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SPORTING ARMS AND AMMUNITION MANUFACTURERS' INSTITUTE, INC.
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Sporting Ammunition Primers

Properties, Handling & Storage for Handloading

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Ammunition handloading has become increasingly popular in recent years. This leaflet summarizes information that is generally known by an experienced handloader, and provides general information to persons interested in handloading. It discusses the properties of sporting ammunition primers and offers recommendations for their safe use, handling and storage.

This leaflet is intended only to increase the knowledge of all concerned individuals and groups regarding sporting ammunition primers. The statements made do not supersede local, state or Federal regulations. Proper authorities should be consulted on regulations for storage, transportation, and use of sporting ammunition primers in each specific community. Other leaflets on smokeless powder and sporting ammunition are available.

Properties of Primers

Sporting ammunition primers contain carefully engineered mixtures of chemical ingredients. Primers are designed to explode and produce the heat, gas and hot particles necessary to ignite the propellant powders in sporting ammunition when the firing pin of a firearm strikes them properly.

Properties of particular importance to the dealer and user of primers are as follows:

1. Primers may explode if subjected to mishandling. Explosions may be caused by friction and by percussion, such as hammering, pounding, dropping or bullet impact. Heating by fire, static electricity, sparks, hot tobacco ashes, or other unspecified abuses may also cause primers to explode.

2. If primers are loose or in bulk, having contact one with another, one primer exploding can, and usually will, cause a violent, sympathetic explosion of all primers so

situated. In other words, one primer exploding for any reason under these circumstances will normally cause all of the primers to explode in one violent blast.

3. Primers may "dust." Small particles of priming compound may separate from the primers in the form of dust, especially when they are subjected to shaking or jolting. Accumulation of this dust in primer feed tubes, loading machines, and loading areas is extremely hazardous as it might cause explosions or fires.

4. Primers exposed to water or any organic solvent, such as paint thinner, gasoline, kerosene, oil, grease, etc. may deteriorate, resulting in misfires or poor ignition.

5. Modern sporting ammunition primers will not absorb moisture under normal or even severe conditions of atmospheric humidity. There is no advantage to be gained from air-tight containers. The factory containers in which they are packaged need only normal conditions of storage. They should be kept dry and not exposed to high temperatures (in excess of 150° F). If exposed to wet conditions or high temperatures, they may deteriorate, yielding misfires or poor ignition of the propellant powder.

Handling of Primers

Primers do explode. This is the purpose for which they have been designed. They demand the respect and careful handling due any device containing explosives.

Sporting Ammunition and the Firefighter, a video produced by the Sporting Arms and Ammunition Manufacturers' Institute, analyzes the characteristics associated with small arms ammunition when it is subjected to severe impact and fire. When a primer ignites, it causes the propellant to burn, which creates gases which, when under pressure in a firearm, send the bullet down the barrel. Pressure created by the propellant being burned is what discharges a bullet. As such, loose ammunition in a fire does not result in bullets being discharged because the propellant is not burning under pressure. The video, which has been widely circulated to fire departments, concludes that while ammunition produces a popping sound when it burns, there is no mass detonation of the ammunition, any projectiles are of low velocity, and there is no threat to firefighters in their standard turn-out gear.

Primers should never be handled, used, or stored in bulk, since primers in bulk can explode simultaneously. The

placing of primers in tubes or columns, or using other bulk systems in which the explosion of any one primer may cause the explosion of all others, is a potentially hazardous condition. The manufacturers of primers do not recommend the use of primer feeds for reloading unless adequate protection from the hazard of explosion is provided. It is the responsibility of the manufacturers of primer handling systems to provide safety and protective features for their equipment. It is recommended that primers be handled individually unless adequate safeguards are provided and used.

Care must always be exercised in any handloading operation to avoid rough handling and undue force where a primer is involved, since the primer may fire. Any malfunction of equipment must be cleared with extreme caution. The decapping of shells or cases containing live primers is to be avoided.

Precautions should be taken to avoid buildup of static electricity on the person when handling primers or conducting handloading procedures. Loading equipment should be electrically grounded.

All loading equipment and adjacent areas must be kept scrupulously clean and free of primer dust and powder accumulations. Work areas and loading equipment must be cleaned by wiping with a damp cloth or sponge which should be thoroughly rinsed after each use. Fired primers, primer cups, anvils, or other bits of hard, abrasive material are a hazard during loading operation as contact with them may cause primers to fire.

Accidentally spilled primers should be picked up immediately as they may explode when stepped upon.

An absolute minimum of primers should be maintained at the loading operation. Only one packing tray at a time should be removed from the primer storage.

When a priming operation is completed, any remaining primers should be returned to the package in which they were originally contained. These packages have been specifically designed to protect primers during shipment and storage and also to protect the consumer.

Primers available to children, household pets, or persons not recognizing them as potentially hazardous, are an unnecessary risk to all concerned.

Never have an open flame, source of sparks, or hot particles in the vicinity of primers or any ammunition loading operation.

Do not smoke near primers.

Safety glasses must be worn when performing any and all handloading operations. Additional protection such as face shields or machine guards are strongly recommended.

Recommended Storage of Primers

Storage cabinets containing only primers are recommended. These cabinets should be ruggedly constructed of lumber at least 1" nominal thickness to delay or minimize the transmission of heat in the event of fire. SAAMI recommends against storing primers in sealed or pressurized containers.

Keep your storage and use area clean. Make sure the surrounding area is free of trash or other readily combustible materials.

Be sure your storage area is free from any possible sources of excessive heat and is isolated from open flame, furnaces, water heaters, etc. Do not store primers where they can be exposed to direct sunlight. Avoid storage in areas where mechanical or electrical equipment is in operation.

Do not store primers in the same area with solvents, flammable gases, or highly combustible materials. Store primers only in their original factory containers. Do not transfer the primers from this approved container into one which is not approved. The use of glass bottles, fruit jars, plastic or metal containers, or other bulk containers for primer storage is extremely hazardous.

Do not smoke in areas where primers are stored. Place appropriate "No Smoking" signs in these areas.

Do not store primers in any area where they might be exposed to gun fire, bullet impact, or ricochets.

Do not store primers with propellant powders or any other highly combustible materials so as to avoid involving primers in a fire as much as possible.

Observe all regulations regarding quantity and methods of storing primers.

Know the Following
RECOMMENDATIONS ON STORAGE AND HANDLING
Issued by the National Fire Protection Association
Battery March Park, Quincy, MA 02269 and reprinted with their permission:

NFPA 495

Explosive Materials Code

This edition of NFPA 495, Explosive Materials Code, was prepared by the Technical Committee on Explosives and acted on by the National Fire Protection Association, Inc. at its Annual Meeting held May 20-23, 1996, in Boston, MA. It was issued by the Standards Council on July 18, 1996, with an effective date of August 9, 1996, and supersedes all previous editions.

The 1996 edition of this document has been approved by the American National Standards Institute.

Origin and Development of NFPA 495

This code was originally issued in 1912 as the Suggested State Law to Regulate the Manufacture, Storage, Sale and Use of Explosives. The second edition was issued in 1941 by the Committee on laws and Ordinance and retitled Suggested Explosives Ordinance for Cities. Later, the document number NFPA 495L was designated.

After being assigned to the Committee on Chemicals and Explosives, a new edition was issued in 1959. This was retitled as the Code for the Manufacture, Transportation, Storage, and Use of Explosives and Blasting Agents and redesigned as NFPA 495.

Following reorganization of the committee in 1960, the responsibility for amendments to NFPA 495 was assigned to the Sectional Committee on Explosives. This committee reported to the Correlating Committee on Chemicals and Explosives. Revised editions were issued in 1962, 1965, 1967, 1968, 1969 and 1970. A new edition was issued in 1972 with the document title revised to code for the Manufacture, Transportation, Storage, and Use of Explosive Materials. A subsequent edition followed in 1973.

Following the issuance of the 1973 edition, the Sectional Committee on Explosives was redesignated as a Technical Committee. In 1976, the committee began a detailed review intended to amend requirements so that there were no conflicts with the regulations promulgated by the various federal agencies concerned with explosive materials (Bureau of Alcohol, Tobacco and Firearms, US Mine Safety and Health Administration, US Department of Transportation, etc.) This effort resulted in the 1982 edition, which was subsequently followed by a new edition in 1985. In 1990, the document was again revised and included the title being changed to the Explosive Materials Code. The latest edition, issued in 1996, incorporates change in the classification of explosives to conform with recent U.S. Department of Transportation "Hazardous Materials Regulations" which in turn are based on United Nations Recommendations on the Transport of Dangerous Goods. The 1996 edition also includes technical and editorial amendments.

Chapter 11
Small Arms Ammunition and Primers, Smokeless Propellants, and Black Powder Propellants

11-1 Basic Requirements.

11-1.1 In addition to all other applicable requirements of this code, intrastate transportation of small arms ammunition, small arms primers, smokeless propellants, and black powder shall comply with US Department of Transportation Hazardous Materials Regulations, 49 CFR, Parts 100-199.

11-1.2 This chapter applies to the channels of distribution of and to the users of small arms ammunition, small arms primers, smokeless propellants, and black powder.

11-1.3 This chapter does not apply to in-process storage and intra-plant transportation during manufacture.

11-1.4 This chapter applies to the transportation and storage of small arms ammunition and components.

11-1.5 This chapter does not apply to safety procedures in the use of small arms ammunition and components.

11-5 Small Arms Primers

11-5.1 Small arms primers shall be transported or stored in containers approved by the US Department of Transportation.

11-5.2 Transportation of small arms primers shall comply with US Department of Transportation Regulations.

11-5.3 No more than 25,000 small arms primers may be transported in a private vehicle.

11-5.4 No more than 10,000 small arms primers may be stored in residences.

11-5.5 No more than 10,000 small arms primers may be displayed in commercial establishments.

11-5.6 Commercial stocks of small arms primers shall be stored as follows:

(a) Quantities not exceeding 750,000 may be stored in a building if not more than 100,000 are stored in any one pile and piles are at least 15 ft (4.6 m) apart.

(b) Quantities exceeding 750,000 may be stored in a building if the following conditions are met:

1. The warehouse or storage room shall not be accessible to unauthorized personnel.

2. Primers shall be stored in cabinets. No more than 200,000 primers shall be stored in any one cabinet.

3. Shelves in cabinets shall have vertical separation of at least 2 ft (0.6 m).

4. Cabinets shall be located against walls of the warehouse or storage room with at least 40 ft (12.2 m) between cabinets.

5. Separation between cabinets may be reduced to 20 ft (6.1 m) if barricades twice the height of the cabinets are attached to the wall, midway between each cabinet. The barricades shall extend at least 10 ft (3 m) outward, shall be firmly attached to the wall, and shall be constructed of 1/4 in. (6.4 mm) boiler plate, 2 in. (51 mm) thick wood, brick or concrete block.

6. Primers shall be separated from materials classified by the US Department of Transportation as flammable liquids, flammable solids, and oxidizing materials by a distance of 25 ft (7.63 m) or by a fire partition having a fire resistance of at least 1 hour.

7. The building shall be protected by an automatic sprinkler system installed according to NFPA 13, Standard for the Installation of Sprinkler Systems.

(c) Small arms primers not stored according to (a) or (b) above shall be stored in a magazine meeting the requirements of Chapter 6.