm Ground Smoke & Illum

## ▪ Mortar Weapons and Spare Parts

- 60mm: M57, M6-211 Long Range
- 82mm: M37, M41, M69
- 120mm: NEMO, M43, M75

## ▪ Mortar Ammunition

- 60mm HE, Illum, Smoke
- 82mm HE, Illum, Smoke
- 120mm HE, Illum, Smoke
- 120mm Breach Loaded, HE Practice, HE, Illum, Smoke

## ▪ Artillery

- 122mm HE Part & Full
- 122mm Smoke & Illum
- 130mm HE Part & Full
- 152mm HE Part & Full

## ▪ Other

- Anti Tank Guided Missile (ATGM) and launchers
- 57mm, 80mm, 107mm, 122mm Rockets
- Fire Suppression: PP3, PP9
- YAK B WPN Cycle: PPL
- Counter Measure: PPI-26
- Links, Belts, Linking Machines

Over 400+ items available and additional as needed by customer

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**Questions?**

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