

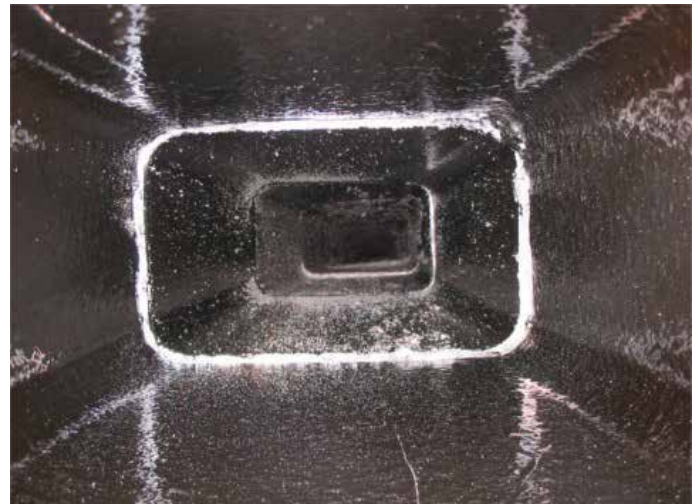
Creosote - causes for formation and ways for removal

When burning wood, no matter how it has been done, emissions are released, mainly in the form of gas or solid particles. This process depends not only on what heating appliance you use, but also how you operate with it. One of the main dangers when burning wood is the accumulation of creosote inside the fireplace, the pipes and the chimney.

The creosote is a sticky substance (composite mixture of tars, soot and other secondary products of combustion) with unpleasant odor, easily flammable and with a corrosive effect.



Creosote such as this can usually be brushed out



Glazed Creosote is difficult to clean and extremely flammable once ignited

If the fume formed during the combustion has a temperature less than 120°C , the gases condense on the surrounding surfaces, they combine themselves and crystallize forming the creosote.

The creosote develops into three main forms:

Fine dust – When it is mixed with water from the condensation, it drips down as penetrates in each gap soaks through the coat and stains appear on the walls.

Porous crispy crust

Greasy shiny glossy layer on the walls, which practically can't be removed unless when burns up.

The three forms can be found in the same chimney. Under whatever form is the creosote, it is easily inflammable. If it accumulates in sufficient quantity and ignites – its burning becomes energetic, with whistling, as the temperature reaches 2000°C – enough to destroy the chimney.

The amount of the creosote depends highly on the wood, which you burn. When you put raw or wet wood in the fire, the water contained in them evaporates and mixes with other gases. The temperature of the steam 100°C is considerably lower than the temperature, at which the volatile gases condense 120°C . So the availa-

bility of steam cools the chimney, the gases condense and creosote accumulates. So, the burning of raw or wet wood leads to excess consumption of fuel and also to increased possibility of fire in the chimney. For this reason the water contents in the wood must be minimal. Freshly cut down wood can have humidity till 50%, which after proper storage and drying must be reduced below 20%.

The shortage of air and the slow sluggish combustion are ideal to form creosote. One of the actions against its accumulation is the initial kindling of the fireplaces to become brisk, so that the depositions formed during the afterburning from the previous day may burn. It is better for the appliance to be fueled more often with logs smaller in size. After their fuelling, the opening for the primary air must be left open till their full flaring.

The temperature of the walls, along which the flue gases pass, is of essential importance for the accumulation of creosote. If the chimney is external, unpainted, if it is cracked and cold air gets in from outside – these are things, which contribute for intensive deposition.

With fireplaces for water heating the walls of the water jacket are a favorable place for condensation and accumulation of creosote, especially when initial kindling, when the fume is humid and heavy and the walls are cold. Therefore it is necessary for the pump to be controlled by a thermostat, which allows the temperature of the walls to increase quickly and restricts the depositions on them.

The cleaning of the surface of the water jacket off the accumulated creosote is necessary for two reasons:

- The heat exchange between the hot gases and the water deteriorates.
- The passage section of the flue gases is decreases.

When the depositions are in the form of a dust or porous crust, the cleaning is done with the help of a solid object or a brush through the door or the openings provided for the purpose, as it is shown on the picture, in succession from top to bottom.

If, however, on the walls a thick shiny layer has been deposited, it is recommended:

- The water jacket shall be drained and the fireplace shall be detached from system;
- The decorative sides shall be removed (if there are any);
- The thermostat shall be removed from the boilers:
- In the combustion chamber paper shall be kindled, which shall lead to combustion of the creosote and its transformation into dust.

Then the cleaning is done in the indicated sequence.

