

# PRITY

## FIREPLACES, STOVES AND FIREBOXES TO BUILD IN (WITHOUT FORCED VENTILATION AND WATER HEAT EXCHANGER)

### TECHNICAL DESCRIPTION

The fireplaces of Prity are intended for heating of private houses and public premises using solid fuel. The variety of models permits the formation of the desired interior with the purpose of creating coziness, aesthetics and heat comfort. For cooking the technology of embers, in an oven, on a plate can be used.

Model	Heat Output, kW	Heatable volume, m <sup>3</sup>	Dimensions, cm	Mass, kg
Fireplace PRITY Mini	5	60	39x47x62	48
Fireplace PRITY K1	9	110	45x40x76	64
Fireplace PRITY K1 CP	9	110	46x44x76	71
Fireplace PRITY K1 R	9	125	43x39x75	62
Fireplace PRITY K1 RD	6	70	43x42x81	65
Fireplace PRITY K1M204x269 R	7	85	38x42x76	57
Fireplace PRITY K2	10	125	49x45x81	75
Fireplace PRITY K2 D	7	85	49x45x81	87
Fireplace PRITY K2CP	10	125	50x48x81	86
Fireplace PRITY K22	10	125	49x45x81	76
Fireplace PRITY K22 D	7	85	49x45x81	89
Fireplace PRITY K22CP	10	125	50x48x81	86
Fireplace PRITY S1	10	125	49x46x83	76
Fireplace PRITY S1 D	7	85	49x46x83	92
Fireplace PRITY S2	10	125	49x46x83	77
Fireplace PRITY S2 D	7	85	49x46x83	96
Fireplace PRITY SR	11	135	49x46x94	89
Fireplace PRITY SK	10	125	47x54x82	96
Fireplace PRITY AM	12	160	72x55x82	96
Fireplace PRITY AM D	9	112	72x55x82	112
Fireplace PRITY FM	12	150	49x46x92	94
Fireplace PRITY FG	14	175	57x53x93	117
Fireplace PRITY	15	185	65x55x116	119
Fireplace PRITY D	11	135	65x55x116	137
Fireplace PRITY WD	15	185	65x55x78	100
Fireplace PRITY WD D	11	135	65x55x78	121
Cooking stove PRITY 2M	14	175	93x59x79	105
Firebox PRITY A	14	175	65x65x65	105
Firebox PRITY M	13	160	70x58x64	114
Firebox PRITY C	15	185	66x57x72	126
Firebox PRITY AC	14	175	66x55x79	116
Firebox PRITY ATC	14	175	109x80x68	139

Firebox PRITY TC	16	200	109x60x68	165
Firebox PRITY G	16	200	85x57x65	139

The data indicated above of the models to build in are valid with a built-in system for convection of the heat transferred from the built-in firebox.

\*\* With calculable power of 80 W/m<sup>3</sup>.

The indicated heat power of the models have been fixed after investigations according to standardized conditions. Achieving the desired power depends on the selected fuel with the necessary calorificity and humidity; its subsequent kindling and refueling; the regulation of the primary and the secondary air as well as the draught; the organizing of effective air heat exchange etc.

All models are made of basic sheet iron for the body of the fireplace, 2 mm thick, and a plate 3-4 mm. They are equipped with a cast iron grate, doors for refueling, ash-pan, brick-facing, and a valve for adjusting the draught of the chimney. The fireboxes have a thermo shock glass ceramics pane, and the ovens have a hardened glass pane.

For calculating the necessary fuel it must be taken into account that for the heating of one cubic metre, 25 to 180 Watts are necessary depending on the exposure, the insulation, the outside temperature and the wind.

It is known that the correlation between the price and the calorificity of the chosen fuel indicates that the heating with solid fuel is the most economical method. As a result of the long experience and the tests carried out in the laboratories of "Prity 95" Ltd., optimum characteristics and 60-80 % efficiency for all produced fireboxes, stoves and boilers have been achieved.

## INSTALLATION INSTRUCTIONS

The fireplace is placed on a stable horizontal fireproof floor. For protecting the floor a stable and fireproof base can be used, which shall stick out before the fireplace at least 50 cm in front and 30 cm at the side.

In the radiating area of the fireplace, at a distance of 80 cm around it, there shall not be any objects burnable and damageable by the radiated heat.

Prior to (Before) connecting the fireplace to the chimney, consult a skilled worker.

The connecting elements (rosette and smoking pipes) must be fixed tightly and lasting, so that they may not get into (enter) the passage section of the chimney. The smoking pipes shall have the same size as the connecting pipe of the fireplace.

It is advisable that the fireplace work with a separate chimney. If other appliances are connected to the same chimney, it must be calculated for that.

Fresh air must enter (get in) the fireplace at least 4 m<sup>3</sup>/h for each kilowatt from its heat output. When necessary a flow from adjacent premises or outside air is ensured.

The burning process of the fireplace must not feel shortage of air on the action of gravitational or forced aspirations, since this is a prerequisite for insufficient combustion or returning of flue gases in the premises.

## OPERATION INSTRUCTIONS

### Fuel

Use only raw chemical natural wood, as well as wooden briquettes without adhesives.

It is important that the wood be dry. Dry are called those wood which have humidity under 20 %. This is achieved when they stay in a dry and airy place at least for 2 years. The wood shall be kept cut and arranged as their thickness must be between 5 and 15 cm.

Why the humid wood shall not be used?

1. The humidity in the wood decreases their warmth when burning. A big part of the heat is spent on evaporation of the water, and the rest can turn out insufficient to ensure the necessary heating. For example, 20 kg humid wood can mean 10 kg dry wood and 10 litres water, added to the fire.
2. The water vapour decreases the combustion temperature and contributes to the formation of soot, which accumulates and forms a black hard layer on the walls of the combustion chamber, glass ceramics, pipes and the chimney.
3. The pollution of the environment increases because the gases leave the chimney unburnt.

### **Kindling**

The destination of the kindling is to warm up the walls of the combustion chamber, the pipes and the chimney to create draught though a stable blazing fire without being necessary to open the door often to finish its preparation.

1. Before kindling clean the ash off the grate.
2. Open the valves for the primary air and for the flue gases completely.
3. Put two chopped pieces of wood in the combustion chamber, parallel to one another, from both sides of the grate.
4. Crush a read newspaper and put it on the front part of the grate among the logs. Don't use glossy or impregnated paper.
5. Put small dry twigs on the paper. It is preferable easy burning kindling of softwood. Arrange the kindling, so that they may not fall down and stifle the arising fire. Put some finely chopped logs on the kindling.
6. Kindle the paper. When the paper burns up, close the door of the combustion chamber.
7. Leave the valve of the primary air entirely open, until the flame spreads all over the whole combustion chamber.

The purpose is to kindle the fireplace at the first try, with a match, without unnecessary fuss and repeated adding of paper and kindling.

### **Fuelling with wood**

Don't expect that the heat radiated from the fire be permanent in time. Logs burn in the best way in cycles. Cycle is the time from the kindling of the logs put on the embers till their reduction to a new layer of embers. Each cycle can ensure heating for several hours depending on how much logs and how they are fuelled.

Never add only one or two logs each time. Their bigger number is necessary to form a layer of embers which keeps the heat and maintains the fire.

The finely chopped logs, flung about crosswise burn more quickly because the entering air is able to reach all the pieces simultaneously. Such arrangement is suitable when the heat is necessary to be given off intensively.

To achieve a long stable fire, gather the embers on the grate and put bigger logs compactly on them. The close and parallel arrangement of the logs prevents penetrating of air and flames among them and preserves the interior of the pile to burn later. Open entirely the primary air. When the logs most outside kindle, decrease the air to achieve the intensity of burning desired by you.

How many logs are necessary depends on the output (power) of the fireplace and the desired heating. The amount of dry logs to fuel is 0.36 to 0,5 kg per hour for each kilowatt useful heat output. The smaller number is for drier logs.

### **Signs of right burning**

1. Burning must run in the presence of flames till the logs convert into embers. The purpose is not to allow any smouldering and smoking. The smoke is no normal product during the burning of the logs, and it is a consequence of bad combustion.
2. If there are fireproof bricks in the fireplace, they must maintain their natural colour in yellow-brown, not in black.
3. With dried logs and sufficient primary air the immediate kindling must be achieved on each new refueling.
4. The glass ceramics of the door (if there is any) must remain clean.
5. The gases going out of the top of the chimney must be transparent or white. The grey smoke indicates that there is smouldering or bad burning.

### **Chimney**

The chimney is intended to draw the combustion products out of the fireplace and to throw them away in the atmosphere beyond (outside the limits of) the abode.

The upward draught or the “pulling” of the chimney is a result of the combination between its height and the difference in the temperatures of the flue gases and the air outside. The column of hot flue gases in the chimney has smaller weight than the equivalent column of cold air outside, so that the pressure in the lower end is smaller than the atmospheric (air) pressure outside. This quite small difference in the pressures creates the draught.

The greater draught permits the use of a fireplace with a bigger opening of the combustion chamber, respectively with a bigger door and glass pane. The lower draught is a prerequisite for difficult kindling and returning of flue gases, and it is overcome through quick kindling and burning of dry, thin and fast-burning sticks and paper. After kindling of the fire and warming up of the chimney, its draught increases. For economical regime and high efficiency after the warming up of the chimney, the draught must be decreased to 5-10 Pa, so that there should be no return of the flue gases (smoking) with a closed door.

### **The main causes of insufficient draught are the following:**

- layering of soot inside the chimney, which decreases its diameter and increases the resistance of the rising flue gases;
- a cracked wall of the chimney or a loose rosette;
- loose smoke pipes, or pipes pushed deeply in the chimney, as in this way they decrease the diameter or plug up the chimney;
- The use of a single chimney with a small draught by several stoves on the same level (in close proximity);
- Smoking also appears when the weather outside has suddenly got warmer - the warm gases from the kindling of the fire can't escape through the cold chimney. In this case a bigger amount of quickly burning sticks and paper is used. The same effect takes place while attempting to kindle a fire on the first (ground) floor, provided the same or an adjacent chimney is already being used by a fireplace on the top floor;
- when the ceiling is not air-tight or there are open windows on an upper floor, the effect “staircase-chimney” takes place, creating a reverse draught;
- When a chimney is located in an area of overpressure caused by a wind.

On right connection, servicing and maintenance the fireplace doesn't give off smoking emissions in the premises. If nevertheless this occurs, the premises are aired and the cause of the filling with smoke must be found out and removed.

### **Don't burn refuse!**

Burning of refuse leads to unpredictable consequences because in contrast to the dry wood, the garbage contains various substances which react, when they burn together. For example, the garbage contains various coloured papers and plastics. When you burn them, you don't destroy them, but you only change their chemical composition, adding a whole cocktail of poisons in the flue gases. The result is the same when we burn each kind of refuse, only the kind of the emitted poisons changes. One of the products on burning of the papers and the plastics is dioxin – a highly poisonous chemical, which doesn't decompose and gets into the tissues of the animals and the people. All the produced fireplaces and stoves have been designed and tested for operation with dry wood without glues and paints. It is allowed the use of an ordinary newspaper only during the initial kindling.

Don't burn:

- garbage,
- stuck or painted softwood,
- plywood or boards of wooden parts,
- wooden sleepers.

### **Cleaning, maintaining and preservation**

After purchase, the fireplace must be carried carefully and be protected from mechanical damages.

It is painted with thermo-resistant black-lead which self-bakes during the first one or two kindles and becomes mechanically stable. When the paint self-bakes, the premises must be aired to remove the fumes.

During operation the door of the fireplace must be closed. On opening of the door to refuel the openings for the primary air are closed and one shall be careful not to drop down fuel and prevent it from falling out of the fireplace.

The power of the fireplace is regulated with the help of the valves for the primary air and on the outlet for the flue gases.

The cooking stoves are switched over in regime "baking" through pulling the valve out over the oven.

Don't touch the fireplace with your bare hands, while it is hot.

The ash-pan shall be cleaned regularly. Don't throw the ash in plastic vessels.

Clean regularly the passage sections of the flue gases in the fireplace and the pipes.

The painted surfaces are cleaned with a damp cloth. Don't use cleaning detergents. If you want to freshen the paint, use a suitable phial of sprayer.

To clean easier the cavities in the cooking stove, the movable bottom of the oven is raised.

The glass pane is wiped with a damp towel, and when necessary it can be washed with cleaning detergents and running water after its removing from the door. The hardened glass panes are washed and dried when cold.

To prevent the condensation and a possible corrosion when the fireplace is not operated for a long time (for example during the non-heating period), it shall be cleaned from the ash and remainders of fuel. Leave the door a little ajar, and the adjusting elements – open, for a better circulation around and through the fireplace.

Do not perform any unauthorized modifications in the design!

During repairs only original spare parts by the producers shall be used.