



This safety resource was written for the recycled materials industry by the recycled materials industry and was developed to assist you in making your recycling operation a safe place for employees, customers, and visitors. This resource covers OSHA requirements that may or may not be applicable to your operation.

FURNACE

DEFINITION: Box or tank type container using high temperature to melt and separate or purify (usually) non-ferrous metals.

Potential Hazards:

- Aerosolized particles
- Burns/ Extreme Heat
- Explosive atmosphere
- Fire
- Hazardous fumes
- Ash

Guarding/Shielding:

- Point-of-operation guards must prevent a worker from placing any body part into the machine's danger zone during the operation cycle. Danger zone includes moving parts, and hot surfaces.
- Fuel lines must be guarded to prevent damage.
- Power transmission parts must be adequately guarded.
- Loaders or forklifts used to charge furnace should have safety glass or expanded steel in front of operator with a solid roof.

Protective Equipment:

Hard hats*

Safety glasses*

Face shield*

Steel toe/steel shank foundry boots with metatarsal guards*

Leather foundry gloves*

Fire resistive clothing*

Respirator as needed

Hearing protection as needed

**minimum requirements*

Safety Procedures:

- Lockout/Tagout procedures must be developed, followed, and enforced for equipment maintenance/ servicing.
- Designate a safe zone around furnace to prevent burns to pedestrians.
- Keep flammables & combustibles away.
- Floor areas adjacent to furnace must be maintained clean and dry and free of trip hazards.
- If indoors, furnace should have forced air ventilation to outside or to bag house or other emission control device. Exhaust ducts should not discharge near doors, windows, or other air intakes.
- Determine, through air monitoring, whether use of respirators is required.
- Fire extinguishers should be appropriately placed, well labeled, with unobstructed access.
- Post emergency shut-down procedures.
- Regularly check for fuel gas leaks.
- Main fuel shut-off must be located away from furnace, easily accessible and labeled.
- Post type of fuel in use at building entrance.
- Regularly monitor temperature readings.
- Train workers on unacceptable materials in furnace including closed containers, magnesium, nitrates, and volatile materials.
- Gas-fired units must have an auto safety shut-off valve that cuts fuel flow if pilot is extinguished.
- High volume water supply and hose should be near furnace and inspected regularly.
- Stacks or ducts passing through walls must be properly insulated or clearance provided.
- Post warning signs indicating area of hazardous operation.
- Make sure skimmers, rakes, ladles and other tools are hot and dry before each use.
- Make sure molds are dry and preheated before pouring molten metal in them.

- Furnace should have automatic or manually controlled ventilating fan.
- Workers should have access to adequate supply of drinking water.
- When melting flammable metals such as magnesium a Class D fire extinguisher should be immediately available. Do not use water on flammable metals