

INSTRUCTIONS FOR PREPARING DD FORM 2357
"HAZARDOUS COMPONENT SAFETY DATA STATEMENT"

APPENDIX H

APPENDIX H

INSTRUCTIONS FOR PREPARING DD FORM 2357

"HAZARDOUS COMPONENT SAFETY DATA STATEMENT"

1. The **HCSDS** is initiated by the developing Military Service responsible for the technical data on the hazardous **commodity** involved. A central file on microfilm is maintained by the Readiness Technical Data/Configuration Management Division (**AMSMC-TDR-TF**), HQ, **AMCCOM**.
2. A hazardous **commodity** is a procurable item of ammunition or explosive. It includes related hazardous items (materials, components, or subassemblies) that have to be handled, shipped, or stored to meet the requirements of a hazardous **commodity** procurement by the SMCA. A separate HCSDS is prepared for each hazardous item (hazardous subassemblies also should be included if they are stored or shipped separately) that is or forms a part of the hazardous commodity. A list of all **HCSDS** for the procurement of a hazardous commodity shall be prepared to accompany the TDP and used to ensure each hazardous item is covered by an **HCSDS**. This may either be a separate list or part of the ADL as appropriate.
3. Before preparing, refer to the automated list prepared and distributed by AMSMC-TDR-TF, HQ, **AMCCOM**. A sheet already may be on file. Revisions to existing sheets to meet current procurement actions shall be coordinated with the developing Military Service that prepared the sheet. The SMCA shall be notified of disputes regarding HCSDS for resolution.
4. The purpose of the HCSDS is to present information on the hazards involved in handling, shipping, and storing a material, component, or assembly normally associated with the procurement of a hazardous **commodity**. The data presented are judgments of qualified experts to be the most-significant in revealing associated hazards. The **HCSDS** do not supersede any requirements of safety manuals, standards, or **regulations** applicable to the procurement action.
5. In preparing the **HCSDS**, when information for a specific sensitivity or hazard is unavailable, specify "UNKNOWN." Indicate "NA" for a requirement for data that is not applicable to the specified item. Abbreviations should be restricted to those **commonly** used and easily recognized.
6. The information relating to safety (herein referred to as "safety data") contained in the **HCSDS** is limited to those instances when the document is provided as a part of a procurement or production package **that** involves the development, testing, storage, manufacture, modification, renovation, demilitarization, packaging, transportation, handling, disposal, inspection, repair, or any other use of the item

(material, component, or assembly) specified in the contract. The safety data contained on the HCSDS are examples that shall be used by the contractor to alert contractor personnel, as well as other personnel of hazards associated with the procurement and production of the item. No representation shall be made that compliance with the information provided will prevent any accident to persons or property, or that additional warnings may not be appropriate. Neither the foregoing nor any act or failure to act by the Government to alert personnel to the hazards of the item shall affect or relieve the contractor of responsibility for the safety of contractor personnel or property and for the safety of the general public in connection with the performance of the contract, or impose or add to any liability of the Government for such safety.

7. Preparation of DD Form 2357 shall be according to the following instructions:

a. Title. Hazardous Component Safety Data **Statement** is the title of the DD Form 2357. Approved abbreviation shall be **HCSDS**.

b. Date. Date of safety office signoff is indicated in the box allocated for the date and in upper right-hand corner of every continuation sheet that forms a part of the **HCSDS**.

c. Block 1., Material/Component/Assembly. The nomenclature shown on the **drawing**, specification, or referenced document shall be used. This basic **name** may be amplified or restricted with prefixal nouns (Explosive, Fuze, Mine, etc.) or suffixal "where-used" phrases (f/Projectile M-, w/Detonator, w/o Booster). Pyrotechnic may include ingredients in nomenclature block to aid identification (Composition, Ignition (BaCro4/B/kNO3/VAAR)). All data presented shall be for the item designated in the nomenclature block. The item shall be defined as a material component or assembly containing all the parts (materials, components, and subassemblies) specified in the reference document. Intermediate steps in the production or manufacturing of the item shall not apply to the safety data sheet but shall be covered by other sheets as necessary. A separate HCSDS **shall** be prepared for each hazardous item (hazardous subassemblies also shall be included if they are stored or shipped separately), that is, or forms a part of, the hazardous item contract. A **list** of all HCSDS for the procurement of a hazardous **commodity** shall be prepared to accompany the TDP and used to ensure each hazardous item is covered with an **HCSDS**. This may either be a separate list or part of the ADL, as appropriate.

d. Block 2., Number. Each HCSDS is assigned a number by the developing agency from the numbers reserved for that agency's use. The number **shall** be unique to that **HCSDS** and may not be repeated for another item. It shall appear only on the HCSDS for the specified item and all subsequent revisions. Each continuation sheet that forms a part of the HCSDS shall have the number repeated in the **upper** right-hand corner.

e. Block 3., Revision. A revision to an original HCSDS and all subsequent revisions shall have a capital letter specified in the revision block and in the upper right hand-corner of each continuation sheet. The first revision **shall** be numbered "A" and an ascending letter (B, C, **D**, etc.) used for each subsequent revision level. A revision is any new submission to the repository of a previously submitted HCSDS.

f. Block 4., Applicable FAR Safety Clause. The applicable FAR safety clause shall be inserted. This clause is used for HCSDS pertaining to ammunition, explosives, or other unique military-related dangerous materials. A separate clause is inserted for sheets pertaining to items containing radioactive materials.

SENSITIVITY

g. Block 5., Friction Test. **Specify a** value or reaction that indicates the mechanical sensitivity of an energetic material to friction. Indicate the apparatus used. Provide **comparison** values of standard materials (lead **azide**, TNT, and black powder), arrived at using the same test apparatus, that (preferably) bracket the value provided for the test material. The test is applicable for most bulk energetic materials. When the test is applicable, but the information is not available, indicate with "Unknown." For items of ammunition or loaded components or assemblies when the test is not applicable, specify with "NA." When a material does not exhibit friction sensitivity, indicate a "None" or "Not Sensitive." Use continuation sheets for explanations or information, as required.

h. Block 6., Impact Test. Specify a value or reaction that indicates the mechanical sensitivity of an energetic material to impact. Provide additional information similar to that required for the friction test.

i. Block 7., Electrostatic Discharge Test. Specify a value or reaction that indicates the sensitivity of an energetic material to an electrostatic discharge (spark). Provide additional information similar to that required for the friction test.

j. Block 8., Fire. Specify an adjective rating to indicate the fire hazard based on ease of ignition, difficulty of extinguishing blaze, and propagation of flame as follows:

(1) Severe. Very **flammable** and easily ignited. Extremely difficult to extinguish, instantaneous propagation of flame from ignition source (**flammable** gases, highly **volatile flammable** liquid, and ethyl ether).

(2) High. Ignitable under normal temperature conditions or rapid burning rate due to own oxygen supply or spontaneously ignites.

Requires **immediate** deluge to extinguish or prevent propagation of flame (propellants, photoflash powders, white phosphorous, acetone, gasoline, black powder, and M2 propellant).

(3) Moderate. Requires heating before ignition can be obtained. Burning rate or propagation of flame is observable and controllable with standard firefighting procedures (combustible liquids, solid fuels, kerosene, TNT, and ammonium nitrate).

(4) Low. Difficult to ignite. Requires high temperature and long exposure. The fire may not sustain burning without continued heating. Material that readily reacts to produce highly **flammable** mixtures. There is slow propagation of flame. Small, flame-producing items are oxidizers, **squibs**, rubber, sulfur, and linseed oil.

(5) None. Nonflammable. Difficult to react to form flammable mixtures.

k. Block 9., Flashpoint. Indicate flashpoint in degrees Centigrade and Fahrenheit obtained in closed cup tests. When open cup flash-point is used, designate "OC" following value. Indicate "NA" or "Unknown," when necessary.

1. Block 10., Autoignition Temperature. Specify minimum temperature, in degrees Centigrade and Fahrenheit, required to initiate and cause **self-sustained combustion** independently of the heating or heated element. Include apparatus or reference used to obtain the value. Indicate "NA" or "Unknown," when necessary.

m. Block 11., Decomposition Products. Indicate the hazardous products and the type of hazard (toxic, flame, and explosion) produced by thermal decomposition. The term "NA" or "Unknown" **shall** be avoided.

n. Block 12., Flammability or Explosive Limits. Give **flammable** and explosive limits by volume of gas or vapor in air, based upon normal atmospheric temperature and pressure. Indicate "NA" or "Unknown," when necessary.

o. Block 13., Explosion. Use an adjective rating (subparagraphs 7.0.(1) through 7.0.(5), below) for the degree of hazard of explosion (a chemical or physical change of state with instantaneous transfer of considerable energy into kinetic form) regarding susceptibility to the initiation and severity of the occurrence, as follows:

(1) Severe. Material is capable of detonation or **deflagration** in mass. It is very sensitive to heat, shock, and electrostatic discharge and requires precautionary measures to avoid accidental exposure to these stimuli during normal handling operation (primary explosives, primer mixtures, and lead **azide** (dry)).

(2) **High.** Material is capable of detonation or **deflagration**. Relatively insensitive to heat, shock, or electrostatic discharge. It generally requires a strong initiating source of heating under confinement to detonate in mass. The explosion presents at extreme hazard from blaze or fragments (secondary explosives, bombs, mines, grenades, TNT, black powder, and Comp B).

(3) **Moderate.** Material is not capable of detonation. Can readily react to form explosive mixtures. The explosion can occur from rapid **deflagration** of mists or dusts (powerful oxidizing material, magnesium powder, flammable gases, highly volatile liquids, ammonium nitrate, and **M2** and WC 870 propellants).

(4) **Low.** Material is not capable of detonation or **deflagration**. It becomes unstable at elevated pressures and temperatures. The package, amount, or form prevents or contains release of any substantial amount of energy. This can react to form hazardous mixtures (oxidizers, most metal **lic** powders, combustible materials, explosive bellows, piston actuator, and IMR 4831 propellant).

(5) **None.** Material is not capable of detonation, **deflagration**, or reaction to form explosive mixes. It is stable even at elevated temperatures.

p. Block 14., Explosion Temperature (5 see). Specify a temperature at which a 5-second exposure will cause the energetic material to react. A suggested experimental procedure is a **0.02-gm** sample (0.01 gm in the case of initiators) of explosives, loose loaded in a No. 8 blasting cap, is **immersed** for a short period in a Wood's Metal Bath. The temperature to be determined is that which produces explosion, ignition, or decomposition of the sample in 5 seconds, and the behavior of the sample is indicated by "Explodes" or "Ignites" or "Decomposes" placed beside the value. When values are available for times other than 5 seconds, these can be included. For determination of **0.1-second** reaction temperature, no cap is used; the explosive sample is placed directly on the freshly cleaned Wood's Metal Bath surface. A **0.1-second** reaction time represents any interval that appears instantaneous to the observer's eye and need not be measured. Dashes indicate no action (PA Tech Report No 1402, Rev 1). Indicate "NA" or "Unknown," when necessary.

q. Block 15., Dusts. Record the minimum concentration of a cloud of the specified material that will sustain propagation of flame, also termed the lower limit of **explosibility**. The value generally is obtained on dust clouds or layers of combustible material. Indicate "NA" or "Unknown," when necessary.

r. Block 16., Health Hazard Information (Toxicity). Indicate an adjective rating to express toxicity under normal conditions of handling and exposure (including the mode of entry and, when available, the TLV and/or the **LD50/LC50**) as follows:

(1) Severe. Can cause death or irreversible injury with very short exposure even if given prompt medical attention. Special protective clothing and special handling to protect against hazard shall be worn.

(2) High. Can cause death or serious injury with exposure of relatively longer periods of time or intake of small amounts. Protective clothing **shall** be worn and caution shall be used to avoid contact. Prompt medical attention is required. Medical surveillance may be a requirement.

(3) Moderate. Can cause injury, incapacitation, or possible death with sustained exposure or intake of substantial amounts. Concentrations and duration of exposure have to be controlled. Protective clothing and procedures are recommended but may not be required. Prompt removal or neutralization of contacted area may be required to prevent injury.

(4) Low. Can cause only minor injury, irritation, or discomfort. Removal from exposure generally alleviates condition. Cleanliness, ventilation, and protective clothing may be employed to limit or avoid exposure.

(5) None. Presents no health hazard under ordinary conditions.

S. Block 17., In-Process Hazard Classification. In-process classification is based on the basic item as it exists and is shown on the title line. The in-process hazard is defined as the hazard presented by the item shown in the title while it is unpacked and being handled, not the hazard associated with making the item. The hazard classification while making the item is covered by supporting **HCSDS** for each specific ingredient, component, composition *or* mixture, material, assembly, etc. The in-process hazard classification may or may not be the same. The packaging for an item may change the hazard classification.

(1) The in-process classification is to be identified (except for liquid propellants) as follows:

- | | |
|---------------|---|
| (a) Class 1.1 | Mass Detonating |
| (b) Class 1.2 | Nonmass Detonating, Fragment-Producing |
| (c) Class 1.3 | Mass Fire |
| (d) Class 1.4 | Moderate Fire, No Blast |

(2) The in-process hazard classification is to be identified for liquid propellants as follows:

- | | |
|---------------|--------------------------------------|
| (a) Group IV | Mass Detonating |
| (b) Group III | Container Rupture, Fragment-Producer |
| (c) Group II | Strong Oxidizers, Serious Fires |
| (d) Group I | Least (Fire) Hazard |

(3) The term "None" shall be avoided in **denoting** the in-process hazard. If the in-process class does not fit one of the indicated categories, specify the type of hazard the in-process handling will constitute (such as toxic hazard) or the part of the **HCSDS** that refers to the hazard (for example, "See Toxicity").

t. Block 18., Special Requirements. This section and any continuation sheets necessary shall contain:

(1) Reference to documents that control, specify, or otherwise identify the item (for example, drawing, specification, NSN, or **FSN**).

(2) Schematic or list of parts immediately contained in the specified item with **HCSDS** and drawing and specification numbers.

(3) Any special precautions particular to the specified item not appearing anywhere else in the TDP or production and procurement package or in the applicable safety manual.

(4) Any additional data/information that could assist in identifying or clarifying specific hazard.

(5) Any synonyms that can be used to describe the specified item (chemical name or formula, **commercial** brand name, Federal stock numbers) associated with the item (T, M, **MK**).

(6) Approved packaging drawing numbers. If there are no **approved packaging drawings**, indicate this fact and show where packaging **is covered (specification, provisional packing, and number)**. If packaging is not covered officially, the classifications for **shipping/storage** (Items 19 through 22) shall be specified as interim or for **intraplant** only to meet small or in-process requirements. The applicable sections of Title 49, Code of Federal Regulations, Parts 100-199, shall be specified for packaging, marking, and labeling of interim or **intraplant** shipment and storage.

(7) The purpose of a block diagram is to provide the contractor with a concise visualization of the component interrelationships. A block diagram shall be constructed on a blank page used for continuation of DD Form 2357 for all HCSDSs that list end item or subassemblies containing hazardous materials in the title block of DD Form 2357. The diagram shall be constructed as follows:

(a) Place the name, identifying number (NSN, drawing number, specification number, and so forth), and HCSDS number from the title block on the DD Form 2357 in a rectangle at the top center of the page.

(b) Place the same data on any component parts or subassemblies containing hazardous materials in similar boxes located beneath the title block item.

(c) The boxes are connected as shown in figure H-1. If more than one component can be used interchangeably in production of the item in the title block, those components are depicted as in figure H-2.

(d) Major inert assemblies, components, or materials used in the title block item may be shown under the boxes (see figure H-1.) listed by noun identifier and drawing number.

(e) The developing Military Service design agent shall decide whether an item is to be considered hazardous or not. A hazardous component or compound shall be broken down to its lowest possible level of hazard. For example, NOL No. 130 compound shall be broken down to lead styphenate, tetracene, antimony sulfide, barium nitrate, and lead azide. Each of these compounds would be shown in the block diagram for NOL No. 130.

SHIPPING/STORAGE CLASSIFICATION OF ITEMS WHEN PACKAGED

ACCORDING TO APPROVED PACKING DRAWINGS

u. Block 19., DoD Hazard Class/Division. State the hazard classification as assigned by authorized command based on criteria in DoD 5154.4-S, Interim Change 1. Indicate whether the hazard classification is final or interim.

v. Block 20., DoD Storage Compatibility Group. Include the final or interim storage compatibility group assigned by authorized command based on the criteria in DoD 5154.4-S, Interim Change 1. Indicate whether this is a final or interim assignment.

w. Block 21., DoT Hazard Class. Provide the authorized or interim hazard class that complies with Title 49, Code of Federal Regulations, Parts 100-199. Indicate whether this is a final or interim classification.

x. Block 22., DoT Container Marking. Show authorized or interim container marking that complies with Title 49, Code of Federal Regulations, Parts 100-199. Indicate whether this is a final or interim assignment.

y. Block 23., Prepared By. Name, signature, and organization of initiator of form.

z. Block 24., Concurred. Name, signature, and organization of person authorized to concur in technical data presented by developing agency.

aa. Block 25., Safety Office. Name, signature, and organization of Safety Chief of developing agency or authorized representative.

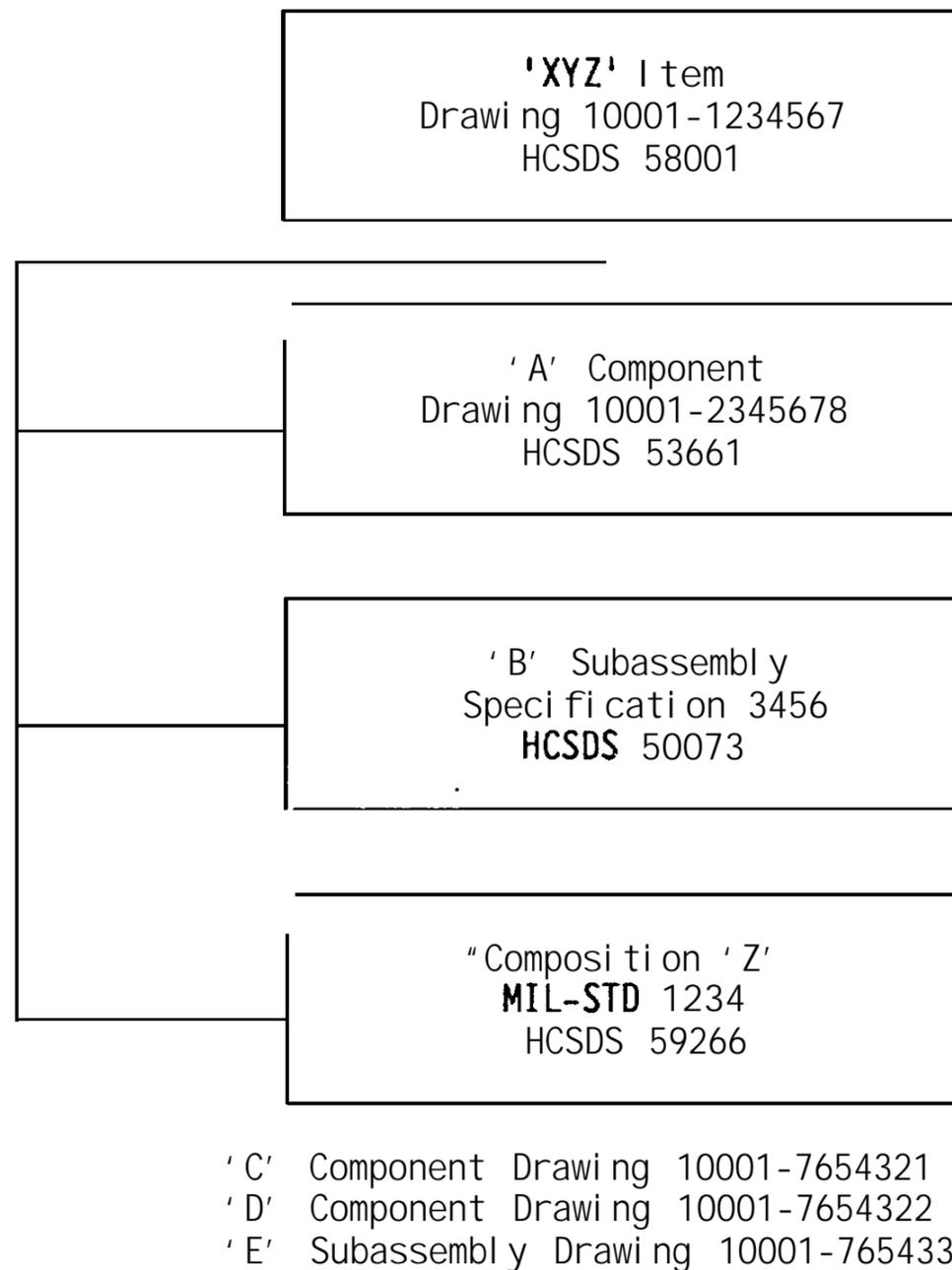


Figure H-1. Sample Block Diagram, DD Form 2357 Continuation Sheet

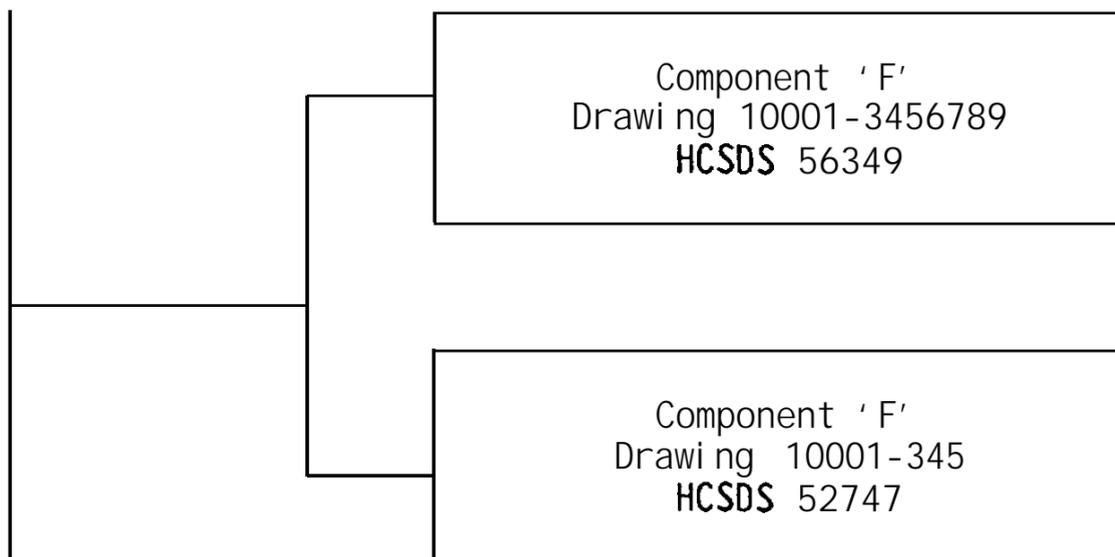


Figure H-2. Sample Display of Multiple Components,
DD Form 2357 Continuation Sheet