

CH2M HILL Hanford Group, Inc.	Manual	ESHQ
COMBUSTIBLE MATERIALS	Document	TFC-ESHQ-FP-STD-01, REV B-2
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1.0 PURPOSE AND SCOPE
(5.1.2)

This standard provides the requirements for minimizing and controlling the use of combustible materials in Tank Farm Contractor (TFC) facilities. This effort should be guided by as low as reasonably achievable (ALARA) principles. In addition, the tank farms safety bases have analyzed tank farm facilities and identified necessary fire protection controls. These analyses were based on certain combustible loading assumptions defined within the documents that shall not be exceeded.

Seasonal fire protection requirements have been added and shall be used, as appropriate, throughout the year. During the months of warm weather, additional attention to outdoor housekeeping and control of ignition sources will be necessary.

2.0 IMPLEMENTATION

This standard is effective on the date shown in the header.

3.0 STANDARD

3.1 Minimum Clearance Maintained Between Storage and Sprinkler Heads

At least 45.7 cm (18 in.) vertical clearance must be maintained between the top of storage and sprinkler head deflectors. (This does not apply to storage shelves and cabinets located against the wall.)

3.2 Amount of Combustible Materials Allowed to Accumulate

1. Accumulations of combustible materials must be limited to the quantity required for current needs and shall be separated from ignition sources.
2. Combustible solid waste and residue from handling flammable and combustible liquids shall be stored in approved, closed metal containers, and shall be disposed of daily.

3.3 Housekeeping Requirements for Controlling Combustibles

NOTE: Combustible loading issue versus a housekeeping issue:

Fire Protection Engineering principles use combustible loading in the form of fuel packages to identify radiant heat releases and required separation distances to prevent transition of one fire to an adjacent location. This can be calculated for indoor locations where the building geometry and the type of material involved is known. In the case of outside locations, NFPA 1143 assumes a worst case and simplifies this separation distance to 30 feet. At tank farms, the fences around the farms act as a barrier, minimizing the combustibles entering into the farms. This control is effective but does not cover significant structures outside the farms. Structures that represent a significant

loss, either from monetary loss or program interruption outside the farm, require the same type of controls.

Housekeeping issues, which are not covered by this standard, are often being confused with fire protection combustibles loading requirements. Housekeeping is a good management practice that is important to a well-run business. They are, however, subjective, and controls should be implemented using a graded approach.

1. Work room floors are maintained clean and dry to the extent practical.
2. Combustible waste shall be collected in metal containers provided with lids. (Lids are not required for office waste cans.)
3. Combustible waste shall not be permitted to accumulate inside or adjacent to buildings or structures. Particular attention must be given to accumulations of transient vegetation.
4. Combustible materials shall not be stored in building stairwells or corridors. Combustibles stored in closed metal cabinets are permitted in corridors if cabinets do not reduce the required exit width of the corridors.

3.4 Use of Non-Combustible/Fire Retardant Materials Required

Non-combustible or fire retardant materials shall be used whenever possible. Materials of unusual fire characteristics (such as urethane foams, which produce large quantities of smoke) shall not be used for interior finishes.

3.5 Additional Requirements for Combustibles in Nuclear Facilities

In nuclear facilities (reactor and non-reactor) the use and installation of combustibles shall be maintained ALARA. Management shall ensure that the use of combustibles is properly controlled and conforms to the following additional requirements.

1. Use of combustibles in the construction of facilities and associated equipment shall be ALARA.

This will usually mean that non-combustible substitutes are found for such common materials as wood, plastic insulation, and especially plastic finish materials. When the non-combustible classification of a material is in question, it must be reviewed and approved in writing by the fire protection engineer.

2. The selection and use of new insulated electrical wire for installation in cable trays shall be reviewed and approved by the fire protection engineer.

Essential uses of combustibles (such as plastic electrical and electronic components) are normally acceptable.

3. Use of essential permanent items (including laundry, personal protective equipment, and office materials) shall be maintained ALARA.

4. Wood, sheet plastic, and paper materials shall be strictly limited and are used only in temporary applications that are absolutely essential to facility operations when acceptable non-combustible substitute materials are not available. Essential written material can be permanent.
5. Wood scaffolding, if used, shall not be staged, stored, or stockpiled in the facility.

This requires that assembly and disassembly be done when the scaffolding is delivered to and removed from the facility. The fire protection engineer may issue a written exception to this requirement for radiation areas, provided that the staging/storage area is protected by automatic sprinklers.
6. Wood used in a nuclear facility for a temporary application, as discussed above (except wooden ladders and scaffolding), shall be pressure-treated fire retardant material with an Underwriter's Laboratories (UL) classification of Fire Retardant (FR-S).

Individual unlabeled pieces of wood (e.g., from a bundle or made by cutting larger pieces) shall be labeled as "FR-S" before use.
7. In lieu of the pressure-treated wood required above, UL listed or Factory Mutual approved fire retardant coatings (paints) may be used in the following cases:
 - Where structural strength/qualification is required
 - For untreated materials already in use.
 - Such painted materials shall also be labeled "FIRE RETARDANT."
8. Sheet plastic shall be tested and documented as meeting NFPA 701. (5.1.1)
9. The use of propane powered equipment within the 242-A Evaporator and 242-AB Buildings is prohibited pending re-analysis of propane explosion accidents in the 242-A Fire Hazards Analysis (see Section 5.2, item 1).

3.6 ~~Wildland Fire Season~~ Fire Prevention Controls for Outside Locations

Annual weather pattern changes can cause some difficulty in accurately predicting the fire season conditions. Additionally, fire conditions can change rapidly. ~~In order to prepare for these changing fire season conditions, DOE formally initiates a letter detailing the fire prevention actions. These actions are implemented site wide to lessen the potential for major fire damage to areas and buildings should a fire occur.~~ The best defense is to be prepared for every potential situation. The following are some of the preventive actions.

1. ALL open burning requires a Hanford Fire Marshal Permit.
2. DO NOT throw lighted materials from your vehicle.
3. Smoking is not permitted in government vehicles, but when smoking in your private vehicle, use your ashtray and make certain other smokers do the same.
4. Off-road driving is restricted to properly equipped vehicles:
 - A means of communication

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- A shovel
 - A portable fire extinguisher (2A rated minimum)
 - A spark arrester and appropriate shielding for catalytic converters and mufflers on all gasoline fueled vehicles.
5. Do not allow gasoline fueled vehicles to idle while off-road.
6. A “defensible space” shall be maintained around buildings and structures that represent a significant loss, either from monetary loss or program interruption. The space shall extend at least 30 feet ~~from buildings~~.
- NOTE: It is recommended that combustible material be removed immediately upon discovery when it is near electrical equipment (e.g., motor control centers) or other heat producing equipment. It should be removed from other locations within 72 hours.
7. Ground fuels shall be treated/removed, combustible materials (e.g., tumbleweeds) removed, and live vegetation within the defensible space shall be thinned/pruned and have dead materials removed.
8. Call 911 (373-3800 for cell phones) if a fire occurs; even if the fire has been extinguished.

4.0 DEFINITIONS

Combustible material (NFPA 5000™, Section 3.3.340.2). A material that, in the form in which it is used and under the conditions anticipated, will ignite and burn; a material that does not meet the definition of noncombustible or limited-combustible.

Limited-combustible material (NFPA 5000™, Section 3.3.340.10). Building construction material not complying with the definition of noncombustible material that, in the form in which it is used, has a potential heat value not exceeding 3500 Btu/lb (8141 kJ/kg), where tested in accordance with NFPA 259 and includes: (1) materials having a structural base of noncombustible material with a surfacing not exceeding a thickness of 1/8 in. (3.2 mm) that has a flame spread index not greater than 50; and (2) materials, in the form and thickness used, other than as described in (1), having neither a flame spread index greater than 25 nor evidence of continued progressive combustion, and of such composition that surfaces that would be exposed by cutting through the material on any plane would have neither a flame spread index greater than 25 nor evidence of continued progressive combustion.

Noncombustible material (NFPA 5000™, Section 3.3.340.11). A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat. Materials that are reported as passing ASTM E 136 are considered noncombustible materials.

5.0 SOURCES**5.1 Requirements**

1. NFPA 701, “Standard Methods of Fire Tests for Flame-Resistant Textiles and Films.”
2. ORP M 420.1-1, “ORP Fire Protection Program.” (S/RID)

5.2 References

1. HNF-SD-WM-FHA-024, "Fire Hazards Analysis for the Evaporator Facility (242-A)."
2. NFPA 5000™, "Building Construction and Safety Code™," National Fire Protection Association, Quincy, Massachusetts.
3. TFC-ESHQ-FP-C-01, "Controls for Safe Hotwork."
4. TFC-ESHQ-FP-STD-03, "Flammable/Combustible Liquids."
5. TFC-ESHQ-FP-STD-06, "Fire Hazard Analysis and Fire Protection Assessment Requirements."
6. TFC-ESHQ-FP-STD-09, "Fire Protection System Winterization and Portable Heater Use."
7. TFC-ESHQ-FP-STD-11, "Fire Protection Requirements for Construction, Occupancy, Demolition Activities."
8. TFC-ESHQ-FP-STD-13, "Fire Protection Requirements for Hazardous Material and Used Waste Absorbing Material Storage."
9. TFC-PLN-13, "Fire Protection Program."