SMOKELESS PROPELLANTS

Summary
For the purposes of this policy, Smokeless propellants are used in small arms ammunition. Small scale manufacturing of small arms ammunition using smokeless powder has not been done in many municipalities, so guidelines are not available. The manufacturing use, storage and transportation of smokeless propellants is covered in various codes such as the International Fire Code, the International Building Code, Bureau of Alcohol, Tobacco and Firearms regulations, and the Federal United States Code, to name a few. The purpose of this policy is to clarify inconsistencies in various Codes and to create guidelines for the use of smokeless propellants in the manufacturing process in Payson. All requirements of the Codes pertaining to explosives and hazardous materials apply, unless in conflict with this policy. Following this policy does not exempt interested parties from working with the Building Department and the Fire Department for a business of this nature.

Definitions

CONTROL AREA. Spaces within a building where quantities of hazardous materials not exceeding the maximum allowable quantities per control area are stored, dispensed, used or handled. (IFC 2702.1)

EXPLOSIVES – DIVISION 1.3. (For transportation) Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

EXPLOSIVES – DIVISION 1.4. (For manufacturing) Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. (IFC 3302.1)

FACTORY INDUSTRIAL GROUP F Occupancies includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H high-hazard or Group S storage capacity.

H-1 USE CLASSIFICATION. Buildings and structures containing materials that pose a detonation hazard. Such materials shall include, but not be limited to, the following: (IFC 202).

Explosives:

Division 1.1
Administrative Policy
SMOKELESS PROPELLANTS
Public Safety – A701

Division 1.2
Division 1.3

Exception: Materials that are used and maintained in a form where either

Division 1.4

Exception: Articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco and Firearms regulations, or unpackaged articles used in process operations that do not propagate a detonation of deflagration between articles shall be allowed in Group H-3 occupancies.

Division 1.5
Division 1.6

H-3 USE CLASSIFICATION. Buildings and structures containing materials that readily support combustion or that pose a physical hazard.

HAZARDOUS USE CLASSIFICATIONS. Hazardous uses are classified in Groups H-1, H-2, H-3, H-4, and H-5. (IFC 202)

HIGH HAZARD GROUP H. High hazard Group H occupancy includes, among other, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of quantities allowed in control areas constructed and located as required by the International Fire Code. (IFC 202)

Exceptions are listed and need to be researched as they pertain to the specific business use

OUTDOOR CONTROL AREA. An outdoor area that contains hazardous in amounts not exceeding the maximum allowable quantities of Table 2703.1.1 (3) or Table 2703.1.1 (4) (IFC 2702.1)

SAMMI. Sporting Arms and Ammunition Manufacturers’ Institute Inc.

SMALL ARMS AMMUNITION. A shotgun, rifle or pistol cartridge and any cartridge for propellant actuated devices. This definition does not include military ammunition containing bursting charges or incendiary, trace, spotting or pyrotechnic projectiles. (IFC 3302.1)

SMALL ARMS PRIMERS. Small percussion sensitive explosive charges, encased in a cap, used to ignite propellant powder.
SMOKELESS PROPELLANTS. Solid propellants, commonly referred to as smokeless powders, used in small arms ammunition, cannons, rockets, propellant actuated devices and similar articles. (IFC 2203.1)

Process

OCCUPANCY CLASSIFICATION

(A) **F-1.** Moderate hazard occupancy: Factory uses which are not classified as Factory Industrial Group F-2 (Low-hazard) shall be classified as F-1 Moderate Hazard.

Can be used for indoor occupancies if an exception to the H classification applies.

(B) **H-3.** Buildings and structures containing materials that readily support combustion or that pose a physical hazard, based on the exception in Division 1.4.

(C) Ignition occurs when the powder granules are heated above their ignition temperature. This can occur by exposing the powder to: (SAMMI)

1. A flame such as a match or primer flash
2. An electrical sparks or sparks
3. Heat from an electric hot plate or a fire directed against or near a closed container

(D) Occupancies classifications may be different for indoor usage/storage and outdoor storage capacities.

EXPLOSIVE CLASSIFICATION

(A) Based on the quantities and purpose, the manufacturing of small arms ammunition using smokeless propellant falls under two explosive categories.

1. Manufacturing – 200 pounds or less daily use in the manufacturing process = Division 1.4
2. Transporting – 100 pounds or less = Division 1.3C in DOT approved containers (DOT)

(B) **DIVISION 1.3.** Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

(E) **DIVISION 1.4.** Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. (IFC 3302.1)

SPRINKLER SYSTEM

(A) No amount of smokeless propellant shall be stored in an inside magazine in an unprotected manner or in an inside area without a sprinkler system.
(B) Daily usage amounts of smokeless powder up to 50 pounds shall be in a sprinkler equipped control area.

(C) Daily usage amount of smokeless propellant powder of 51 to 100 pounds shall be in sprinkler equipped control area in a cabinet constructed in accordance with section 3304.5.1.2 if the International Fire Code.

**CONTROL AREAS**

(A) Design and number of control areas shall comply with Table 2703.8.3.2 of the International Fire Code.

(B) Fire resistance rating for control areas shall comply with Table 2703.8.3.2 of the International Fire Code.

(C) Division 1.4, Group H-3

1. Maximum allowable quantity is 50 pounds per control area (IFC Table 2703.1.1(1))
2. Maximum allowable quantity shall be increased 100 percent when stored in approved storage cabinets, day boxes, gas cabinets, exhausted enclosures of safety cans.
3. Allowed only in buildings equipped with an approved automatic sprinkler system.

**INTERNAL OCCUPANCY SEPARATION**

(A) The required separation for various occupancy groups within the same building shall comply with Table 508.3.3 of the International Building Code.

**DETACHED, OUTDOOR STORAGE AND BUILDING SEPARATION**

(A) Detached storage requirements per Table 415.3.2 of the International Building Code shall apply.

(B) Distances for buildings containing explosives shall comply with Table 3304.5.2(2) of the International Fire Code.

(C) Outdoor storage requirements shall comply with Section 3304 of the International Fire Code.

(D) Barricade may be required on outdoor storage structure based on the amount of explosive stored in the structure.
Administrative Policy
SMOKELESS PROPELLANTS
Public Safety – A701

References
Bureau of Alcohol, Tobacco and Firearms (ATF) – Federal Explosives Law and Regulations booklet.

General Questions:

Question 16 (page 61):
Is small arms ammunition subject to regulations under Federal explosives law?

Answer:
No. The law specifically exempts small arms ammunition and components thereof. [18 USC 845(a) (4)]

Question 81 (page 69):
Is smokeless powder designed for use in small arms ammunition subject to the explosives storage requirements?

Answer:
Smokeless propellants designed for use in small arms ammunition are exempt from regulation under 18 USC Chapter 40 and regulations in 27 CFR Part 555. However, it should be noted that persons engaged in the business of importing or manufacturing smokeless propellants must have a Federal explosives license. Additionally, smokeless propellant designed for use other than small arms ammunition is not exempt. Therefore, explosive products such as squibs, fireworks, theatrical special effects, or other articles that may be utilizing smokeless propellants are regulated and must be stored accordingly.

International Building Code (IBC)
International Fire Code (IFC)
   Chapter 27 – Hazardous Materials
   Chapter 33 – Explosives and Fireworks
National Fire Prevention Association (NFPA)
United States Code (USC) – 18 U.S.C 845(a) (4)