

36.01

36.01 - Propellant powders.

These powders are mixtures, the combustion of which produces a large volume of hot gases. These gases generate a propellant effect.

In the case of propellant powders for firearms, combustion takes place in a confined space of virtually constant volume and the pressure created in the barrel of the firearm gives high velocity to a projectile.

In the case of propellant powders for rockets, combustion produces a constant pressure and the escape of gases through a nozzle gives the propellant effect.

The propellant powders of this heading contain combustible ingredients and ingredients which support combustion. They may also contain ingredients whose purpose is to control the rate of combustion.

The heading includes :

(1) Black powder (gunpowder)

Black powder consists of an intimate mixture of potassium nitrate or sodium nitrate, sulphur and charcoal.

This powder, the colour of which varies from black to brown, is slightly hygroscopic and is used as a sporting powder and as a blasting powder. In the first case, it is presented in the form of round and calibrated grains; in the second case, the grains are of various sizes or may be crushed (blasting powder for use in mining).

(2) Propellant powders for firearms (other than black powder)

(a) Smokeless powders

These are based on nitrocellulose (cellulose nitrates), usually gun-cotton or blasting grade nitrocellulose, together with other products and, in particular, with stabilisers such as diphenylamine. These powders may be manufactured either from nitrocellulose and solvents, or from nitrocellulose to which barium nitrate or potassium nitrate, alkaline dichromates, etc., and solvents have been added, or again by the association of nitroglycerol (glycerol trinitrate) with nitrocellulose (ballistites, cordites, etc.).

Smokeless powders are generally presented in the form of sticks, tubes, discs, flakes or grains.

(b) Composite powders

In composite powders, additives such as nitroguanidine, hexogen (1,3,5-trinitro-1,3,5-triazinane), or octogene (1,3,5,7-tetranitro-1,3,5,7-tetrazocane) may be added to the basic products (nitrocellulose, nitroglycerol) to improve their combustion characteristics.

Polymeric binders associated with the same constituents (but not containing any nitrocellulose) may also be used to obtain a propellant powder.

(3) Propellant powders for rockets

(a) Homogeneous propellant powders

These are composed essentially of nitrocellulose and organic nitrates with the addition of other products (stabilisers, ballistic catalysts, etc.). They are presented as charges, generally cylindrical, which are loaded into the combustion chamber in the form of a cartridge.

(b) Composite propellant powders

These are products composed of a substance supporting combustion (ammonium perchlorate, ammonium nitrate, etc.) and a reducing agent (generally synthetic rubber), and possibly a further metallic reducing agent (aluminium, etc.).

The heading **excludes** :

- (a) Separate chemically defined compounds (usually **Chapter 28 or 29**).
- (b) Prepared explosives of **heading 36.02**.
- (c) Nitrocellulose (cellulose nitrates) e.g., gun-cotton (**heading 39.12**).