

High-Piled Combustible Storage Packet # 3

COMMODITY CLASSIFICATION



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Specifying the type, amount, and arrangement of combustibles for any commodity classification is essentially an attempt to define the potential fire severity, based on its burning characteristics, so the fire may be successfully controlled by the prescribed fire sprinkler protection. In real life, however, many storage arrays will not fit properly into one of the fundamental classifications thus requiring the user to make judgments after comparing each classification to the storage conditions at hand. With the thousands of products possible in storage arrays, it becomes impossible to define in words all the possible variations that could be acceptable in any class. As an alternative, to help the user, the Colorado Springs Fire Department has classified a variety of common products based on judgment, loss experience, and fire results.

ATTENTION: *This is supplemental book #3 of four books concerning high-pile combustible storage. Please see our other packets for additional and helpful information.*

Other High-pile Storage packets are available as follows:

Book 1 - This packet contains **GENERAL** information about High-Piled Combustible Storage. We recommend this packet for the “*first time*” customer trying to obtain as much practical information as possible about this subject. This packet also contains samples of our questionnaires for both general item high pile stock, as well as plastic stocking. See last pages of this Packet 1, and/or packet 4 for copies of these questionnaires.

Book 2 - Is a reprint of Section 4 of Packet 1, **UFC ARTICLE 8107, as amended**, for “**NO STORAGE ABOVE 12 feet (general stock) and/or 6 feet (high hazards)**” agreements.

Book 3 - Is our **COMMODITY TYPE** packet, which features *numerous* examples of commodity types. This should help with correctly determining what commodity class your specific storage items will fit into.

Book 4 - Is our **QUESTIONNAIRE FORMS** packet, and it contains the questionnaires for customers familiar with our General Packet No. 1, who just need copies of the necessary submittal forms.

Classification of Commodities:

Commodity classification is determined by the type and amounts of materials (i.e. metal, paper, plastic, wood, etc.) involved in a product and its primary packaging. However, in a storage or warehousing situation it is also affected by such factors as the material of the main storage or shipping container, the amount of air space and the location of the more hazardous materials within the container.

EXAMPLE - a group A plastic product enclosed in a 5 or 6-sided metal container could be considered Class II; or a ceramic product heavily wrapped in tissue paper and placed into a corrugated carton would be considered as a Class III.

Most general types of common commodities are classified as **Class I, II, III, or IV**. Commodities presenting special fire hazards beyond Class I, II, III, or IV, and most Group A plastics will be considered as **High-hazard Commodities**. Plastics, elastomers, and rubber are placed into three additional categories to assist in defining their fire fighting hazards and risks. These three categories are Group A (the most hazardous), Group B (with moderate hazards), or Group C (the lowest hazard group). This is in accordance with Article 81 of the Uniform Fire Code, and NFPA 231. Materials listed within each commodity classification are assumed to be unmodified for improved combustibility characteristics. Use of flame retarding modifiers or the physical form of the material could change the classification.

The following are a few examples to help demonstrate how the configuration or use of storage aids may effect the commodity classification.

EXAMPLE 1 - Plastic materials stored in cardboard cartons are protected as a High-hazard (plastic) commodity. When these same materials are stored in five-sided open top solid metal containers, the

arrangement can be protected as a Class III commodity. This type of array limits the amount of air available for burning and reduces the amount of continuous vertical and horizontal plastic surfaces. This then reduces the hazard. Additionally, High-hazard (plastic) materials stored in sealed solid metal containers with solid metal tops, may be protected as a class I commodity.

EXAMPLE 2 - Metal parts in ordinary cardboard cartons are protected as a Class I commodity. When these metal parts are handled in plastic tote boxes, the arrangement must be protected as a High-hazard (plastic) commodity.

EXAMPLE 3 - Hypodermic needles are stainless steel. Each individual needle is stored in its own plastic case. Several of the needles are then packaged into cardboard boxes. This arrangement must be protected as a High-hazard (plastic) commodity.

As you can see, a commodity classification may be raised or lowered based on the configuration of the packaging of the products. The packaging material becomes one of the **major** deciding factors when determining the exact commodity being protected.

Mixed commodities:

Protection for mixed commodities should not be based on the overall commodity mix in a fire area. Mixed storage shall be protected by the requirements for the highest classified commodity and storage arrangement. An exception to this would be when the higher hazard material can be confined to a designated area and properly protected for that specific area.

Palletized items:

When items are palletized, the use of wooden or metal pallets is assumed in the classification of the commodities. When plastic pallets are used, the classification of the commodity shall be increased one class. An example of this would be, class III would become Class IV or Class IV would become High-Hazard.

EXCEPTION: No increase is required for High Hazard commodities.

CLASS I, II, III, IV, & HIGH-HAZARD COMMODITIES:

Class I Commodities: Class I commodities are essentially noncombustible products. Noncombustible materials do not burn and do not, by themselves, require fire sprinkler protection. Class I commodities generally are found on wooden or nonexpanded polyethylene solid deck pallets, in ordinary corrugated cartons (maximum carton wall thickness 1/8 inch) with or without single-thickness dividers, or in ordinary paper wrappings with or without pallets. In accordance with Article 81 of the Uniform Fire code, Class I commodities are allowed to contain a limited amount of Group A plastics such as knobs or handles.

Class II Commodities: Class II commodities are Class I products in slatted wooden crates, solid wooden boxes, multiple-thickness paperboard cartons of equivalent combustible packaging material with or without pallets. Class I products in small cartons or packages, placed in ordinary corrugated cartons. A couple examples are: empty boxes in boxes; ordinary combustible, free-flowing powdered products in paper bags on pallets. Commodities are allowed to contain a limited amount of Group A plastics in accordance with Article 81. Some Class III products may be classified as Class II commodities when the hazard is reduced by the configuration of the products. An example is: a solid block of paper with smooth sides or the packaging in a solid wood box or barrel.

Class III Commodities: Class III commodities are commodities of wood, paper, natural fiber cloth, or Group C plastics or products thereof, with or without pallets. Generally Class III products are allowed to contain no more than 5 percent of Group A or B plastics by weight or volume. An example is: metal bicycle frames with plastic handles, seats, pedals, and tires. This is a Class III commodity since the amount of plastic is about 5 percent. Metal frame bicycles with just plastic handles would be a class I commodity.

Class IV Commodities: Class IV commodities are Class I, II, or III products containing Group A Plastics in ordinary corrugated cartons, and Classes I, II, and III products with Group A plastic packaging with or without pallets. Group B plastics and free-flowing Group A plastics are also included in this class.

A good rule of thumb is to allow no more than 25 % by volume and 15 % by weight of expanded or unexpanded plastic or polyurethane, in ordinary corrugated cartons. The weight or volumes of a pallet load (including the pallet) should be used in determining percentages.

NOTE: The percentages used in the definition of a Class IV commodity refer to a single pallet load. In no way should these percentages be applied to an entire warehouse; a warehouse where 10 % of the storage is plastic should have protection for plastics anywhere plastics may be stored. All warehouses having a variety of commodities should have the sprinkler protection based on the highest hazard commodity, or the high hazard commodities should be segregated and protected accordingly.

These percentages are intended to apply only where products are in cartons. They do not apply to products handled in plastic containers such as plastic tote boxes.

An example of packing material is a metal product in a foamed plastic cocoon in a corrugated carton.

High-hazard Commodities: High-hazard commodities are high-hazard products presenting special fire hazards beyond those of Class I, II, III or IV. Group A plastic not otherwise classified in Class I – IV commodities, as listed above, are included in this class.

PLASTIC COMMODITIES:

Group A Plastics: Group A plastics are products which incorporate plastic materials having a heat of combustion **greater than** Group B plastics, and a burning rate **much higher** than ordinary combustibles. Many thermosetting plastics fall into this category.

Group B Plastics: Group B plastics are products which incorporate plastic materials having heat combustion and burning rates **higher** than those of ordinary combustibles, but not as great as Group A plastics. The heat of combustion for many Group B plastic materials may be as high or sometimes higher than some Group A plastic materials, but given the same configuration, the burning rate of a Group B plastic is lower than that for Group A plastic. Both thermosetting and thermoforming plastics can fall into this category.

Group C Plastics: Group C Plastics - Polymers assigned this designation are those plastic materials which have a heat and rate of combustion **similar** to ordinary combustibles. Most thermosetting, fluorinated and lightly plasticized plastics are assigned to this category. When these materials are combined with other materials that would change the burning characteristics of the commodity, careful analysis is needed to determine if the product would remain in the Group C plastic commodity category.

Important terms - When trying to classify plastics, one must have some basic knowledge of a couple general terms used in the definitions of all plastic products. These definitions include:

Expanded and Unexpanded Plastics – *Plastic materials are manufactured into two basic forms, Expanded and unexpanded. Expanded plastics are generally a low-density product and are commonly called “foam plastics” such as polystyrene foam coffee cups, polystyrene foam packaging material. Unexpanded plastics are a solid high-density product such as polyethylene film, polystyrene toys, polyester and polystyrene plastic tote bins, polyethylene 55-gallon drums or smaller containers.*

Classifying a mixed commodity containing plastic:

NOTE: UTILIZE UNIFORM FIRE CODE - TABLE 8101.4-A (next page) WHEN DETERMINING PLASTIC COMMODITY CLASSIFICATIONS IN MIXED PACKAGING.

1. Make sure the plastic in question is in a Group A or B plastic category, and that its involvement in a fire is neither delayed by the non-plastic around it nor very rapid.
2. Estimate the percent by volume or weight of expanded plastic (left and right sides of the chart).
3. Estimate the percent by weight of un-expanded plastic (bottom of the chart)
4. Commodities classified as plastic should be considered as expanded plastic if more than 40 percent of the carton volume is expanded plastic.

EXAMPLE - For a camera with less than 25 percent volume of expanded plastic in a carton. If the camera has a metal casing with plastic parts inside, involvement of plastic parts in a fire can be expected to be delayed. Hence, the camera itself can be protected essentially as Class III product and the commodity can be considered to be Class IV.

On the other hand, if the camera has a plastic casing, the weight of the casing should be estimated. If the casing is very light and constitutes less than five percent by weight (no other plastic parts), the commodity is Class IV. However, if there is more than 15 percent by weight of plastic in the casing and the parts, the commodity is High-hazard (plastic); if there is five to 15 percent by weight of un-expanded plastic in the camera, accurate estimate or weighing will be necessary before using table 8101.4-A.

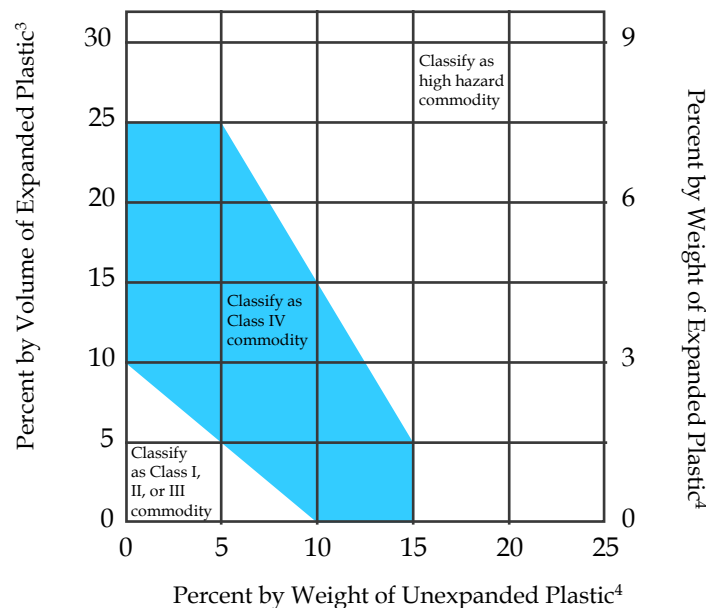


FIGURE 8101.4-A MIXED COMMODITIES^{1,2}
(See Section 8101.4.3)

¹This table is intended to determine the commodity classification of a mixed commodity in a package, carton or on a pallet when plastics are involved.

²The following is an example of how to apply the table: A package containing a Class III commodity has 12 percent Group A expanded plastic by volume. The weight of the unexpanded Group A plastic is 10 percent. This commodity is classified as

a Class IV commodity. If the weight of the unexpanded plastic is increased to 14 percent, the classification changes to a high-hazard commodity.

$$^3\text{Percent by volume} = \frac{\text{Volume of plastic in pallet load}}{\text{Total volume of pallet load, including pallet}}$$

$$^4\text{Percent by weight} = \frac{\text{Weight of plastic in pallet load}}{\text{Total weight of pallet load, including pallet}}$$

COMMODITY TYPE

COMMODITY CLASS

AEROSOLS:

(cartoned or uncartoned)

- level 1 Class III
- level 2 Class IV
- level 3 **High Hazard**

ALCOHOLIC BEVERAGES:

(cartoned or uncartoned)

- beer & wine not exceeding 20% alcohol, in metal, glass, or ceramic containers Class I
- up to 20% in wooden or combustible non-plastic containers Class II
- over 20%, but less than 80%, in cans or bottles in cartons Class IV
- exceeding 80% or higher, in bottles in cartons **High Hazard**

AMMUNITION:

(packaged, cartoned)

- small arms, shotgun Class IV

APPLIANCES:

(major, electric, noncombustible, - ex: stoves, washers, and dryers)

- not packaged, no appreciable plastic exterior trim Class I
- corrugated, cartoned, no appreciable plastic exterior trim Class II
- refrigerators, freezers, and washers with plastic interiors Class III
- small appliances containing appreciable amounts of Group A plastic Class IV

BAKED GOODS:

(cookies, cakes, pies)

- frozen, packaged in cartons (see note 2) Class II
- not frozen, packaged in cartons Class III

BARLEY, RICE, OATS, FEED:

- packaged in cartons Class III

BATTERIES:

- **DRY CELL** (*nonlithium or similar exotic metals*)
 - ❖ packaged in cartons Class I
 - ❖ in blister pack in cartons Class II
- **AUTOMOBILE**
 - ❖ filled (see note 1) Class II
- **TRUCK OR LARGER**
 - ❖ empty or filled (see note 1) High hazard - Group A plastic

BEANS:

(dried)

- packaged, cartons Class III

BOTTLES/JARS:

- **EMPTY, AND CARTONED**
 - ❖ glass Class I
 - ❖ plastic PET (polyethylene terephthalate) Class IV
- **FILLED WITH NONCOMBUSTIBLE POWDERS**
 - ❖ glass, cartoned Class I
 - ❖ plastic, cartoned or uncartoned, **less** than 1 gallon size Class IV
 - ❖ plastic, cartoned or uncartoned, **greater** than 1 gallon size High hazard - Group A plastic
 - ❖ plastic, other than PET, any size High hazard - Group A plastic
 - ❖ plastic, solid plastic crates High hazard - Group A plastic
 - ❖ plastic, open plastic crates High hazard - Group A plastic

➤ FILLED WITH NONCOMBUSTIBLE LIQUIDS	
❖ glass, cartoned	Class I
❖ plastic, cartoned, less than 5 gallon size	Class I
❖ plastic, open or solid plastic crates (see note 5)	High hazard - <u>Group A plastic</u>
BOXES, CRATES:	
➤ empty, wood, solid walls	Class II
➤ empty, wood, slatted (see note 6)	OUTSIDE OF SCOPE
BREAD:	
➤ wrapped cartoned	Class III
BUTTER:	
➤ whipped spread	Class III
➤ in plastic containers	High-hazard
CABINETS:	
➤ metal	Class I
➤ wood	Class III
CABLE:	
➤ uncartoned PVC (polyvinyl chloride) insulated cable on larger than 2 ½ ft. diameter metal or wood reels	Class I
➤ cartoned or uncartoned PVC (polyvinyl chloride) insulated cable on 2½ ft. or smaller diameter metal or wood reels	Class III
➤ cartoned PVC (polyvinyl chloride) insulated cable on greater than 2 ½ ft. diameter metal or wood reels	Class III
➤ uncartoned plastic (other than PVC) insulated conductor and power cable on wood or metal reels or in cartons	Class IV
CAMERAS:	
➤ metal with small plastic parts and less than 25% expanded plastic and packaging by volume	Class IV
CANDLES: (packaged, cartoned)	
➤ treat as expanded plastics	High hazard - <u>Group A plastic</u>
CANDY:	
➤ packaged, cartoned	Class III
CANNED FOODS:	
➤ in ordinary cartons	Class I
CANS:	
➤ metal - empty	Class I
CARPET TILES:	
➤ cartoned	High hazard - <u>Group A plastic</u>
CARTONS:	
➤ corrugated, unassembled (neat piles)	Class III
➤ corrugated, partially assembled	Class IV
➤ wax coated, single walled	High hazard - <u>Group A plastic</u>
CELLULOSICS (CELLOPHANE):	
new product or regenerated	Class IV
CEMENT:	
➤ bagged	Class I
CERAMICS:	

➤ ceramic containers in ordinary corrugated cartons	Class I
CEREALS:	
➤ combustible foods, packaged, cartoned	Class III
CHARCOAL:	
➤ bagged, standard with no quick start flammable liquid added	Class III
➤ bagged, with quick start flammable liquid added	High Hazard
CHEESE:	
➤ packaged; wheels; cartoned	Class III
CHEWING GUM:	
➤ packaged, cartoned	Class III
CHOCOLATE:	
➤ packaged, cartoned	Class III
CLASS I PRODUCTS:	
➤ in slatted wooden crates, solid wooden crates, multi-wall corrugated cartons, or equivalent combustible packaging material on wood pallets	Class II
CLOTH:	
➤ natural fiber clothing or textile products, viscose	Class III
➤ plastic backed synthetic fabric or clothing	Class IV
➤ synthetic (see note 3)	Class IV
CLOTHING:	
➤ synthetic or nonviscose	Class IV
COCOA PRODUCTS:	
➤ packaged, cartoned	Class III
COFFEE:	
➤ canned, cartoned	Class I
➤ packaged, cartoned	Class III
COFFEE BEANS:	
➤ bagged	Class III
COMMODITIES IN PLASTIC CONTAINERS IN CAROUSEL STORAGE:	
➤ any commodity class	High-hazard
CORK:	
➤ baled	Class III
COTTON:	
➤ packaged, cartoned	Class III
➤ absorbent cotton in packages	Class III
CRAYONS:	
➤ tightly and orderly packed crayons in a box packed in cardboard cartons	Class IV
DAIRY PRODUCTS:	
➤ in nonwaxed coated paper containers(excluding bottles)	Class I
➤ non-combustible liquid products in wax coated or plastic coated cardboard or paperboard containers	Class I
DIAPERS:	
➤ cotton, linen	Class III
➤ disposable with plastics and non woven fabric	Class IV

DOORS:

- wood Class III
- polyurethane insulated filled doors with no exposed polyurethane Class IV

DRIED FOODS:

- packaged, cartoned Class III

DRY INSECTICIDES:

- bagged Class I
- in plastic tub less than 5 gallons size Class IV
- in plastic bucket 5 gallons or greater **High-hazard**

DRYERS:

- not packaged, non combustible, no appreciable plastic exterior trim Class I

ELECTRICAL DEVICES:

- electrical devices in metal enclosures Class I
- electrical insulators Class I
- electric motors Class I
- electric coils Class I

FEED:

- bagged Class III
- in plastic tub less than 5 gallon size **High-hazard**
- in plastic bucket 5 gallons or greater High hazard -Group A plastic

FERTILIZERS:

Class III

FIBERBOARD:

- combustible Class III

FIBERGLASS INSULATION:

- paper-backed rolls Class III

FILE CABINETS:

- metal - packaged in cardboard box or shroud Class I

FISH OR FISH PRODUCTS:

- *FROZEN*
 - ❖ non-waxed, non-plastic packaging Class I
 - ❖ waxed-paper containers, cartoned Class II
 - ❖ boxed or barreled Class II
 - ❖ plastic trays, cartoned Class III
- *CANNED*
 - ❖ Cartoned Class I

FLAMMABLE SOLIDS:

- **except** solid combustible metals **High-hazard**

FLATS AND PALLETS:

- which are idle combustible **High-hazard**

FLORESCENT OR INCANDESCENT LIGHT BULBS:

- in cartons Class II

FOODS:

- in noncombustible containers Class I
- crushed fruits and vegetables in 5 gallon or smaller plastic containers Class I
- frozen foods Class I
- dairy products in non-wax coated paper containers Class I
- fresh fruits or vegetables in non-plastic containers Class I
- in combustible containers Class II

➤ in plastic trays or containers	Class III
FROZEN FOODS:	
➤ non-wax, non-plastic packaging	Class I
➤ waxed-paper containers, cartoned	Class II
➤ plastic trays or containers	Class III
FRUIT:	
(fresh)	
➤ in non-plastic/non-combustible trays & containers with/without wood spacers	Class I
FURNITURE:	
➤ <i>WOOD</i>	
❖ natural fiber, upholstered, non-plastic, wood or metal with no plastic-padded or covered arm rests	Class III
❖ wood or metal frame upholstered with plastic covering and/or polyurethane or synthetic fiber padding	Class IV
❖ with foam plastic cushioning	High hazard - <u>Group A plastic</u>
➤ <i>PLASTIC</i>	
❖ plastic upholstered	Class IV
➤ <i>METAL</i>	
❖ with plastic coverings or padding or both	Class IV
GLASS:	
➤ bottles, empty or filled with noncombustible liquids	Class I
➤ bottles, empty or filled with noncombustible powders	Class I
➤ mirrors	Class I
GLYCOL:	
➤ in metal cans	Class I
➤ in combustible containers not exceeding 25 percent	Class III
➤ in combustible containers greater than 25 percent and less than 50 percent	Class IV
➤ in combustible containers 50 percent or greater	High-hazard
GYPSUM BOARD:	
	Class I
HYDRALIC OR LUBRICATING FLUID:	
➤ in metal containers	Class III
➤ in plastic containers	High-hazard
ICE CREAM:	
➤ waxed paper containers	Class III
➤ in plastic containers less than 5 gallon size	High-hazard
➤ in plastic containers 5 gallons or greater	High hazard - <u>Group A plastic</u>
INCANDESCENT OR FLORESCENT LIGHT BULBS:	
➤ in cartons	Class II
INERT MATERIALS:	
➤ when bagged and stored on racks	Class I
➤ abrasives, granular detergents, free-flowing cement, iron oxide, minerals, calcium chloride, sodium ash, sodium chloride and sodium silicate	Class I
➤ inert pigments	Class I
INSULATION:	
➤ noncombustible	Class I
LACQUERS:	
➤ which dry by solvent evaporation, in metal cans or cartons	High-hazard

LEATHER GOODS:

- non-baled, shoes, jackets, gloves, luggage Class III
- leather hides - baled Class II

LIGHT BULBS - INCANDESCENT OR FLORESCENT:

- in cartons Class II

LIGHT FIXTURES:

- non-plastic, cartoned Class II

LIGHTERS:

- butane-blister packed, cartoned High hazard -Group A plastic
- butane-loose in large containers (level 3 Aerosol) **OUTSIDE OF SCOPE**

LINOLEUM PRODUCTS:

Class IV

LIQUIDS:

- noncombustible – in wax coated or plastic cardboard or paperboard containers less than 5 gal. capacity Class I

LUBRICATING OR HYDRALIC FLUID:

- in metal cans Class III
- in plastic containers **High-hazard**

LUMBER:

Class III

MARBLE:

- artificial sinks, countertops, cartoned, crated Class II

MARGARINE:

- up to 50% oil Class III
- between 50% and 80% oil (in any packaging) High hazard -Group A plastic

MATCHES:

- paper, packaged, cartoned Class IV
- wood, packaged, cartoned High hazard -Group A plastic

MATTRESSES:

- standard (box spring) Class III
- with thin layer (about ¾ inch) polyurethane foam between spring & outer layer of cotton padding Class III
- without expanded plastic or rubber Class III
- wood or metal frame with plastic covering and/or polyurethane or synthetic fiber padding Class IV
- foamed rubber or foamed plastic **High-hazard**
- foam (in finished form) High hazard -Group A plastic

MEAT AND MEAT PRODUCTS:

- bulk Class I
- canned, cartoned Class I
- frozen, non-waxed, non-plastic containers Class I
- frozen, waxed-paper containers Class II
- frozen, plastic trays Class III

METAL PRODUCTS:

- parts Class I
- pots and pans Class I
- stoves, washers, dryers – with some plastic knobs, not cartoned Class I
- empty metal cans Class I
- noncombustible metal products Class I

➤ closed metal boxes filled with plastic materials	Class I
➤ metal cabinets/desks with plastic tops and trim	Class II
➤ combustible (solid)	Class IV
➤ metal dashboards with plastic padding	Class IV
➤ metal bumpers with plastic padding	Class IV
➤ metal product in a foamed plastic cocoon in corrugated carton	Class IV
➤ combustible (fibers)	High-hazard
MILK:	
➤ non-wax paper containers	Class I
➤ waxed paper containers	Class I
➤ plastic containers	Class II
➤ plastic containers in plastic crates	High hazard - <u>Group A plastic</u>
MINERAL PRODUCTS:	Class I
MIRRORS:	Class I
MOTORS:	
➤ electric	Class I
NAIL POLISH:	
➤ 1 to 2 oz glass, cartoned	Class IV
➤ 1 to 2 oz plastic, cartoned	High hazard - <u>Group A plastic</u>
NON-COMBUSTIBLE / FLAMMABLE LIQUIDS:	
➤ in plastic containers having less than 5 gallon capacity	Class I
➤ in plastic containers having a capacity of more than 5 gallons	Class III
➤ soaps, detergents and bleaches	Class III
NUTS:	
➤ canned, cartoned	Class I
➤ packaged, cartoned	Class III
➤ bagged	Class III
PAINTS:	
➤ friction top cans, cartoned, water-based (latex)	Class I
➤ friction top cans, cartoned oil based – metal cans	Class IV
➤ friction top cans, cartoned oil based – in combustible containers	High-hazard
➤ oil based – in plastic containers, 5 gallon container or less	High hazard - <u>Group A plastic</u>
PALLETS AND FLATS:	
➤ piled, idle combustible	High-hazard
PAPER, ASPHALT:	
➤ rolled, horizontal or vertical storage	High-hazard
PAPER PRODUCTS:	
➤ books; magazines; stationary; plastic-coated paper food containers; newspapers; paper or cardboard games; tissue products in cartons; waste-baled paper; paper and pulp, horizontal or vertical storage that is banded or protected in approved wrap, paper in cardboard boxes; regenerated cellulose (cellophane).	Class III
➤ pulp rolled, in vertical storage and unbanded or not protected in approved wrap	High-hazard
PAPER, ROLLED:	
➤ in racks or on side - medium - heavyweight	[INCLUDED IN NFPA 231C ONLY] Class III
➤ in racks - lightweight	[INCLUDED IN NFPA 231C ONLY] Class IV

PAPER, WAXED:

- packaged in cartons Class IV

PAPER, WASTE, BALED:

Class III

PHARMACEUTICALS:

- *PILLS, POWDERS*
 - ❖ glass bottles, cartoned Class II
 - ❖ plastic bottles, cartoned Class IV
- *NON-FLAMMABLE AND NON-COMBUSTIBLE LIQUIDS*
 - ❖ glass bottles, cartoned Class II
 - ❖ plastic containers, cartoned Class III
- *ALCOHOLIC ELIXIRS, TOXINS, ETC.* Class IV

PHOTOGRAPHIC FILM:

- 35 MM in metal film cartridges in polyethylene cans in cardboard boxes Class III
- motion picture or bulk rolls of film in polycarbonate, polyethylene or metal cans, polyethylene bagged in cardboard boxes Class III
- paper, in sheets, bagged in polyethylene, in cardboard boxes Class III
- non-negative producing film packs in sealed metal foil wrappers in paperboard packages Class III
- self-processing film packs in sealed metal foil wrappers in paperboard packages Class III
- roll film in polycarbonate plastic cassettes, bulk wrapped in cardboard boxes Class IV

PILLOWS:

- excluding foamed rubber and foamed plastics Class III
- foamed rubber and foamed plastics **High-hazard**

PLASTIC MATERIALS:

- in five sided, open topped metal containers Class III

PLASTIC CONTAINERS:

- non-combustible liquids or semi-liquids in plastic containers less than 5 gallon capacity Class I
- non-combustible liquids or semi-liquids in plastic containers larger than 5 gallon capacity Class II
- plastic – coated paper food containers Class III
- plastic tote boxes **High-hazard**
- combustible or noncombustible solids in 1 gal. or smaller plastic containers **High-hazard**
- combustible or non-combustible solids in plastic containers & empty plastic containers larger than 1 gallon High-hazard -Group A plastic

PLYWOOD:

Class III

POLYURETHANE:

- cartoned or uncartoned expanded High hazard -Group A plastic

POTS AND PANS:

Class I

POULTRY PRODUCTS:

- canned, cartoned Class I
- frozen, non-wax non-plastic containers Class I
- frozen, (on paper or expanded plastic meat trays) Class II
- frozen, waxed or plastic containers **High-hazard**

POWDERS:

- ordinary combustibles - free flowing - in paper bags (i.e. flour, sugar, salt, etc.) Class II

(PVA) POLYVINYL ALCOHOL RESINS:

- bagged Class IV

(PVC) POLYVINYL CHLORIDE:

- flexible (i.e., cable jackets, plasticized sheets) Class III
- rigid (i.e., pipe, pipe fittings) Class III
- bagged resins Class III

PULP AND PAPER:

- rolled, in vertical storage and unbanded or not protected in approved wrap *High-hazard*

PYROXYLIN:

High-hazard

RAGS:

(baled)

- natural fibers Class III
- synthetic fibers Class IV

ROOFING FELT:

Class III

RUBBER:

- natural, blocks in cartons Class IV
- synthetic High hazard -Group A plastic

RUBBER TIRES:

High-hazard

RUGS:

- without foamed backing Class III
- foam backed Class IV

SALT:

- bagged Class I
- packaged, cartoned Class II

SHINGLES:

- asphalt coated fiberglass Class III
- asphalt Class IV
- asphalt impregnated felt Class IV

SHOCK ABSORBERS:

- metal dust cover Class II
- plastic dust cover Class III

SIGNATURES (books, magazines):

- solid array on pallet Class II

SKIS:

- wood Class III
- foam core Class IV

STOVES:

- not packaged, non combustible, no appreciable plastic exterior trim Class I

STUFFED TOYS:

- foam or synthetic High hazard -Group A plastic

SUGAR:

- bagged Class III

SYNTHETICS:

- 50/50 BLEND OR LESS:

❖ thread, yarn on wood or paper spools	Class III
❖ fabrics	Class III
❖ thread, yarn on plastic spools	Class IV
❖ baled fiber	High hazard - <u>Group A plastic</u>
➤ GREATER THAN 50/50 BLEND:	
❖ thread, yarn on wood or paper spools	Class IV
❖ fabrics	Class IV
➤ thread, yarn on plastic spools	High hazard - <u>Group A plastic</u>
baled fiber	High hazard - <u>Group A plastic</u>
❖ thread, yarn on wood or paper spools	Class IV
❖ fabrics	Class IV
❖ baled	Class IV
❖ thread, yarn on plastic spools	High hazard - <u>Group A plastic</u>
SYRUP:	
➤ drummed - metal containers	Class I
➤ barreled, wood	Class II
TELEPHONES:	
➤ assembled with metal base	Class IV
➤ plastic	High hazard - <u>Group A plastic</u>
TEXTILES:	
➤ natural fiber upholstered (padded and cover) furniture; wood or metal furniture with plastic padded (not overstuffed) and covered arm rests; mattresses without expanded plastics or rubber; absorbent cotton in cartons; natural fiber and viscose (100% cellulose based) yarns & thread; natural fiber clothing or textile products; mattresses with thin layer (about ¾ inch.) polyurethane foam between spring and other layers of cotton padding	Class III
➤ synthetic thread and yarn, synthetic fabrics or clothing (except viscose)	Class IV
➤ yarns of natural fibers and viscose	Class III
THREAD OR YARN:	
➤ natural fibers and viscose	Class III
➤ synthetic or nonviscose	Class IV
TOBACCO PRODUCTS:	
➤ in paperboard cartons	Class III
TRANSFORMERS:	
➤ dry or oil filled & other types of distribution transformers (except ones containing PCB's)	Class I
➤ transformers containing PCB's of any size or type	High hazard - <u>Group A plastic</u>
TYPEWRITERS:	
➤ metal with plastic parts and less than 25% expanded plastic packaging by volume	Class IV
VEGETABLES: (fresh)	
➤ nonplastic trays or in less than 5 gallon plastic containers	Class I
➤ plastic containers 5 gallons or larger	Class III
VEGETABLE OIL AND BUTTER:	
➤ in plastic containers	High-hazard
VIDEO TAPES:	
➤ in plastic containers in corrugated boxes	High hazard - <u>Group A plastic</u>
VINYL COATED FABRIC:	
➤ cartoned	High hazard - <u>Group A plastic</u>

VINYL FLOOR COVERINGS:

- tiles in cartons Class IV
- rolled High hazard -Group A plastic

WASHERS:

- not packaged, non combustible, no appreciable plastic exterior trim Class I

WAX COATED PAPER, CUPS & PLATES:

- boxed or packaged inside cartons (emphasis is on packaging) Class IV
- loose inside large cartons High hazard -Group A plastic

WAX:

- paraffin, blocks, cartoned High hazard -Group A plastic

WINDOWS:

- wood Class III

WIRE:

- bare metal wire on metal spools on wood skids Class I
- metal wire, thinly coated (20 – 25 mils) with PVC or varnish, on metal reels Class I
- unplasticized PVC (no more than two percent plasticizer) Class I
- metal wire, thinly coated (20-25 mils) with PVC or varnish, on wood or paper reels Class II
- thinly coated fine wire (20-25 mils) on reels or in cartons ex: radio coil wire Class II
- bare wire on wood or cardboard spools on wood skids Class II
- bare wire on metal, wood or cardboard spools in cardboard boxes on wood skids Class II
- single or multiple (PVC) covered wire on metal spools on wood skids Class II
- insulated – (PVC) covered cable on large wood or metal spools on wood skids Class II
- thinly coated metal wire (20-25 mils) w/ (PVC) or varnish on wood or paper reels Class III
- bare wire on plastic spools in cardboard boxes on wood skids Class IV
- plastic (other than PVC) insulated conductor and power cable on wood or metal reels or in cartons Class IV
- single or multiple (PVC) covered wire on plastic spools in cardboard boxes on wood skids Class IV
- single, multiple, or power cables, (PVC) covered, on large plastic spools Class IV
- bulk storage of empty plastic spools High hazard -Group A plastic

WOOD PRODUCTS:

- solid piles; lumber, plywood, particle board, pressboard, all with smooth ends and edges Class II
- spools - empty Class III
- toothpicks, clothespins, hangers in cartons, doors, windows, door and window frames, wood cabinets and furniture, solid cases, slatted crate flats, bottle cases, other wood products Class III
- baled Class III
- patterns Class IV

YARN OR THREAD:

- natural fibers and viscose Class III
- synthetic or nonviscose Class IV

NOTES:

1. Most batteries have a polypropylene case, and if stored empty, should be treated as a Group A plastic. Truck batteries, even when filled, should be considered a Group A plastic because of thicker walls.
2. Presumes product is in a plastic-coated package in a corrugated carton. If packaged in a metal foil, it may be considered Class I.

3. Tests conducted clearly indicated synthetics or synthetic blends are considered greater than Class III Commodity: when it is palletized, it should be considered a Class IV Commodity.
4. When alcohol is stored in glass containers in racks, it should be considered a Class III Commodity: when it is palletized, it should be considered a Class IV Commodity.
5. As the openings in plastic crates become larger, the commodity behaves more like Class III. Conversely, as the openings become smaller, the product makeup behaves more like plastic.
6. Should be treated as idle pallets

PLASTIC COMMODITIES

GROUP “A” PLASTICS

- ABS (acrylonitrile – butadiene-styrene copolymer)
- Acetal (polyformaldehyde)
- Acrylic (polymethyl methacrylate)
- Beeswax
- Butyl rubber
- EPDM (ethylene - propylene rubber)
- FRP (fiberglass reinforced polyester)
- Natural rubber (if expanded)
- Nitrile rubber (acrylonitrile-butadiene rubber)
- PET or PETE (polyethylene terephthalate)
- Polybutadiene
- Polycarbonate
- Polyester elastomer
- Polyethylene
- Polypropylene
- Polystyrene (expanded & unexpanded)
- Polyurethane (expanded & unexpanded)
- PVC (polyvinyl chloride greater than 15% plasticized, e.g., coated fabric, unsupported film) (rarely found)
- SAN (styrene acrylonitrile)
- SBR (styrene - butadiene rubber)

GROUP “B” PLASTICS

- Cellulosics (cellulose acetate, cellulose acetate butyrate, ethyl cellulose)
- Chloroprene Rubber
- Fluoroplastics (ECTFE, ethylene - chlorotrifluoroethylene copolymer; ETFE, ethylene-tetrafluoroethylene copolymer)
- Tetrafluoroethylene (copolymer FEP - fluorinated ethylene propylene copolymer)
- Natural Rubber (nonexpanded)
- Nylon (nylon 6, nylon 6/6)
- PVC (polyvinyl chloride greater than 5%, but not exceeding 15% plasticized)
- Silicone rubber

GROUP “C” PLASTICS

- Fluoroplastics (PCTFE – polychlorotrifluoroethylene; PTFE, polytetrafluoroethylene)
- Melamine (melamine formaldehyde)
- Phenol
- PVC (polyvinyl chloride - rigid or plasticized less than 5%, e.g., pipe fittings)
- PVDC (polyvinylidene chloride)
- PVDF (polyvinylidene fluoride)
- PVF (polyvinyl fluoride)
- Urea (urea formaldehyde)