



**ENGINEERING AND CONSTRUCTION**

**BRIEFLY THE PRESENTATION of  
LIGHT WEAPON AMMUNITION**



# GENERAL INFORMATION

- We have prepared a presentation containing our preliminary information and suggestions for the Light Weapon Ammunition Factory Establishment Project that you want to be established in your country.
- Complex questions to be asked during and after the presentation, and as a result of the negotiations, the project will become clearer and the next process will be continued in a best way.
- First of all, a brief information about Light Weapon Ammunition. We thought it would be very helpful if we did.

# LIGHT WEAPON AMMUNITION

- Ammunition up to 12.7 mm (including 12.7 mm) is accepted as Light Arms Ammunition by both NATO and the Warsaw Pact (RUSSIAN).

These are:

- Pistol Cartridges,
- 5.56x45 mm Cartridges,
- 7.62 mm Cartridges,
- 12.7 mm Cartridges,
- Special purpose Cartridges..

- PISTOL CARTRIDGES
- Most Used :
  - . 9x19 mm PARABELLUM
  - . 7.65x17 mm BROWNING
  - . 9x17 mm SHORT
  - . 9x18 mm MAKAROW . 9X20 mm LONG
  - . 9.65 mm (.38 cal.) SPEC.
  - . .45 cal. THOMPSON



- 5.56x45 mm CARTRIDGES

- . 5.56x45 mm M855/SS109
- . 5.56x45 mm M193 LEAD CORE
- . 5.56x45 mm M856/L110 TRACER
- . 5.56 mm BLANK



- 7.62 mm CARTRIDGES

- . 7.62x51 mm M80 NATO
- . 7.62x39 mm KALASHNIKOV. (RUSIAN)
- . 7.62x54 mm (RUSIAN)
- . 7.62x51 mm M61 ARMOR PIERCING
- . 7.62x51 mm M62 TRACER
- . 7.62 mm BLANK



- 12.7 mm CARTRIDGES

- . 12.7X99 mm M33 BALL
- . 12.7X99 mm M8 ARMOR PIERCING
- . 12.7X99 mm M17 TRACER
- .12.7X99 mm APIT( ARMOR PIERCING, TRACER AND FIRE) CARTRIDGES
- .12.7X108 mm NORMAL- TRACER (RUSIAN)
- .12.7 mm BLANK



- SPECIAL PURPOSE CARTRIDGES

- . Plastic Cartridge- Education
- . Painted tracer cartridge



# BASIC COMPONENTS of CARTRIDGES

- . CASE (SLEEVE)
- . BULLET
- . PRIMER (CAPSULE)
- . POWDER (PROPELLANT)



## CASE (SLEEVE)

The material of the case is brass material according to NATO standard, or steel according to RUSSIAN standard.

Steel material is not used in Nato standart because of the it causes wear in weapons.

As additional information, Brass raw material is easier to purchase than steel raw material. This is related to the World metal demand.

CuZn30 is used as brass material (%70 Cu ve %30 Zn), this material is also used in the production of case cup. It can be purchased or manufactured at the factory.

# BULLET

- The bullet generally consists of the bullet jacket and the core inside.
- The core can be either a Lead-Antimony alloy or a steel material.
- Bullets with a lead-Antimon alloy core are normal bullets, steel core bullets are armor-piercing.
- Tracer bullets contain lead core / steel core and pyrotechnic material (trace material) inside the bullet jacketed.
- The bullet jacket is made of brass or tombak (CuZn10 – CuZn30) material.
- Brass is used in pistol cartridges, and tombac material is used in other cartridges.
- Bullet jacket cup can be purchased or manufactured, it is recommended that the lead and steel core can be produced at the factory

# PRIMER (CAPSULE)

- It is used to feed the powder.
- There are two types as Boxer and Berdan.
- Boxer type in NATO technology,
- Berdan type capsule is used in RUSSIAN technology.
- The cases in which these two types of capsules are different type.
- Boxer capsule; It consists of capsule ring, capsule anvil and explosive.
- Berdan capsule consists of capsule ring and explosive.

NOTE: Both Berdan and Boxer capsules can be used in the production of 7.62x39 mm cartridges.

# POWDER

- It performs the task of throwing the bullet of the cartridges.
- It is ignited as a result of the detonation of the bullet, and the bullet is activated by the pressure of the gas released as a result of its combustion.
- There are single-based cylindrical or double-based spherical/spheroidal types.
- Double-based spherical type is preferred in the production of light weapons.



# **THE ESTABLISHMENT OF PRODUCTION FACTORY REQUIREMENTS OF LIGHT WEAPON AMMUNITION**

# NEEDS

- Factory Construction are needed
- Product Designs are needed
- Production Methodes are needed
- Production Machines are needed
- Inspection Methodes are needed
- Inspection Machines are needed
- Testing Areas are needed
- Employees are needed

# **SELECTION OF FACTORY SITE AND CONSTRUCTION**

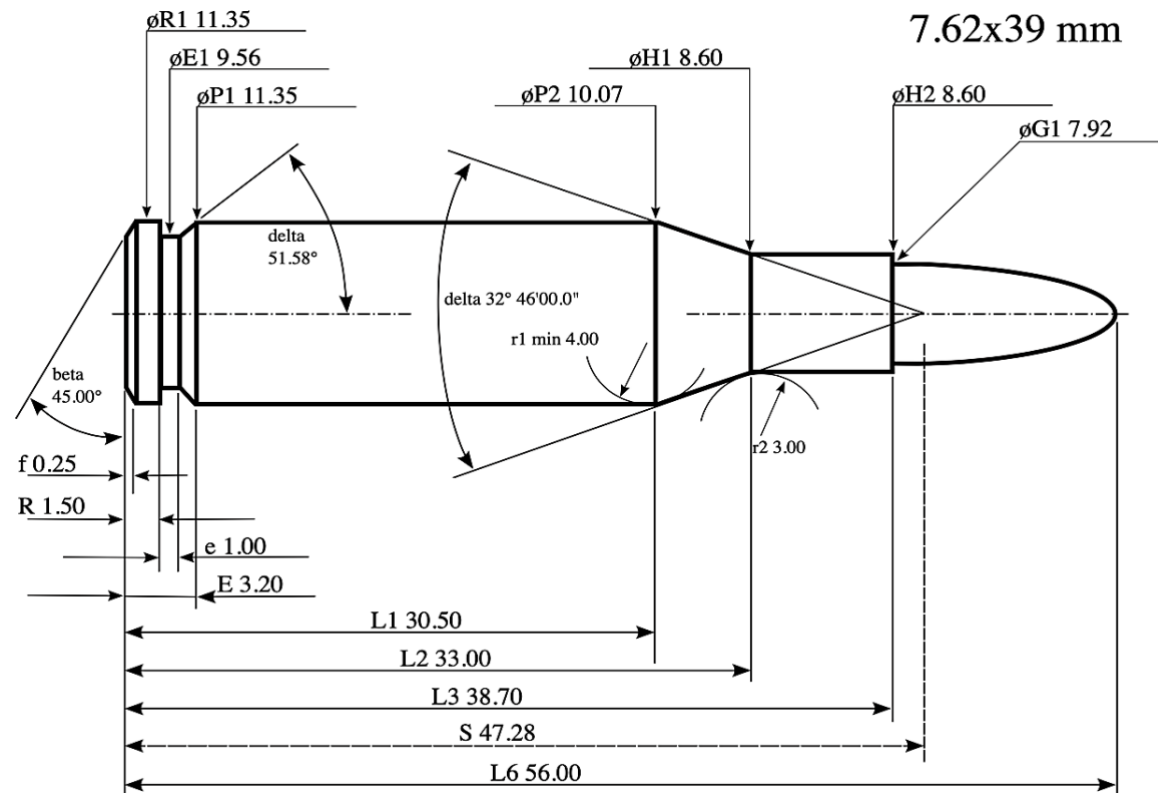
## **OF FACTORY BUILDINGS**

- The land where the factory will be established should be chosen from a region far from the settlements in the long term, where the infrastructure, water and electricity needs can be easily met.
- Lodging, guesthouse, cafeteria, administrative building, etc. for the critical personnel who will work in the factory. should be taken into account as needed.
- Considering that it may be necessary to add new production lines to the factory in the long term (as capsule production lines, gun powder production factory, larger caliber ammunition production lines, etc.), it is recommended to allocate an area of approximately 300 decares.

- Factory construction can be done by us, the project will be created together by mutual consultation. Our experiences are enough to establish construction according to NATO standards.

# PRODUCT DESIGNS

DKR's engineering can provide product designs.



## **PRODUCTION METHODES**

- DKR's engineering can supply all required operational instructions by english language

## **PRODUCTION MACHINES**

- DKR's can provide all required machines
- DKR's can install all machines
- DKR's can provide user manuals by english
- DKR's can provide maintenance manuel by english language
- DKR's can supply all required fixtures and toolings

## **INSPECTION METHODES**

- DKR's engineering can supply all required inspection instructions by english language

## **INSPECTION MACHINES**

- DKR's can provide all required machines
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- DKR's can provide maintenance manuel by english language

# **EMPLOYEES**

- CUSTOMER can provide all related employees (such as operators, engineers, inspectors, managers according to organisation chart)
- DKR's can supply all required job descriptions,
- DKR's can educate for key personels.

**BRIEFLY WE WOULD LIKE TO GIVE INFORMATION FOR  
PRODUCTION AND QUALITY CONTROL TECHNOLOGIES**

# PRODUCTION TECHNOLOGY

- We recommend giving importance to the selection of the most advanced technology, without considering the investment costs, in order to ensure that the factory to be established can be operated without any problems for many years, to ensure the maximum level of product quality and to sell your products more than you need in the foreign market.
- Many countries in Africa cannot operate the cartridges factories they have established with the technology they obtained from unknown companies. Almost all of these lines are idle.
- Help is requested from many countries to operate these production lines. However, this is not possible.

# QUALITY CONTROL TECHNOLOGY

- A very good quality control system must be established in the factory in order to minimize the amount of scrap products in the production process of the ammunition and to ensure that the ammunition complies with the specifications and standards.
- A quality control plan should be established for each munition. In addition, laboratories (Physics, Metallurgy, Chemistry) and shooting test area are needed.
- According to the operation and quality control plans to be prepared, starting from the raw materials and operationally performing all quality controls without interruption (both by the producing worker and the quality control staff), the results should be recorded.

# LIGHT WEAPON AMMUNITION QUALITY CONTROL

The following tests are mandatory to check the conformity of the produced cartridges with specifications, standards and AC-225 requirements.

- Visual inspection
- Dimensional inspection
- NDT (Non destructive testing) and DT (Destructive testing) testings
- Velocity, pressure and action time testing (EPVAT)
- Target dispersion testing
- Aging testing (Mercury nitrate test)
- Waterproof testing
- Tracing test (For Tracing Cartridges)
- Armor penetration testing (For Armor Piercing Cartridges)
- Function and fault test
- Conditioning test (+52°C ve -54°C)

- We can supply all of the materials that will not be produced in the factory but to be purchased from Turkey in accordance with the standards and send them to Customer.
- Raw material needs will also be available from Turkey.

**THANK YOU FOR YOUR PATIENCE**



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