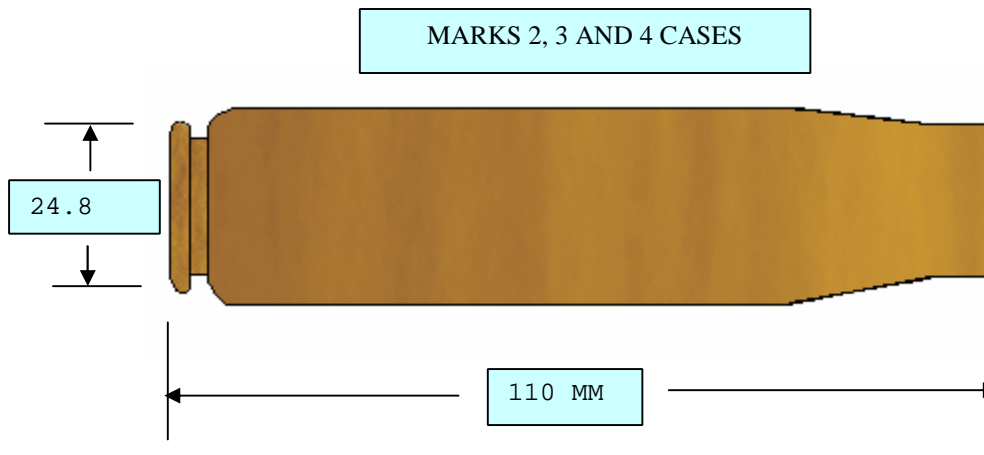


## US NAVY 20mm CARTRIDGE CASES

Along with all the belligerent powers America soon realized that .50 calibre weapons and ammunition were unsuitable for anti-aircraft work. The projectile lacked range and mass, two critical factors when attempting to shoot down fast moving dive-bombers and torpedo armed aircraft. The Americans rushed into service their 1.1" shipboard weapon but it soon gained a reputation for unreliability because of its hasty introduction before all the bugs were ironed out. Also the 1.1 inch projectile hasn't the explosive content to do much damage to an aircraft. The American answer was to adopt an already proven weapon and this was the 20mm Oerlikon S. This was done in 1941 just in time to begin the arming of naval fighting ships. The initial suites of AAA on ships very soon were shown to be totally inadequate, which led to the introduction of quad mountings and later on, heavier calibres.

The initial cartridge and weapon system had several drawbacks viz:

- 1 They were magazine fed weapons, which reduced the firing time to approximately 7.5 seconds.
- 2 The firing rate was a meager 450 rounds per minute
- 3 The cartridge case initially required greasing to ensure reliable extraction. Steel cases always needed greasing.



These three cases are of similar dimensions externally. Where they differ is in the size of the primer pocket and the form of flash holes.

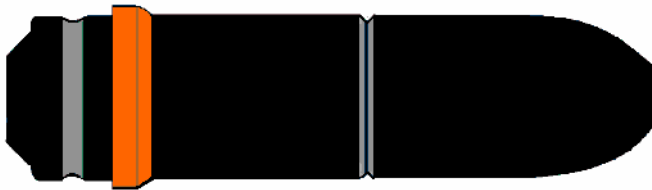
MK 2 has a primer pocket 7.8mm in diameter and is of the berdan style. Obviously a direct copy of the British Oerlikon round.

MK 3 and 4 have primer pockets 8.38mm in diameter and are of the boxer style. The internal lip is beveled. The MK 3 is made from steel.

The propellant is tubular and is loaded loosely into the case. The propellant weight is 27.7 grms.

All cases are fitted with the Mk 31 primer with the exception that the early Mk 2 may be found fitted with the Mk 30 primer.

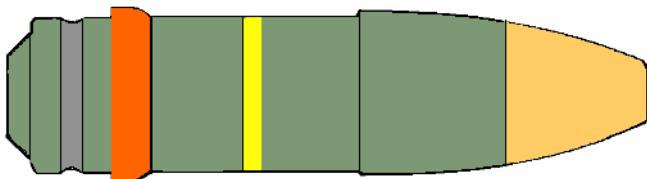
# US NAVY 20MM PROJECTILES



20mm AA AP-T MK 9



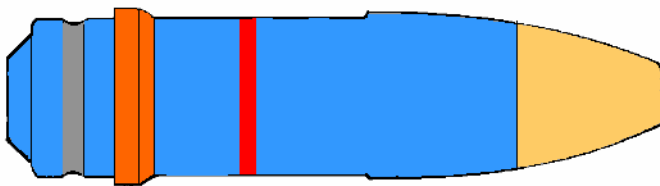
20mm AA BL & P



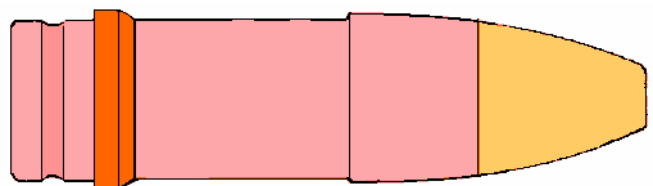
BL & T



20mm AA HE MK.3 (Tetryl)



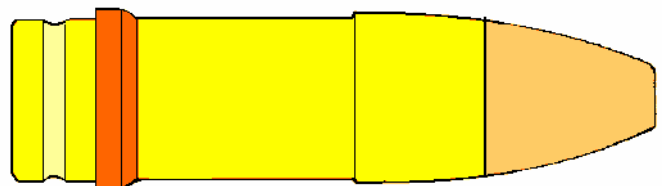
Fitted w/dim ignition tracer



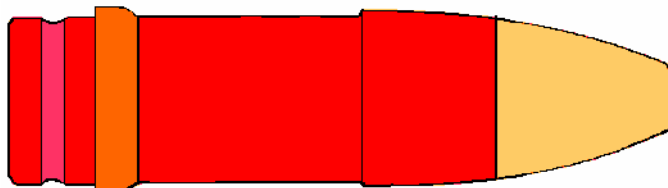
20mm AA HE-I MK3 (Pentolite)



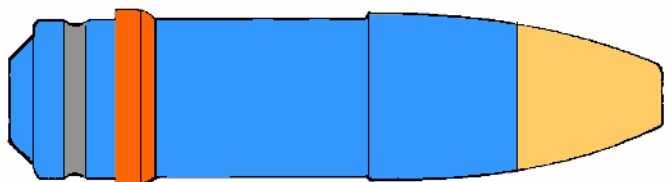
20mm AA HE-T MK. 7 (Tetryl)



20mm AA HE MK.3 (Pentolite)



20mm AA HE-I MK 3 (Tetryl)



20mm AA HE-T MK. 7 (Pentolite)

United States 20mm headstamps some of the stamps are doubtful and may be wrong.  
 For 20x110 Hispano-Suiza for A/C guns M1 AN-M2 and for Oerlikon naval AA guns Mk 2 and 4.

#### HISPANO-BRASS CASE

CODE LETTER	COMPANY	MODEL	DATES
AGM	Aluminum Goods Manufacturing Co, Manitowoc, WI	M21A1	1944-45
AS	Aluminium Specialty Coy, Manitowoc, WI.	M21A1	1944-45
ASC	A.S. Campbell Co, Inc. Boston MA.	M21, M21A1	1942
AS CO	DITTO	M21A1	1942
◇	Bridgeport Brass Coy. Bridgeport CT. .	M20	1940-41
◇	DITTO	M21	1941
BBC	DITTO		1941-42
BP	Bowen Products Corp, Ecorse, MI	M21A1	1944
BPC	DITTO	M21	1941-42
BPC	DITTO	M21A1	1942
DPS	Detroit Pressed Steel Coy. Detroit MI	M21, M21A1	1942
DURA	Dura Co (Division of Detroit Harvester), Toledo, OH	M21, M21A1	1942
FA	Frankford Arsenal Philadelphia, PA	M21A1	1950-51
FC0	Frost Co, Kenosha, WI	M21	1942
"	DITTO	M21A1	1941-45
GIB	Gibson Manufacturing Corp, Longmont, CO	M21A1	1951
GIBSON	DITTO	M21A1	1951
GMS	Globe Machine & Stamping Co, Cleveland, OH	M21	1942
"	DITTO	M21A1	1942-44
HM	Hupp Motor Co, Cleveland, OH	M21A1	1945
LC	Lake City Arsenal, Independence, MO	M21A1	1951-54
MS	Metal Specialties Manufacturing Co, Chicago, IL	M21A1	1945
NECO	Northern Engraving and Manufacturing Co, La Crosse, WI	M21	1942
NESCO	National Enameling & Stamping Co, Milwaukee, WI	M21A1	1951-54
NS	Norris Stamping & Manufacturing Co, Los Angeles, CA	M21A1	1950-52
RH	Ryerson & Haynes, Inc, Jackson, MI	M21, M21A1	1942
RIP	Ritepoint, Inc, Milwaukee, WI	M21A1	1958
SMC	Stoner Manufacturing Corp, Aurora, IL	M21	1941-42
"	DITTO	M21A1	1942-45
STON	DITTO	M21A1	1952-53
WBA	West Bend Aluminium Coy. West Bend, WI	M21A1	1952-53

#### HISPANO-STEEL CASE

CODE LETTER	COMPANY	MODEL	DATES
AG	Aluminium Specialty Coy. Manitowoc WI	M21A1B1	1943
ASC	A. S. Campbell Co, Inc, Boston, MA	M21A1B1	1942-43
BP	Bowen Products Corp, Ecorse, MI	M21A1B1	1943
BPC	DITTO	M21A1B1	1942
CB	Corcoran-Brown Lamp Co, Toledo, OH (Div. Of The Electric Auto-Lite Co )	M21A1B1	1942-44
DPS	Detroit Pressed Steel Co, Detroit, MI	M21A1B1	1943
DURA	Dura Co, Toledo, OH ( Div. Of Detroit Harvester)	M21A1B1	1943
EKCO	Ekco Products Co, Chicago, IL	M21A1B1	1953
KM	Knapp-Monarch Co, St. Louis, MO	M21A1B1	1942-43
MMP	McCaughey Metal Products, Inc, Buffalo, NY	M21A1B1	1942
NECO	Northern Engraving and Manufacturing Co, La Crosse, WI	M21A1B1	1942-43
P E	Proctor Electric Co, Philadelphia, PA	M21A1B1	1953-55
PROCTOR	DITTO	M21A1B1	1942
RS	Rockwood Sprinkler Co, Worcester, MA	M21A1B1	1942-43

OERLIKON-STEEL CASE

CODE LETTER	COMPANY	MODEL	DATES
EK	Ekco Products Co, Chicago, IL		1943
"	DITTO	Mk 3	1943-44
MDC	Michigan Die Casting Co, Detroit, MI	Mk 3	1943-45
SM	Steel Materials Corp, Detroit, MI		1942
"	DITTO	Mk 3	1943

OERLIKON-BRASS CASE

CODE LETTER	COMPANY	MODEL	DATES
AG	Aluminium Goods Manufacturing Co, Manitowoc, WI	Mk 2	1942-43
AS	Aluminium Specialties Co, Manitowoc, WI	Mk 2	1942
ASC	A. S. Campbell Co, Boston, MA	Mk 2	1942-43
"	DITTO	Mk 4	1944
◇	Bridgeport Brass Co, Bridgeport, CT	Mk 2	1941
◇	DITTO	Mk 2	1941-43
◇	DITTO	Mk 4	1943-45
○	DITTO	Mk 2	1942-43
○	DITTO	Mk 4	1944
BC	Briggs Clarifier Co, Washington, DC	Mk 2	1943
"	DITTO	Mk 4	1944
EK	Ecko Products Co, Chicago, IL	Mk 2	1943
"	DITTO	Mk 4	1944
FSC	Florence Stove Co, Kankakee, IL	Mk 2	1942-43
"	DITTO	Mk 4	1944-45
IS	International Silver Co, Meriden, CT	Mk 2	1942-43
"	DITTO	Mk 4	1943-44
MP	Metallic Products, Corp, Closter, NJ	Mk 2	1942-44
MS	Metal Specialties Manufacturing Co, Chicago, IL	Mk 2	1942-43
NES	National Enameling & Stamping Co, Milwaukee	Mk 2	1942-43
"	DITTO	Mk 4	1944
NOEN	Northern Engraving & Manufacturing Co, La Crosse, WI	Mk 2	1942-43
"	DITTO	Mk 4	1944-45
RN0	Amron Corp, Waukesha, WI	Mk 4	1964
TACU	The Aluminum Cooking Utensil Co, New Kensington, PA	Mk 2	1942-43
"	DITTO	Mk 4	1944
WB	West Bend Aluminum Co, West Bend, WI	Mk 2	1941-43
"	DITTO	Mk 4	1944-45



Left Hispano link and Right Hispano with "Ears"