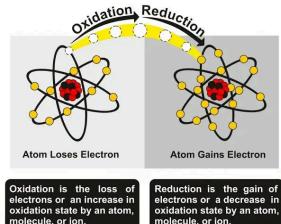
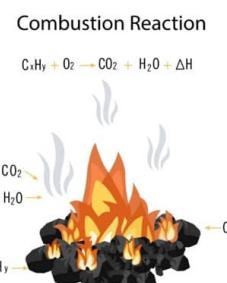


# Things Really Do Catch Fire



**Oxidation:** is a chemical reaction where a substance loses electrons, often involving oxygen. It's part of redox reactions, where oxidation and reduction occur together. Remembered as "OIL RIG" (Oxidation Is Loss, Reduction Is Gain), this process is central to many biological, industrial, and combustion systems that release energy.

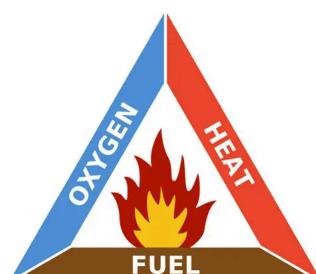
**Combustion** is a high-temperature exothermic redox reaction between fuel and an oxidizer, often oxygen. It produces heat, light, and gases. A flame may or may not appear. Combustion requires activation energy, but once initiated, it can become self-sustaining. It's the basis of engines, heating systems, and fire behavior.



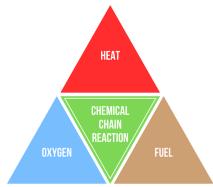
**Flash point** is the lowest temperature at which a liquid emits enough vapor to form an ignitable mixture with air. It classifies substances as flammable (flash point < 37.8°C) or combustible (above that). Knowing a material's flash point is essential for understanding its fire hazard and safe handling.

**Convection** is the transfer of heat through the movement of fluids, such as air or water. Warmer, less dense fluid rises while cooler, denser fluid sinks, creating circulation. Convection drives weather patterns, ocean currents, and fire behavior, spreading heat to new areas and contributing to the growth of fires.

**The fire triangle** explains the three essential elements for fire: heat, fuel, and oxygen. Fire occurs when these elements are present in the right proportion. Removing any one—such as smothering the fire to cut off



oxygen—extinguishes the flame. It's a fundamental model used in fire safety and firefighting.



**The fire tetrahedron** adds a fourth element—chemical chain reaction—to the fire triangle (heat, fuel, oxygen). Once combustion starts, this chain reaction sustains the fire. Removing any element, including interrupting the chemical reaction (e.g., with halon), stops the fire. Some fires, like metal or oil fires, resist water-based extinguishing.

**A flame** is the visible, hot part of a fire, resulting from a combustion reaction. It's plasma—an ionized gas—that forms in a thin zone where heat, fuel, and oxygen combine. Flame behavior is explained by heat conduction or diffusion. Specific fuel-air ratios define whether a flame can sustain itself.



**Fuel** is any material that reacts chemically or physically to release energy, typically as heat or for work. Fuels can be chemical (like gasoline), nuclear, or biological. The term originally applied to materials for combustion, but now includes many energy sources used in transportation, heating, cooking, and electricity generation.

**History of Fire** was likely first controlled by *Homo erectus* around 1 to 2 million years ago, based on archaeological findings in South Africa's Wonderwerk Cave. Controlled fire enabled cooking, leading to evolutionary changes like bigger brains. Fire use spread through early human ancestors and became central to survival and technology.

**Fire-starting** evolved from ancient tools like flint and steel to modern lighters and ignition systems. Natural materials, focused sunlight, or chemical reactions can create fire. Videos by survivalists like John Plant demonstrate fire-starting in survival

situations. Knowing multiple methods is useful in emergencies or outdoor scenarios like camping.

**The Apprentice** was a business-themed reality TV show that aired from 2004–2017. Created by Mark Burnett, it featured contestants completing tasks and being judged by host Donald Trump, who made “You’re fired” famous. It was a cultural reference point for discussions on success, business skills, and even fire-themed metaphors.

**A lighter** is a portable device that produces a flame using flammable material or electricity. Early lighters were converted pistols. The invention of ferrocium made modern lighters like Zippos possible. They are widely used for lighting cigarettes, candles, or fires, and come in mechanical, gas-fueled, and electric designs.



**Joseph Haydn's Symphony No. 59** in A major, known as the Fire Symphony, was composed in the late 1760s for Nikolaus Esterházy. This work features four movements and utilizes two oboes, two French horns, continuo, and strings. It is famously linked to the play Die Feuersbrunst and is characterized by its lively first movement, Presto, which gives the impression of fire through energetic violin melodies.

**Richard Wagner**, a renowned German composer, created an influential cycle of operas called **Der Ring des Nibelungen**. A key moment occurs in Die Walküre, where Wotan grapples with his duty as a father and the fate of his daughter Brünnhilde. After an emotional conflict, he puts her in a magical sleep protected by fire, allowing only the bravest heroes to reach her.

**Jean Sibelius's The Origin of Fire**, a cantata for baritone, male choir, and orchestra, premiered in 1902. Based on Finland's national epic, the Kalevala, it reflects the country's patriotic spirit.

**Igor Stravinsky composed The Firebird for the Ballet Russes**, blending human and supernatural themes in his music. This ballet tells a magical story of adventure involving the Firebird and an evil sorcerer.

**Sergei Prokofiev's Winter Bonfire**, written for orchestra, choir, and narrator, depicts a winter outing by children in Moscow, showcasing his talent in orchestration.

**Jerry Lee Lewis's "Great Balls of Fire" (1957)** expresses excitement and passion in love, highlighting how intense emotions can feel thrilling yet overwhelming. The lyrics describe a man's transformation from disbelief in love to acknowledging its power, as he joyfully shares his feelings for someone special.

**Johnny Cash's "Ring of Fire" (1963)** describes love as a consuming force, comparing it to a fiery ring. Written by June Carter and Merle Kilgore, the song portrays the intense emotions that come with love, suggesting that falling in love can feel like descending into flames.

**Vangelis's "Chariots of Fire" (1981)** is an instrumental piece for the film of the same name. It became widely known due to its association with the Olympic Games and captures a sense of vitality and power. The title phrase is derived from a William Blake poem and conveys a dynamic image.

**Billy Joel's "We Didn't Start The Fire" (1989)** is a fast-paced song listing significant world events from 1949 to 1989. The lyrics reflect historical moments that shaped those years, asserting that while the fire of history continues to burn, it's not the current generation's fault.

**William Blake's poem "The Tyger" (1794)** explores the duality of creation, questioning why a fearsome creature like a tiger exists alongside gentle beings. It raises profound questions about the nature of good and evil.

**Forrest Gander's poem "Wasteland: on the California Wildfires" (2020)** details the destructive nature of wildfires, emphasizing their connection to climate change and humanity's refusal to acknowledge its consequences.

**Linda Hogan's poem "The History of Fire"** reflects on Native American myths about the origins of fire, highlighting the speaker's connection to their ancestors. The poem compares family members to elements of fire, emphasizing the speaker's role as the wind that spreads their legacy.

**Jorie Graham's poem "I Am Still"** portrays a person trapped in a chaotic fire, surrounded by destruction. The speaker searches for a remembered river, representing lost hope due to climate change, which has altered the landscape and taken away vital resources. The absence of the river symbolizes the challenges faced in seeking safety and sanctuary.

**The Music for the Royal Fireworks (HWV 351)** is a suite composed by George Frideric Handel for the fireworks display in London's Green Park on April 27, 1749. The music celebrates the conclusion of the War of the Austrian Succession and the Treaty of Aix-la-Chapelle. Despite its popularity, the initial performance faced challenges, such as bad weather and a fire during the show.

**Igor Stravinsky's Feu d'artifice**, Op. 4, created in 1908, is a short orchestral piece meant as a wedding gift. This lively piece features dynamic strings and woodwinds, capturing the essence of fireworks.

**Claude Debussy's Feux d'artifice**, released in 1913 as the final piece of his twenty-four preludes, artistically depicts a fireworks display. This innovative composition includes musical quotes from the French national anthem and challenges pianists with its complex structure.

**Oliver Knussen's Flourish with Fireworks**, composed in 1988 and inspired by Stravinsky, was created for the London Philharmonic Orchestra.

**The song "Fire©Flower" by halyosy**, released in 2008, is a pop rock piece about a boy's summer love, using fireworks as a metaphor.

**Katy Perry's song "Firework,"** from her album Teenage Dream (2010), is a self-empowerment anthem with themes of inspiration, influenced by Jack Kerouac's novel, On the Road. The lyrics encourage listeners to recognize their worth and shine brightly.



**Georges de La Tour** was a French Baroque painter known for his unique use of candlelight in art, creating an ethereal atmosphere. His painting "**Magdalen with the Smoking Flame**" features Mary Magdalene as an elderly woman reflecting on Jesus's life. The light symbolizes God's guidance, while the skull represents mortality, encouraging viewers to appreciate life's fleeting nature.

**The Great Fire of London**, which occurred from September 2-6, 1666, devastated the city, destroying 13,200 houses and many significant buildings. Although around 70,000 inhabitants lost their homes, only six deaths were officially recorded. The fire began at a baker's house, and poor leadership from the Lord Mayor contributed to the disaster. The painting by **Jan Griffier** captures the chaos and despair of the event.





**Paul Sandby's painting of Windsor Castle** celebrates **Guy Fawkes Night**, showing townspeople enjoying festivities around a bonfire. In this work, fire symbolizes victory rather than destruction.

**J. M. W. Turner's "The Burning of the Houses of Lords and Commons"** depicts the devastating fire of October 16, 1834, highlighting the struggle against nature's fury. Turner's expressive style conveys the vastness and chaos of the scene.



**Tsukioka Yoshitoshi** was a significant Ukiyo-e artist who created **"The Moon in Smoke"** in 1886, depicting a firefighter amid flames and smoke. The firefighter wears a distinctive coat and holds a flag to guide his squad, highlighting the competition among fire brigades for recognition and rewards. This work is part of his "One Hundred Aspects of the Moon" series, showing various figures in moonlit scenes.

**Alberto Burri** was an Italian artist known for his innovative use of materials like burlap and plastic. His experimentation with fire as a creative technique became one of his signatures, showcased in his piece **"Red Plastic"** from 1961.



**Yves Klein**, a French artist, was influential in post-war art. He was a key figure in the Nouveau réalisme movement and a pioneer of performance art and minimalism. Created **"Fire Paintings"** by burning a whole sheet of paper by showing the destruction fire can cause, and the dangers it can come with.