

## Wood Fibre Storage Risk and Mitigation

### Hazard: Fire and Deflagration



WOOD PELLET ASSOCIATION OF CANADA  
SAFETY COMMITTEE

#### Potential ignition sources

#### Mitigation options

**Bold = Leading/Best Practice**

Mobile Equipment	<ol style="list-style-type: none"><li>1. <b>Approved automatic extinguishing systems on engine and hydraulic components.</b></li><li>2. <b>Protected wiring, air operated starting, enclosed batteries.</b></li><li>3. <b>Water cooled manifold and muffler.</b></li><li>4. <b>Frequent inspection, maintenance and cleaning.</b></li><li>5. <b>Never leave mobile equipment unattended or parked in storage area.</b></li><li>6. <b>Reversing engine fan.</b></li><li>7. <b>Extra manual extinguishers.</b></li><li>8. <b>Ceramic coating or insulation on turbos.</b></li><li>9. <b>Interlock on hydraulic systems.</b></li><li>10. <b>Rubber/Teflon/non ferrous material on bucket edges to reduce the chance of sparks.</b></li></ol>
Luminaries	<ol style="list-style-type: none"><li>1. <b>Approved, class 2 div 1 rated.</b></li><li>2. <b>Housings/mounting not prone to dust accumulation/buildup. i.e. ceiling</b></li><li>3. <b>Frequent inspection, maintenance and cleaning.</b></li><li>4. <b>Use of robotic fans (if applicable)</b></li></ol>
Electrical distribution equipment NFPA 70/77 and Canadian electrical code	<ol style="list-style-type: none"><li>1. <b>Conduits.</b></li><li>2. <b>Insulated wiring.</b></li><li>3. <b>Adequate grounding and bonding of all metal components. Including regular inspection (visual, infrared, conductivity) and maintenance.</b></li><li>4. <b>Circuit protection devices.</b></li><li>5. <b>Protection/guarding around electrical components i.e. motors, panels etc.</b></li><li>6. <b>Design should minimize/limit extent of wiring.</b></li><li>7. <b>Horizontal wiring to have sloped covers to prevent dust buildup.</b></li><li>8. <b>Frequent inspection, maintenance and cleaning.</b></li><li>9. <b>Equipment in cut-off room. Positive pressure, sealed self closing doors, min. 1 hr fire rated.</b></li></ol>
Conveyor	<ol style="list-style-type: none"><li>1. <b>Deluge system.</b></li><li>2. <b>Fibre shut down or redirect system.</b></li><li>3. <b>Scrapers or other equipment to prevent carry back.</b></li><li>4. <b>Anti slip sensors.</b></li><li>5. <b>Alignment sensors.</b></li><li>6. <b>Remote temperature sensors on bearings with alarms includes data capture and trending.</b></li><li>7. <b>Bearings to be dust type ball and monitored for wear.</b></li><li>8. <b>Regular inspection and maintenance.</b></li><li>9. <b>Where possible designing the conveyor systems so that head and tail drums (and corresponding bearings) are outside the storage building.</b></li><li>10. <b>Installing shields, covers or other effective devices which will prevent the bearings from become buried in dust.</b></li></ol>
Bins/Reclaims	<ol style="list-style-type: none"><li>1. <b>Water deluge system.</b></li><li>2. <b>Deflagration venting.</b></li><li>3. <b>Approved deflagration suppression system.</b></li></ol>
Trucks	<ol style="list-style-type: none"><li>1. <b>Delivery SOPs Inc. no smoking policy.</b></li><li>2. <b>Regular inspection/monitoring of fibre delivery process.</b></li><li>3. <b>Trucks/delivery equipment inspected prior to entry into from wood fibre storage structures. i.e. thermal, visual.</b></li></ol>

General

1. Regular inspection/audit schedule.
2. Regular inspection, maintenance and cleaning schedule. (Consider new equipment introduction and MOC.)
3. All electrical equipment based on hazard classification and electrical code.
4. Emergency Response Plans in place and practiced.
5. Corrective action planning in place and executed.
6. Regular monitoring and enforcement of site specific SOPs. Inc. Hotworks.
7. Infrared scanning based on risk assessment.

Building

1. Open end construction i.e. allows natural ventilation.
2. Fire alarm system.
3. Approved automatic fire suppression system. i.e. sprinkler or deluge systems
4. Fire extinguishers.
5. Fire wall where connected to existing non storage building.
6. \*Damage limiting construction.
7. Construction minimizes horizontal ledges where dust can accumulate.
8. Air actuated vibrators on trusses of fabric covered buildings.
9. Introduction of equipment with hot surfaces or other heat/ignition sources carefully monitored. Inc. Hotworks.

**\*Damage-Limiting Construction.** A building construction method that incorporates exterior wall or roof sections, or both, designed to relieve deflagration pressures without jeopardizing the structural integrity of the building. Deflagration to propagate into adjacent interior spaces. Usually makes maximum use of exterior walls as pressure-relieving walls rather than relying on the minimum recommended. Pressure-resistive walls are sometimes explosion propagation into adjacent areas. Further information on this subject can be found in NFPA68, Standard on Explosion Protection by Deflagration Venting.