SKILLSIGNAL™
Construction Safety & Compliance

TOOLBOX TALK

The Flame Over Circle: It Doesn't Burn. It Makes Everything Else Burn Worse.

TOPIC NO.	DURATION	AUDIENCE
HC-05	10 to 15 min	All Crew

OSHA REFERENCE 29 CFR 1910.1200 Appendix B & C · 29 CFR 1926.350(a)(10) · 29 CFR 1926.350(i)

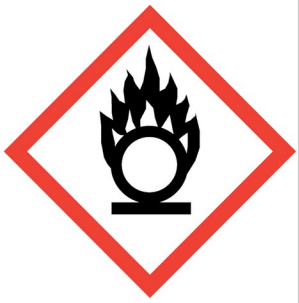
PROJECT / JOBSITE	DATE	PRESENTED BY

01 THE HOOK

START HERE

A welder wipes his hands on a greasy rag, then opens the oxygen cylinder valve. Nothing happens, most days. Then one day the grease in the fitting flashes like a cutting torch and takes his hand with it. Oxygen does not burn. It cannot. What it does is turn anything that can burn into something that burns three times faster and hotter than it would in normal air. That is an oxidizer, and the symbol for it looks almost exactly like the flammable symbol with a circle under the fire. People mix them up every day. The difference matters, because the rules for each one are nearly opposite.

02 WHAT THE SYMBOL COVERS



FLAME OVER CIRCLE

OXIDIZING GASES, LIQUIDS, AND SOLIDS

An oxidizer is a substance that **gives off oxygen or otherwise feeds combustion**. Hazard statements: “May cause or intensify fire; oxidizer” or, for the worst category, “May cause fire or explosion; strong oxidizer.” The flame over circle goes on oxidizing **gases** (oxygen, chlorine, nitrous oxide), oxidizing **liquids** (nitric acid, concentrated hydrogen peroxide, perchloric acid), and oxidizing **solids** (calcium hypochlorite, ammonium nitrate, potassium permanganate, some concrete accelerators). It does not appear on the fuel. It appears on the thing that makes the fuel dangerous.

03 FLAME VS. FLAME OVER CIRCLE

FLAME (FLAMMABLE)	FLAME OVER CIRCLE (OXIDIZER)
WHAT IT IS **The fuel. Gasoline, acetone, propane, PVC primer**	WHAT IT IS **The thing that feeds the fire. Oxygen, pool chlorine, nitric acid**
WHAT IT NEEDS TO BE DANGEROUS Oxygen (air) and an ignition source	WHAT IT NEEDS TO BE DANGEROUS A fuel and an ignition source, or sometimes just a fuel and friction or heat
WHAT TO KEEP IT AWAY FROM Heat, sparks, open flame, oxidizers	WHAT TO KEEP IT AWAY FROM Fuels, oil, grease, solvents, wood, paper, rags, and anything flammable
THE TRAP Vapor pools low and travels to the spark	THE TRAP A fire that should have been small becomes a fire that cannot be put out, because the oxidizer keeps feeding it

Here is the version that matters on a jobsite: **the oxidizer and the fuel are stored apart.** Not on the same shelf, not in the same cabinet, not leaning against each other at the gas cage. When the two meet with a spark, the result is not a flammable fire. It is a fire with its own oxygen supply.

04 WHERE YOU SEE IT ON SITE

OXYGEN CYLINDERS
The most common oxidizer on any construction site. Every oxy-fuel rig has one.

POOL SHOCK / CALCIUM HYPOCHLORITE
Used for water treatment and disinfection. A solid oxidizer that reacts with oil, brake fluid, and even damp organic material.

NITRIC ACID AND CONCRETE ETCH
Some masonry cleaners and etching products are oxidizing acids. Corrosion plus flame over circle on the same label.

HYDROGEN PEROXIDE (CONCENTRATED)
Above 8 percent it is an oxidizer. Industrial grades used in cleaning and water treatment carry the symbol.

AMMONIUM NITRATE
Fertilizer and blasting agent component. Oxidizer that becomes an explosive under heat and confinement.

NITROUS OXIDE AND CHLORINE GAS
Less common, but both are oxidizing gases that carry the symbol and the cylinder.

05 THE RULES BEHIND THE SYMBOL

RULE 1

OXYGEN AWAY FROM FUEL GAS: 20 FEET OR A 5-FOOT WALL

29 CFR 1926.350(a)(10): oxygen cylinders in storage must be **separated from fuel-gas cylinders or combustible materials by at least 20 feet**, or by a noncombustible barrier **at least 5 feet high** with a half-hour fire rating. “In storage” means not on the cart hooked to a regulator. The cart is the only place they ride together.

RULE 2

NO OIL, NO GREASE, EVER

29 CFR 1926.350(i): oxygen cylinders and fittings must be **kept away from oil or grease**. Cylinders, caps, valves, couplings, regulators, hoses: none of it gets handled with oily hands or gloves. Oil in an oxygen fitting under pressure can ignite on its own. Wipe your hands before you touch the oxygen side.

RULE 3

NEVER USE OXYGEN AS COMPRESSED AIR

Not to blow off dust, not to clean a bench, not to cool off, not to ventilate a space. Oxygen soaked into clothing makes the clothing a flare. A cigarette after “blowing off” with oxygen has killed people.

RULE
4

READ THE INCOMPATIBLES IN SDS SECTION 10

For solid and liquid oxidizers, Section 10 (stability and reactivity) lists what they must never touch. Pool shock plus brake fluid ignites. Pool shock plus a damp cardboard box can self-heat. Store oxidizers in their original container, dry, cool, and away from every organic material.

⚠ **DON'T PUT OUT AN OXIDIZER FIRE LIKE A NORMAL FIRE**

A fire fed by an oxidizer does not need air, so smothering it with a blanket or a CO2 extinguisher may do nothing. Many oxidizer fires need large amounts of water. Some oxidizers react violently with water. The answer is in SDS Section 5 for that product, and you need to have read it before the fire, not during. If a fire involves an oxidizer and you do not know, get out and call it in.

06 WHY IT MATTERS

[JOBSITE]

FOR THE CREW

The oxygen cylinder leaning against the acetylene at the gas cage is one of the most common torch-area citations in construction. Twenty feet or a wall. A crew that knows the symbol keeps the cage right without being told.

[INDIVIDUAL]

FOR YOU

An oxygen-fed fire burns at cutting-torch temperature. It does not singe. It removes. Clean hands on the oxygen side and the oxidizers on their own shelf are the two habits that keep this symbol from hurting you.

[HOME]

FOR LIFE OFF-SITE

Pool chemicals in the garage next to the gas can and the lawn mower are the classic home version of this exact mistake. Separate them. Keep the pool shock dry and in its own container.

07 TODAY'S DRILL

TODAY'S DRILL **WALK THE GAS CAGE**

Go to the cylinder storage. Measure (pace off) the distance between the oxygen and the fuel gas cylinders in storage. If it is under 20 feet, is there a 5-foot noncombustible barrier? Then check the chemical storage for any flame-over-circle product and look at what is on the shelf next to it. Any oxidizer within reach of a fuel, solvent, oil, or rag gets separated today.

08 CREW DISCUSSION

Take 2 minutes. Pick one.

1. Where are the oxygen and acetylene cylinders stored on this site, and how far apart are they?
2. Who on this crew has handled an oxygen regulator with greasy gloves? What did you think would happen?
3. Name one oxidizer on this site besides oxygen. What is stored next to it?

09 ATTENDANCE & SIGN-OFF

All attendees confirm they participated in this Toolbox Talk and understand the content covered.

NAME (PRINT)	SIGNATURE

SUPERVISOR SIGNATURE

_____ Date: _____

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