

20mm Hispano AP Ammunition

With the Hispano 20mm cannon becoming a more common armament for the Royal Air Force in 1940 the question of using the cannons to attack AFVs was soon raised, bombing at the time were too inaccurate to deal with tanks and tank armour had progressed to a stage where machineguns were useless. The Hispano was initially armed with High Explosive and Ball ammunition, Ball did not have the penetration to deal with tanks so development of an armour piercing shot went ahead. Initial attempts failed and with urgent requests for 20mm AP ammunition the failed attempt was modified so that only the tip of the projectile was hardened, 5000 of these were dispatched to Egypt towards the end of the year and had penetration around 5mm better than that of Ball.

By the 5th of May 1941 three types of 20mm AP ammunition were available.

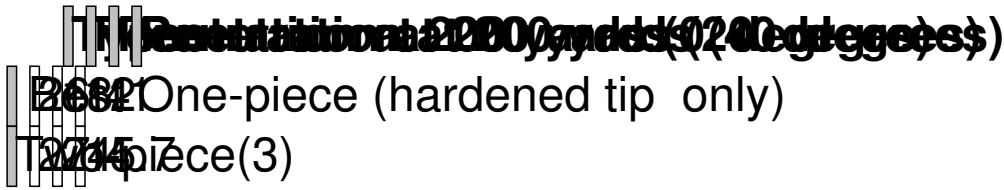
1. One-piece tungsten-steel, hardened at tip only (Could only be used in steel-ended magazine type).
2. Two-piece design - mild steel body with oil-hardened tungsten-steel tip (Could only be used in steel-ended magazine type).
3. Two-piece design - chrome-molybdenum steel body with moulded-on bakelite ballistic cap (Could be used in all types of

Hispano 20mm Armour Piercing Ammunition

Written by David Boyd

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of the ammunition was the following...

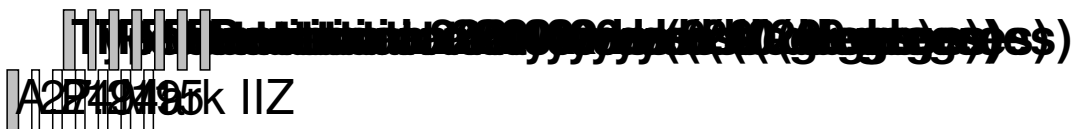


In June 1941 requirements of AP ammunition were to be 1% of total 20mm ammunition production, this was calculated with a loading of 80% AP/20% Tracer for attack against AFVs. The air-to-air requirement was not definite until the introduction of heavy armour in German aircraft. The One-piece design became known as A.P. Mark I and the Two-piece design became known as A.P. Mark II.

20mm Hispano A.P. Mk II

Weight	40 grams
Muzzle velocity	2660 fps
Charge	cellulose powder
Identification	Bifurcated body, white tip

Penetration of Hispano ammunition July 1942 against High Hardness plate.



A2095 Mk.IZ
B2107 IZ
H8E/I - Mk IZ

A.P. Mk III development

In 1941 and 1942 British units in North Africa had suffered badly against German armoured vehicles which had 30mm thick side armour, R.A.F fighters armed with the current AP ammunition could do little against these vehicles at combat ranges, attempts to meet this requirement included the 40mm Vickers S Guns and hyper-velocity AP projectiles in existing guns (littlejohn). The 40mm gun was used in service with good success but units equipped could only be used against specialised targets when general purpose fighters were badly needed. The littlejohn project did not meet with much success due to gun function difficulties with the light projectile.

So, it was decided in June 1942 to develop a composite rigid projectile capable of defeating the armour of German tanks at all combat ranges and be designed to fire from standard service fighter equipment. The design consisted of a duralumin envelope with a tungsten carbide core weighting 57.5 grams, the total weight of the projectile was around 96 grams. Penetration and ballistic trials were carried out in January 1943

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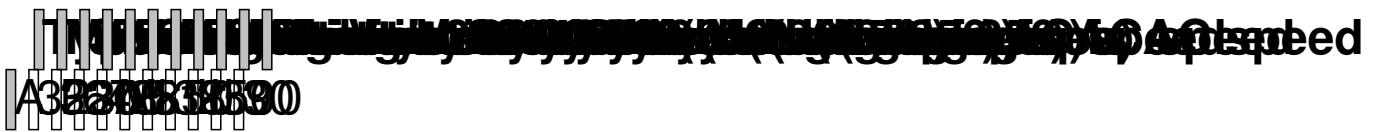
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and these left the stability of the projectiles in doubt but penetration was very good. Several modifications were made to improve the stability of the rounds, in May 1943 a trial was carried out against a Panzer Mk IIIH with wooden mock-ups for crew, the results were impressive as the crew were shot to pieces but the poor accuracy of the shot was still noticed.

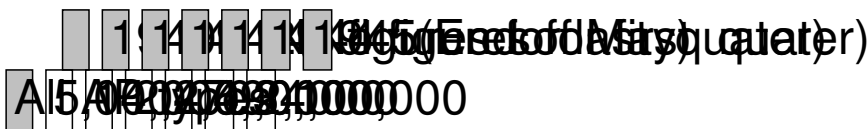
Production of Mk III AP began in May 1943

A.P. Mk III Performance



At the beginning of 1944 AP. Mk IV was introduced, I haven't been able to come across the particulars of this ammunition yet but it seems to be regular AP and not APCR. Developments in 1945 included both APC and APCBC types.

Production of Hispano AP Ammunition by year (UK Only)



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Sources - AIR 2 8688, AVIA 22 456-514