INTRODUCTION

Welding, cutting, and allied processes produce molten metal, sparks, slag, and hot work surfaces. These can cause fire or explosion if precautionary measures are not followed.

MAIN CAUSES OF FIRES IN WELDING AND CUTTING—FLYING SPARKS

• Sparks can travel up to 35 feet (10 meters) on a horizontal direction from the work area.

  Note: Sparks and molten metal can travel greater distances when falling.

• Sparks can pass through or become lodged in cracks, clothing, pipe holes, and other small openings in floors or partitions.

TYPICAL COMBUSTIBLE MATERIALS AND CONDITIONS

• Parts of buildings such as floors, partitions, and roofs.

• Contents of buildings such as wood, paper, clothing, plastics, chemicals, and flammable liquids and gases.

• Outdoor combustible materials include dry leaves, grass, and brush.

• Welding and cutting have caused explosions when performed in spaces containing flammable gases, vapors, liquids, or dusts.

HOW TO PREVENT FIRES

• Remove any combustible material from the work area.

• Where possible, move the work to a location well away from combustible materials.

• If relocation is not possible, protect combustibles with a cover made of fire-resistant material.
• Remove or make safe all combustible materials for a radius of 35 feet (10 meters) around the work area.

• Using fire-resistant material, cover or block all open doorways, windows, cracks, and other openings.

• If possible, enclose the work area with portable fire-resistant screens.

• Protect combustible walls, ceilings, floors, etc., from sparks and heat with fire-resistant covers.

• If working on a metal wall, ceiling, etc., prevent ignition of combustibles on the other side by moving the combustibles to a safe location.

• If relocation of combustibles cannot be done, designate someone to serve as a fire watch, equipped with a fire extinguisher, during the welding operation and for at least one half-hour after welding is completed.

• Do not weld or cut on material having a combustible coating or combustible internal structure, as in walls or ceilings, without an approved method for eliminating the hazard.

• Do not dispose of hot slag in containers holding combustible material.

• Keep a charged fire extinguisher nearby, and know how to use it.

• After welding or cutting, make a thorough examination for evidence of fire. Remember that easily visible smoke or flame may not be present for some time after the fire has started.

• Be aware that overloading and improper sizing can cause overheating of electrical equipment and possible fire hazard.

• Be sure all electrical equipment and wiring are installed properly and have recommended circuit protection.

• Be sure the work cable is connected to the work as close to the welding area as practical. Work cables connected to the building framework or other locations some distance from the welding area increase the possibility of the welding current passing through lifting chains, crane cables, or other alternate circuits. This can create fire and shock hazards or overheat lifting chains or cables until they fail.

• Do not weld or cut in atmospheres containing dangerously reactive or flammable gases, vapors, liquids, or dust.
• Do not apply heat to a container that has held an unknown substance or a combustible material whose contents, when heated, can produce flammable or explosive vapors.

• Do not apply heat to a workpiece covered by an unknown substance or whose coating can produce flammable, toxic, or reactive vapors when heated.

• Develop adequate procedures, and use proper equipment to do the job safely.

• Provide adequate ventilation in work areas to prevent accumulation of flammable gases, vapors, or dusts.

• Clean and purge containers before applying heat.

• Vent closed containers, including castings, before preheating, welding, or cutting. Venting prevents the buildup of pressure and possible explosion due to the heating and expansion of gases.

INFORMATION SOURCES


