Description

Process schematic

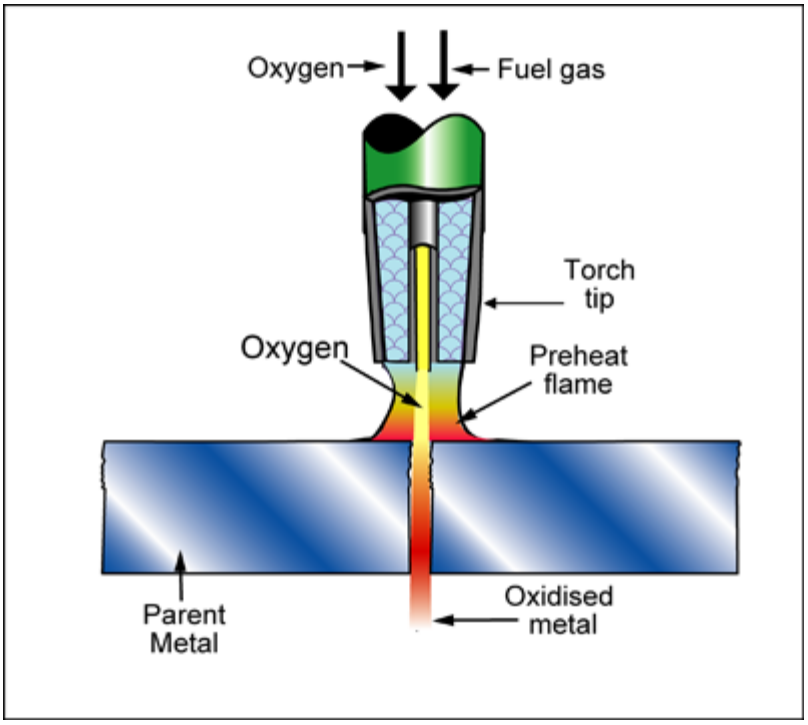

Figure caption

Flame, or oxy-fuel gas cutting.

The process

OXYFUEL GAS FLAME CUTTING is a metal cutting process in which a gas flame heats the surface to a sufficient temperature to trigger exothermic oxidation of the metal, sustained by an oxygen stream injected into the center of the flame. Thick plate can be cut.

Tradenames

Oxy-fuel cutting, OFC

Material compatibility

Metals - ferrous	✓
Metals - non-ferrous	✓

Shape

Flat sheet	✓

Economic compatibility

Relative tooling cost	low
Relative equipment cost	low
Labor intensity	medium
Economic batch size (units)	1 - 1e6

Physical and quality attributes

Range of section thickness	8	-	300	mm
Tolerance	1	-	3	mm
Roughness	6.3	-	80	µm
Surface roughness (A=v. smooth)	C			
Cutting speed	0.1	-	50	mm/s
Minimum cut width	3	-	5	mm

Process characteristics

Machining processes	✓
Cutting processes	✓
Discrete	✓

Supporting information

Design guidelines

OFC used for cutting steel, cast iron and cast steel. Other iron-base alloys and some nonferrous metals can be flame cut, although process modification may be required. Generally the effectiveness of flame cutting decreases as carbon increases. Distortion is severe in plate thinner than 8mm.

Technical notes

Cutting occurs by a combination of oxidation and melting.

Typical uses

Cutting plate for shipbuilding, structural fabrication, manufacture of earthmoving equipment, machinery construction, fabrication of pressure vessels and storage tanks.

The economics

OFC is more economic than other forms of cutting for thick

Links

MaterialUniverse

Reference