

NFPA Compliance Checklist for Dust Collection Systems

This quick-reference checklist walks you through the key NFPA standards that govern dust collection system design—plus the essential design elements for compliance.

Standards That Govern Dust Collection System Design

NFPA 660 – Standard for Combustible Dusts (2025 Edition)

This unified combustible dust standard combines several previous standards:

- NFPA 652 (Fundamentals of Combustible Dusts)
- NFPA 654 (General Manufacturing)
- NFPA 664 (Wood Processing and Woodworking)
- NFPA 484 (Combustible Metals)
- NFPA 61 (Agricultural and Food Products)

Standards for handling combustible dusts, including:

- Dust Hazard Analysis
- Ignition source control
- Housekeeping, maintenance and training
- Emergency planning and response

NFPA
660

Standard for
Combustible Dusts
and Particulate Solids
2025

NFPA
484

Standard for
Combustible Metals

NFPA
652

Standard on
the Fundamentals of
Combustible Dust
2019

Referenced Standards:

The following additional standards apply to dust collection system components:

- NFPA 68 (Explosion Protection by Deflagration Venting)
- NFPA 69 (Explosion Prevention Systems)
- NFPA 70/NEC (Electrical safety and grounding requirements)



NFPA Compliance Design Checklist

For Dust Collection Systems Under NFPA 660

Each category below reflects a major area of design responsibility under NFPA 660 and its referenced standards (NFPA 68, 69, and 70).

1. Collector Location & Enclosure

Proper placement and containment are critical to minimize explosion hazards and protect personnel.

- **Collector placement:** Located outdoors whenever possible and vent to a safe area.
- **Indoor installations:** Equipped with flameless venting or chemical explosion suppression and isolation (per NFPA 68/69).
- **Building separation:** Meets distance or barrier requirements for adjacent work areas.
- **Access:** Provides safe maintenance access without exposure to collected dust.
- **Construction:** Collector housing designed to contain maximum pressure (Pmax).

2. Explosion Protection & Isolation

NFPA 660 requires appropriate measures to control, vent or isolate explosions in dust collection systems.

- **Explosion venting:** Sized and located per NFPA 68.
- **Deflagration suppression:** System installed where venting isn't possible.
- **Flameless vents:** Used for indoor collectors. (Note: flameless vents have restrictions based on materials and Kst values.)
- **Explosion isolation:** Valves, barriers or suppression between process and collector (NFPA 69).
- **Vent ducting:** Short, straight discharge path to a safe area outdoors. (Note: maximum duct length depends on duct diameter; performance-based testing may be required.)

3. Ductwork & Conveyance

Proper duct design prevents dust accumulation, ignition, and flame propagation.

- **Velocity:** Ductwork maintains minimum conveying velocity to prevent settling.
- **Grounding:** All conductive parts grounded and bonded.
- **Branch design:** Minimizes elbows and dead legs where dust can collect.
- **Isolation:** Explosion isolation device at collector inlet.
- **Spark detection:** installed in ductwork for spark producing processes.

4. Filtration & Air Return

Safe air handling prevents reintroduction of combustible dust into the workspace.

- **Filter media:** Compatible with dust type (anti-static, conductive, or flame-retardant as needed).
- **Secondary filtration:** Depending on process, may require HEPA or equivalent installed when returning air indoors.
- **Recirculation monitoring:** Spark and temperature sensors in return air plenum.
- **Clean air ducts:** Designed for inspection and cleaning access.

5. Electrical & Ignition Control

Electrical systems and static control are essential parts of NFPA 660 and NFPA 70 compliance.

- **Electrical classification:** Verified for dust hazard area (per NEC Article 500).
- **Equipment grounding:** Verified continuity throughout system.
- **Motors and sensors:** Properly rated for classified environment.
- **Static control:** Non-conductive hoses bonded to grounded components.
- **Hot surfaces:** Kept below ignition temperature of collected dust.

6. Housekeeping & Maintenance *(client responsibility)*

Preventive cleaning and inspection are required to maintain compliance and reduce risk.

- **Dust accumulation:** Surfaces free of more than 1/32" of dust.
- **Cleaning schedule:** Written and followed per DHA recommendations.
- **Filter replacement:** Conducted safely to minimize dust release.
- **Maintenance records:** Logged inspections of vents, valves, and suppression systems.
- **Hot work controls:** Permits and monitoring for any spark-producing maintenance.

7. Documentation & Training *(client responsibility)*

NFPA 660 emphasizes ongoing management and recordkeeping.

- **Dust Hazard Analysis (DHA):** Completed and updated every 5 years.
- **System documentation:** Includes design data, vent calculations, and inspection logs.
- **Employee training:** Covers dust hazards, emergency response, and system operation.
- **Incident response plan:** Written procedures for fire or explosion events.

This is not an all-inclusive program.

For more information, consult RoboVent or your DHA provider.