# FUEL IN THE FIRE HEAT

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**Abstract:**The volume that forms the combustion process is called a flame. A flame is formed by increasing the concentration of the substances that form it and the temperature. The length of the flame should correspond to the length of the working part of the furnace, so that the working volume can be burned during the combustion process of the fuel. Gas combustion can be kinetic and diffusion (absorption). Kinetic combustion occurs in a gas-air mixture. Diffusion combustion occurs in metallurgical furnaces. Every how fuel minimum and maximum (high) flare-up For example,

Ke**ywords:** The combustion of fuel depends on the oxidation of its components. Heat is released from them. The components of any fuel have their own combustion temperature.

**Introduction:** Fuel burning for following conditions execution necessary.vFlame harvest to be for fuel organization of the heat is consumed to the point of reaching the combustion temperature. Fuel oxygen with to contact fast entry condition, on the surface the more contact, the more intensely the fuel burns. Fuel when it burns chemical to react entering, oxidationv necessary.

Burning heat - heat energy to the amount, fuel complete It is formed due to combustion. For 1 *kg of solid and liquid fuel, 1* $m^l$ at is considered.

In this case, a low temperature is generated in the combustion chamber. This is because water vapor is formed in the hydrogen as a result of combustion. There is an equality between low and high heat as follows:

There are many ways to determine the amount of heat released by the

combustion of fuel. A fairly accurate value was determined by OI Mendeleev:

where 339; 1255; 109 - thermal effect, these values refer to 0.01 *kg* of the constituent.

Gas in the state fuel from burning came out heat following is found from the formula

This on the ground numerical coefficient - the burner organization the one who does , this 0.01 $m^3$ flammable to gas relevant value , *kDj* . $CO$ ; $H_2$ ; $CN_4$ etc. - amounts that make up the composition of the fuel in the gaseous state, %.

Calculations as a result to align the output data heat engineering on devices - conditional fuel phrase acceptance done. Conditional The heat released from the combustion of fuel is $Q_{sh.yo.} = 2930\ kDj/kg = 29.3\ MDj/kg$ .

When assessing the quality of fuel, the calorie or heat equivalent is adopted :

$E_k$ - amount how much big if, fuel price that much high will be. Some modern to heat in the ovens used fuels briefly about information: blastfurnace in the gas

*Fuel burning conditions*

The combustion of fuel depends on the oxidation of its components. Heat is released from them. The components of any fuel have their own combustion temperature.

Fuel burning for following conditions execution necessary:

flame harvest to be for fuel organization of the heat is consumed to the point of reaching the combustion temperature;

fuel oxygen with to contact fast entry condition, on the surface the more contact, the more intensely the fuel burns;

fuel when it burns chemical to react entering, oxidation necessary;

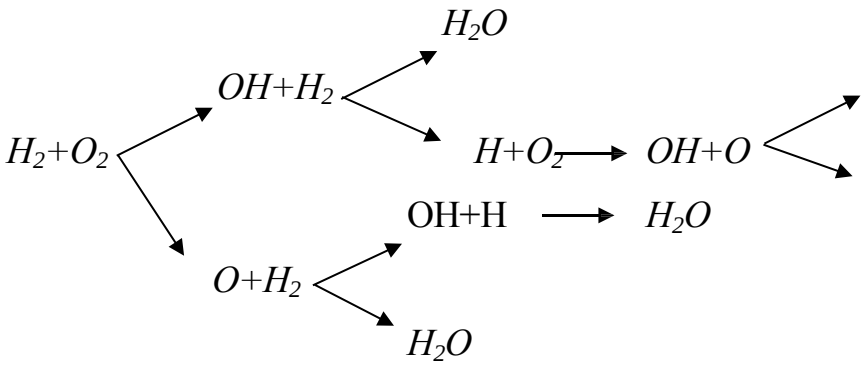
For high-quality combustion of solid fuel, it is necessary to reduce the amount of ash generated in the furnace. An increase in ash reduces the possibility of oxygen coming into contact with the fuel.

*Combustible of products composition and amount to determine, flare-up*

*temperature*

Russian scientist Academician NN Semyonov, together with his assistants, created the theory of a chain reaction that forms the active center of combustion. The speed of a chain reaction is 100,000 times faster than the speed of a molecular reaction. The chain reaction is divided into unbranched and branched.

For example, the combustion of hydrogen, like that of other gaseous fuels, produces a chain reaction. The oxidation of hydrogen can be expressed schematically as follows:




Where? molecule harvest if, this on the ground chain interruption harvest It will be. Wherever a hydrogen atom or radical is formed, the chain continues.

The volume that forms the combustion process is called a flame. A flame is formed by increasing the concentration of the substances that form it and the temperature.

The length of the flame should correspond to the length of the working part of the furnace, so that the working volume can be burned during the combustion process of the fuel.

Gas combustion can be kinetic and diffusion (absorption). Kinetic combustion occurs in a gas-air mixture. Diffusion combustion occurs in metallurgical furnaces.

Every how fuel minimum and maximum (high) flare-up For example, the minimum combustion of hydrogen ( *H2 ) gas is 4.00%, the maximum combustion is 74.20%, and the combustion temperature in* $_{the}$ 70.20% range is 530–590 °C.

Carbon oxide ( $CO$ ) gas 12.50 - 74.30 % between it flares up, 61.80 % It heats the firebox to a temperature of 610 – 658 °C.

Methane ( $CH_4$ ) gas 5.0 – 15 % it flares up, grass the area 645 - 850 It heats up to °C.

Ethan ( $C_2H_6$ ) gas 3.22 - 12.45 % between it flares up, 9.23 % also grass heats the area to a temperature of 530 – 554 °C.

Propane ( $C_3H_8$ ) gas 2.73 - 9.50 % between it flares up, 7.13% also The fire heats the area to a temperature of 530 – 588 °C.

Le Chatelier's law is used to ensure good combustion of the gas mixture :

on the ground $Z^{sh}$ - heating up lower or high burning value, %;

$Z_1, Z_2, Z_3$ - separately flammable to the street related was burning value;

$P_1, P_2, P_3$ - working output in the newspaper separately flammable article quantity, %.

***The problem.*** *Consists of the following:* $H_2 = 56$ %, $CH_4 = 24$ %, $CO = 7$ %, $C_2H_4 = 3$

%, $CO_2 = 3$ %, $H_2O = 1$ %, $N = 6$ % *grain organization found coke gas of combustion Determine the distance between the bottom and the top.*

***Solution.*** Using formula (1.18), *we calculate the lower and upper limits of coke oven gas combustion:*

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