Ground breaking ammunition with innovative designs to meet all land, air and navel combat requirements

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Rheinmetall Defence: Leading Defence System Supplier

**Combat Systems**
- Combat platforms
- Infantry
- Protection systems
- Propulsion systems
- Combat international

**Electronic Solutions**
- Air defence systems
- Defence electronics
- Electro-optics
- Simulation and training

**Wheeled Vehicles**
- Logistic vehicles
- Tactical vehicles
Conventional threat

Classic scenario
Similarly equipped armed forces
New challenges

Todays scenario
Asymmetric warfare
Lesson learned

- Scenarios changed over the last years
  - Different levels (from peace keeping up to asymmetric war)
  - Scenario specific rules of engagements

- Requirements to ammunition performance
  - High penetration and controlled fragmentation capability
  - Air Burst capability
  - Avoid collateral damage
  - Effective against Urban Ops targets
  -Insensitive ammunitions (without explosives)

- Rheinmetall provides the right ammunition
APFSDS

- Optimized ammunition to
  - Defeat hard and medium hard targets
    - Armoured Personnel Carrier
    - Infantry Fighting Vehicle
    - Successfully defeat vehicles of the same class
  - Effects
    - Optimized for penetration
  - Available
    - 25mm
    - 30mm
    - 35mm
FAPDS

- Optimized ammunition to
  - Defeat hard, medium hard and soft targets
    - Armoured Personnel Carrier
    - Infantry Fighting Vehicle
    - Trucks
    - Urban Ops
    - Air targets
    - Naval targets
  - Effects
    - Excellent penetration
    - Fragmentation
  - Available
    - 25mm
    - 27mm
    - 30mm
Impressions KE technology
Fragmentation Round
HEI with nose or base fuze

Ammunition optimized to

- Defeat soft and/or medium hard targets
  - Light armoured vehicle
  - Troops (suppression fire)
  - Air targets

- Effects
  - Fragmentation
  - Limited penetration
  - Incendiary effect

- Available
  - 20mm
  - 25mm
  - 30mm
  - 35mm
Impressions HEI technology
Frangible Armour Piercing Penetrator with Enhanced Lateral Effect
FAP and PELE

Ammunition optimized to

- **Defeat soft and medium hard targets**
  - Armoured Personnel Carrier
  - Vehicle
  - Urban Ops
  - Naval targets
  - Aircraft targets

- **Effects**
  - Penetration and fragmentation

- **Available**
  - 20mm FAP
  - 25mm FAP
  - 27mm FAP & PELE
  - 30mm PELE
Future improvements

- Frangible ammunition with implemented marker – FAP Marker
  - Visible for the Pilot and other troops

- FAPPIE ammunition - Frangible Armour Piercing Pyrotechnical Induced Effect
  - Ammunition without explosive
  - High blast and sound effect after perforation
  - Or visible by hitting the target
  - Or a combination of both effects
25mm FAP for the F-35 Characteristics

Performance:
- One general purpose, Non-DU, Non-CO, 25mm round without explosives for both Air-to-Air and Air-to-Ground employment
- Effective against a wide range of targets:
  - Hard targets (IFV, armoured vehicles, also on long range)
  - Soft targets (trucks, helicopters, aircraft, ..)
  - Urban area targets
- Capable to defeat targets at long ranges as defined in Operational Requirements Document
- First round officially qualified for F-35A GAU-22A Gun by USAF / GDATP
- 25mm FAP official US designation: PGU-48/B

Status:
- USAF & RNLAF have procured rounds for Operational testing & Life Test firing
Impressions FAP and PELE
Kinetic Energy

Time Fuze
KETF

Ammunition optimized to

- Defeat soft and/or medium hard targets
  - Armoured Personnel Carrier
  - Vehicle
  - Urban Ops
  - Troops in the open or in prone
  - Naval targets
  - Airborne targets

- Effects
  - Fragmentation and penetration

- Available
  - 30mm
  - 35mm
ABM-KETF
Functional Description

Fire Control Unit → Range to Target → ABM Electronics → Muzzle Velocity

Ejection of Subprojectiles

Target

~ 15°
KETF Sub-Projectile Optimization

- 35mm for Air Defence against aircraft and helicopters: optimal sub-projectile size is 3,3 gram

- 30mm and 35mm for IFV against ground targets: optimal sub-projectile size is 1,24 gram
Medium Calibre Ammunition
Effectiveness against all Threats

**HEI** High Explosive Incendiary

**PELE** Penetrator with Enhanced Lateral Efficiency

**FAPDS** Frangible Armour Piercing Discarding Sabot

**ABM** Air Burst Munition

**APFSDS** Armour Piercing Fin Stabilized Discarding Sabot tracer
Thank you for your attention

Rheinmetall has the perfect suite of ammunition to successfully engage today’s threats

Rheinmetall has the technologies to offer individually customized solutions

With Rheinmetall you are always one step ahead
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