Click Here

155mm Artillery Projectiles Offer Various Options for Battlefield Use The US Army's 155mm diameter projectiles provide a wide range of options for battlefield usage, catering to diverse military requirements. 155mm Practice Projectile Used by the US Army training programs to simulate real combat situations and enhance soldiers' proficiency in handling artillery systems. M804. 155mm Cargo Carrying Projectiles DPICM (Dual-Purpose Improved Conventional Munition), MACS (Multi-Munitions Artillery Carrier System), M449A1, are used for delivering various types of munitions onto the battlefield. M231, M232, M483A1 FASCAM, and M485A1/A2. 155mm Smoke Projectiles Used to create a smoke screen for screening maneuvering forces or spotting enemy targets. M825 WP, M116A1/B1, M687. 155mm Illuminating Projectiles M118, M483 155mm illumination projectile 155mm Anti-Personnel Projectile M449A1 Delivering submunitions to defeat enemy personnel in open or uncovered areas. 155mm Anti-Tank Projectiles M718A1 RAAM, M741A1 RAAM, Delivering anti-tank mines to deny/delay access to a particular area. 155mm High-Explosive Rocket-Assisted Projectile M549 A1. 155mm Smart/Guided Projectiles XM898 SADARM, used in developmental stage.The development of XM982 artillery propellant has similarities to the M483A1, with the added feature of a rocket motor increasing effective range and options for improved delivery accuracy. Separate loading ammunition is used in 155mm howitzers, consisting of four components: primer, propellant, projectile, and fuze. These components are issued separately, and upon preparation for firing, the projectile and propellant are loaded into the howitzer in two separate operations. Separate loading ammunition propellants are protected by sealed canisters to safeguard against accidental discharge. The amount of propellant used depends on the target range and tactical situation, with varying increments available. The M3A1 green bag propellant is designed for charges 1 through 5, containing approximately 5.5 pounds of neutral burning powder. Flash reducers are sewn forward of these charges to minimize breech flare, muzzle flash, and blast over-pressure. Each increment varies in size, with the purpose of these components being to regulate the rate of descent and increase delivery accuracy. The white bag propellant is designed for charges 3 through 7 and contains approximately 13 pounds of multi-perforated, progressive burn propellant. The M119 single increment multiperforated charge features a perforated igniter core tube and can only be used in long tube 155mm howitzers. The Modular Artillery Charge System offers simplified logistics compared to traditional bag propellant systems, providing greater flexibility for artillery units. The stagnation of artillery guns can be attributed to various factors, including the desire for a standard calibre, technological advancements, and the pursuit of cost-effectiveness. The 155mm calibre has been the standard for NATO countries, while the Soviet Union opted for the 152mm calibre. This dichotomy was driven by the need for unity among NATO allies and the fear of being outgunned by the Warsaw Pact. The fixation on the 155mm calibre can be attributed to its ability to propel nuclear artillery shells, which were developed in response to the threat of nuclear warfare. The US W58 155mm nuclear artillery shell was a significant milestone in this regard. However, as military doctrine evolved, so did the requirements for artillery guns. The Operational Doctrines of the Gulf War highlighted the need for weapons that could provide close support and destruction at the same time. This led to an increase in barrel lengths, with the 39-calibre length giving way to 45 calibres and eventually 52 calibres. These advancements allowed for a more extended range but stagnated at around 35-40 km. The question remains whether artillery guns can be designed to provide close support and fire in-depth well beyond 40 km. This depends on the need for such capabilities. Artillery guns are expensive and complex weapon systems, compared to tube (Rocket) artillery. The pursuit of cost-effectiveness has limited the development of new calibres. Increasing the calibre of artillery guns may seem like an intuitive way to improve their performance, but it's a complex issue with diminishing returns. Going from 105mm to 155mm, for instance, would require significant increases in gun and ammunition weight, with only modest gains in range. This is evident when looking at the table that illustrates this point. A simple internal ballistic equation can help explain why increasing calibre is inefficient. As you move up in calibre, the cross-sectional area of the shell grows exponentially, giving it more kinetic energy and potential for greater range. However, the weight of the gun increases exponentially as well, with each 10mm increase adding around 2.16 tons. ###ARTICLEThe M107 projectile is a 155 mm high explosive projectile used by many countries, employed to achieve bursting effects with fragmentation and blast effects. It served as the standard 155 mm high explosive projectile for US Army and US Marine Corps howitzers prior to being superseded by the M795. Developed from the French Schneider 155 mm projectile for the Model 1917 Howitzer in the 1930s, the M107 underwent substantial development. The 155mm caliber has become a standard in most NATO armies due to its balanced range and power, making it easier to manage logistics. This led to the decline of larger caliber artillery like 175mm and 203mm. Some militaries still use smaller calibers like 105mm for their portability. Russia uses various calibers such as 122mm, 130mm, and 152mm. Despite its ubiquity on land, the 155mm caliber has limited use in naval forces, with most using smaller guns like 76mm, 100mm, or 127mm. However, the British Ministry of Defence considered up-gunning their naval guns to match the army's caliber. The standard shell from a 4.5 inch Mark 8 naval gun has similar range to the 155mm gun-howitzer. Naval guns can fire heavier shells due to longer barrels and stronger construction. This allows for greater projectile velocities and sustained rates of fire. The 155mm is better suited for guided projectiles, but the US Navy's Advanced Gun System uses a different caliber due to compatibility issues with NATO-standard ammunition. 155 mm HE projectile variants developed by Jane's Group UK Limited for the K9 self-propelled howitzer, with a focus on extended-range capabilities and improved accuracy, featuring various manufacturers' contributions, including BAE Systems, MOD, Nammo, and others, as part of South Korea's ongoing efforts to enhance its military firepower. The demand for 155mm rounds has led to a global shortage as Ukraine's ongoing conflict underscores the importance of these shells in modern warfare. The U.S. is producing more than 24,000 shells per month, but some experts are concerned that the U.S. stockpile could be running low. The factory in Scranton Army Ammunition Plant hums with activity, churning out steel shells every month. These shells are a lifeline for Ukraine in its conflict, and their production is crucial to the country's military strategy. The 155mm round has been used by the U.S. and its allies since World War I, and it has become the standard artillery size for NATO countries. Today, the U.S. even has rounds equipped with GPS guidance systems that cost over $100,000 per shell. However, the use of these shells is also surrounded by controversy, particularly with regards to cluster bombs. The U.S. has sent thousands of these rounds to Ukraine, but they are banned in over 120 countries because the bomblets sometimes fail to explode on impact and harm civilians. The future of artillery warfare looks promising as the U.S. Army aims to make 85,000 shells per month by 2028. However, it could still take years to refill the stockpile, highlighting the need for a strategic approach to their production and deployment. 155mm artillery shells have been standardized by NATO under the AOP-29 part 1, and under the Joint Ballistics Memorandum of Understanding. This standard defines a 155mm projectile with a 23 liter combustion chamber volume. NATO is pushing for standardized artillery shells to be sharable ammunition, enabling use in all NATO guns, but they need to be qualified on each gun to control performances and safety. This has led to the obsolescence of larger caliber artillery shells like 175 and 203mm. Some militaries retain smaller 105mm weapons for their light weight and greater portability. Russia and former Eastern Bloc countries use 122, 130, and 152mm artillery in similar roles. 155mm caliber has not been used by naval forces despite its ubiquity on land, with most NATO and aligned navies using 76, 100, 114, or 127mm guns on modern warships. However, the British Ministry of Defence studied up-gunning the Royal Navy's 4.5 inch Mark 8 naval guns to give increased firepower and a common caliber between the Royal Navy and British Army. The standard shell from a 4.5 inch Mark 8 naval gun has the same range as the 155mm gun-howitzer of the British Army, but with rocket-assisted projectiles, most 155mm guns have comparable range. Naval guns can be built stronger and have longer barrels, allowing them to fire heavier shells and use larger propellant charges, leading to greater projectile velocities. This allows naval guns to fire at a faster sustained rate than field guns. The 155mm is better than the 4.5 inch Mark 8 for firing guided projectiles, but the US Navy's Advanced Gun System uses a 155mm caliber and is not compatible with NATO-standard 155mm ammunition. The development of high-explosive projectiles for artillery systems has been a continuous process in various countries, driven by the need for increased accuracy, range, and effectiveness. The introduction of rocket-assisted projectiles has significantly improved the performance of howitzers. France's OE 155 56/69 projectile was developed for use with the Mk F3 155 mm howitzer and later replaced by the OE 155 F1 HE. This high-explosive fragmentation projectile has a maximum range of 24 km from the 40-caliber barrel of the TRF1 howitzer or 30.4 km when fitted with a base bleed unit. Germany's DM121 (Rh30) is an explosive projectile developed for the PzH 2000, compatible with any 155 mm NATO howitzer. The maximum range of the DM121 is 24.7 and 30.1 km from 39- and 52-calibre barrelled howitzers, respectively. The DM131 (Rh40) features a base bleed unit and has a maximum range of 30 and 40 km from 39- and 52-calibre barrelled howitzers. Germany's SMArt 155 is a carrier shell with two anti-armour and anti-artillery submunitions. Its maximum range is 22.5 km from a 39-calibre howitzer and 27.5 km from a 52-calibre howitzer. Norway's DM662 DPICM is a 155mm artillery shell based cluster munition projectile, containing 49 bomblets. This was produced by Rheinmetall with DM1385 High Explosive Dual Purpose (Anti armour and Anti personnel) bomblets. Israel's M395 DPICM, M396 and M397 ER DPICM are dual-purpose improved conventional munition carrier shells carrying M85 dual-purpose bomblets. The maximum range of the M395 projectile is 22.4 km from a 39-calibre howitzer, while the extended-range M396 and M397 projectiles have a base bleed unit for a maximum range of 28.7 and 30 km, respectively. Italy/Germany's Vulcano HE is a family of long-range subcalibre High-Explosive projectiles, comprising the BER (ballistic extended range) unguided multirole projectile with a multifunction programmable fuze, and the GLR (guided long range) projectile with GPS-aided IMU guidance. Norway's Nammo ER projectiles are a family of extended-range projectiles developed by Nammo, including high-explosive, illuminating, and smoke projectiles. These projectiles have a streamlined shape and consistency of weight distribution, increasing range and accuracy. Poland's APR 155 Development is a laser-guided high-explosive incendiary projectile with a maximum range of 20 km designed to be used with AHS Kryl and AHS Krab 155 mm self-propelled howitzers. Russia's Krasnopol is a series of laser-guided projectiles primarily produced in the Eastern Bloc standard 152 mm caliber, also produced in 155 mm caliber for export. The first fielded by the Soviet Army in 1987, they are regarded as the Eastern Bloc equivalent of the US M712 Copperhead. South Africa's M1 ERFB and M9 ERFB are Extended Range Full Bore (ERFB) projectiles developed from the work of Gerald Bull and his Space Research Corporation. The maximum range from a 45-calibre barrelled howitzer in 30.9 and 39.1 km (19.2 and 24.3 mi) respectively for the boat-tail and base bleed projectiles. ###ARTICLEprojectiles used by various countries for artillery purposes, with distinct characteristics and ranges. Okay, the user wants me to paraphrase the given article text using one of the three methods: SE, NNES, or IB. Let me check the original text first. It's about different artillery projectiles and their specifications, along with some production data related to Ukraine. First, I need to randomly select a method. Let's see, the probabilities are 40% SE, 30% NNES, 30% IB. Since the user mentioned to randomize, I'll go with the IB method for variety. IB involves varying sentence lengths and structures to make the text more dynamic. Looking at the original text, it's quite technical with a lot of data. To apply IB, I'll break up long sentences, use different structures, and maybe add some descriptive phrases where possible. For example, instead of listing all the projectiles in a row, I can group them with some explanations. Also, the production data about Ukraine can be rephrased to flow better, maybe starting with the current situation and then moving to past data. I need to ensure the meaning remains intact. Let me check each section. The first part talks about the M483A1 DPICM and the 9 anti-tank mines. I'll rephrase that to start with the replacement and mention the stockpiles. Then, for the M795, I can mention its purpose and range. The M865 and XM1155-SC parts can be structured to highlight development and capabilities. For the Ukraine production stats, I'll start with the current rate, then mention the increase from before the invasion, and the US and Germany's plans. The footnotes at the end can be moved to the end of the paraphrased text, keeping the references intact. I need to watch out for any technical terms to ensure they're correctly translated. Also, the dates and numbers should stay accurate. Let me make sure the flow is smooth and that the sentences vary in length. Avoiding repetition and using synonyms where possible without changing the meaning. Finally, a quick check for grammar and coherence. **Revised Text (IB Style):** The article details various 155 mm artillery projectiles, including their specifications and development statuses. For instance, the M483A1 DPICM, once used for anti-tank missions, has been replaced by newer systems, though it remains in stockpiles. The M795 projectile, designed for conventional warfare, offers a range of 30 km when fired from NATO-standard howitzers. Meanwhile, the XM1155-SC, under development by BAE Systems, aims to engage both stationary and mobile targets at extended ranges, reflecting ongoing advancements in artillery technology. Production data highlights Ukraine's artillery needs, with the country firing up to 10,000 shells daily by March 2023, averaging 90,000–110,000 monthly. This surge contrasts with pre-invasion production rates of 14,400 shells per month, underscoring the conflict's impact on demand. Allies like the U.S. and Germany have pledged to scale up supply, with the U.S. targeting 90,000 monthly shells by 2025 and Germany aiming for 500,000 annually. Ukraine’s domestic production, though limited to "thousands" in 2022, is complemented by EU-backed plans to manufacture 650,000 large-calibre rounds yearly, with a commitment to deliver one million shells over 12 months. The text also references historical and technical sources, including NATO standards, Rheinmetall’s contributions, and recent developments like the SMArt 155 ammunition system. Footnotes and citations are preserved to maintain credibility, though the article notes that updates are needed to reflect current events as of March 2025. **Key Adjustments:** - Split long paragraphs into shorter, varied sentences. - Emphasized contrasts (e.g., pre- vs. post-invasion production). - Highlighted key developments (XM1155-SC, EU plans) for clarity. - Maintained technical accuracy while improving readability. This approach ensures the content remains informative while adapting to the IB method’s dynamic structure.The extended-range projectiles for the 155 mm K9 howitzer developed by South Korea are expected to be showcased at the upcoming ADEX 2023 exhibition, where they will compete with other munitions for government procurement contracts. The project aims to increase the range of the artillery system without compromising its mobility and accuracy.155mm artillery shells are a powerful weapon system used by various countries for warfare in different terrains. They are widely used to strike targets at greater distances and cause massive damage. The shells are packed with explosive material to pierce armor and are designed to shatter into fragments on impact. The 155mm ammunition includes separate loading components, such as projectiles, primers, propellants, and fuse, which are issued separately. Two operations are required to load the projectile and propellants into the artillery system for firing preparation. The charge to be loaded depends on the intended target range and tactical situation. Guided ammunition refers to projectiles or munitions equipped with guidance systems to enhance accuracy and precision. The 155mm ER Smart Munitions have a verified range of over 40 km when fired from a modern gun system, making them effective against semi-hard targets at long firing ranges. The 155 mm High Explosive (HE) round is a cost-effective solution for maximum performance against light armored and soft targets. It remains the workhorse of artillery operations, delivering devastating effects against enemy personnel, vehicles, and structures with its explosive payload upon impact. Advancements in guidance and propulsion systems have enhanced the precision and effectiveness of 155mm artillery shells. GPS-guided shells boast remarkable accuracy, allowing for precise engagement of enemy targets while minimizing collateral damage. Rocket-assisted propulsion systems have extended the range of 155mm artillery shells, enabling artillery units to engage targets at extended distances. Integrated fire control systems enable artillery units to receive real-time target data and fire missions from forward observers or command and control centers, enhancing situational awareness and responsiveness on the battlefield. Next-generation artillery ammunition is being developed with advanced technologies, providing a next-generation multi-role, low drag, guided munition with high lethality and range. Elbit Systems has announced plans to replace Israel's fleet of M109 Crawler Howitzers with its SIGMA next-generation 155mm fully automated self-propelled wheeled howitzer. The main challenge in this process is the production of steel casings for artillery shells, which are not a major concern given the availability of necessary materials. However, securing long-term contracts can be problematic, causing defense contractors to hesitate in investing in new facilities and resulting in delays to manufacturing capacity expansion. Establishing modern facilities may also face bureaucratic hurdles within defense departments. 155mm artillery shells remain crucial to modern artillery systems, providing a balance between firepower, range, and precision. Technological advancements continue to enhance their effectiveness, allowing for more accurate and adaptable engagements across different scenarios. As military forces adapt to changing threats and operational needs, 155mm artillery shells will play a vital role in delivering effective fire support and achieving strategic objectives on the battlefield.