

## **SKWAT**

### **„SADPAL”**

#### **catalyst for soot combustion (P165406)**

#### **additive to solid fuels**

It is typically used for complete afterburning of soot in every location in the boiler (furnace, combustion chamber, chimney canals)

#### **IT IS NEITHER EXPLOSIVE NOR FLAMMABLE**

#### **CERTIFICATES**

- “SADPAL” is certified by Warsaw Technical University and Institute of Inorganic Technology - ITN/99/90;

- “SADPAL” has an expert opinion of the Institute of Material Science, School of Mining and Metallurgy in Cracow, regarding the boiler corrosion;

- “SADPAL” has an expert opinion of Warsaw Technical University - Faculty Of Environmental Engineering, regarding liquidation of higher fractions of aromatic polycyclic aromatic hydrocarbons /PAH/, including 3,4-benzopirane;

- “SADPAL” has an opinion of Warsaw Technical University - Faculty Of Environmental Engineering, regarding natural environment impact;

#### **REDUCTIONS IN CHARGES FOR ATMOSPHERE POLLUTING**

Providing that “SADPAL” product is used regularly, the following reductions in payments are possible:

- for solid grates up to 55%;

- for mechanical grates up to 25%;

#### **APPLICATION OF “SADPAL” ELIMINATES**

1. polluting of atmosphere with soot (black smoke);

2. higher fractions of aromatic polycyclic aromatic hydrocarbons /PAH/, including 3,4-benzopirane;

3. emission of carbon monoxide into atmosphere;

4. requirement to perform mechanical removal of soot sediments from boilers;

5. down-time related to mechanical removal of soot sediments from boilers;

6. soot combustion in the chimney canal.

#### **IT ALSO CAUSES REDUCTION IN:**

1. emission in sulphur dioxide into the atmosphere by approximately 12 – 20% due to coal savings;

2. coal consumption, ranging from 12 to 20% depending on its caloric value;

3. the content of SO<sub>2</sub> and NO<sub>x</sub> in combustion fumes, ranging from 10 to 20%;

4. corrosion speed of steel construction elements of grate furnaces in boilers and combustion gases disposal installations;

5. increases the efficiency of cyclones, multicyclones and electrofilters.

#### **UTILITARIAN PROPERTIES AND APPLICATION RANGE OF “SADPAL”**

“SADPAL” is a green powder – a mixture of inorganic salts, which are subject to decomposition into substances with catalytic properties under temperatures in excess of 65°C.

This product is used to combust soot and organic substances to their final products – carbon dioxide and water.

Application of “SADPAL” does not pose threat to grate furnaces and

combustion gases disposal installations; quite on the contrary – it extends their life cycle (expert opinion of the Institute of Material Science, School of Mining and Metallurgy in Cracow from the 20<sup>th</sup> of February 1991).

“SADPAL” improves life cycles for cyclones, multicyclones and electrofilters. It is not a flammable or toxic product (evaluation issued by the National Institute of Hygiene in Warsaw, number 24/B-23/91), is not explosive and does not pose threat related to its improper application or over-dosage. Since 1991 it has been successfully applied in hundreds of plants and thousands of individual customers.

Major customers include, the following: “KUPIECTWO” Piotr Bodaszewski in Zręcin, Firma Wielobranżowa “WIR” Krzysztof Wirzinkiewicz in Olsztyn, MPGK Jasło, PKP Rzeszów, Glass Works Jasło, Coal depots Nowy Sącz and many more.

Attention: please find a complete list of distributors, in chronological order of voivodeships, attached to this document (regards fuel depots, shops and minor customers).

“SADPAL” eliminates soot and fly-ash through their combustion.

Uncombusted hydrocarbons, including benzopirane, are combusted together with soot deposits. Carbon monoxide is combusted to carbon dioxide.

Reduction in the level of SO<sub>2</sub> by approximately 10-20% and NO<sub>x</sub> by approximately 5 -10% in the combustion gases is the direct result of their being bound by the chemical components of “SADPAL”.

“SADPAL” demonstrates activity in the following groups:

- cleaning of the boiler surfaces;
- enhancement of the combustion processes – decrease in the amount of solid molecules included in the combustion gases and decrease in the carbon dioxide concentration;
- reduction in the SO<sub>2</sub> and NO<sub>x</sub> concentrations;
- reduction in the high and low temperature corrosion;
- reduction in the total dust content;

Regular application of “SADPAL” with the application ratio of 1 – 2 kilograms per a tone of coal eliminates any deposits in the furnace and heating pipes, maintaining them in working order during the heating season.

Thanks to that, the down-time designated for furnace cleaning is short and only involves the removal of ashes collected in the back part of the furnace.

As a direct result of “SADPAL” application, the ash deposits change their structure, become loose and fall off the walls, because the soot – which was keeping them together – was burned out. Newly sedimented ash deposits are burned out immediately – the walls of the furnace remain clean all the time.

“SADPAL” does not cause additional mineral sedimentation on heating elements (heating screens) – it does not contain any dolomite in its structure.

Due to its numerous and above mentioned advantages, it is widely applied during exploitation of furnaces heated with coal, fine coal, wood, peat, brown coal, both in medium and large heat generation plants. It significantly improves the boiler efficiency, at the same time keeping its walls clean. Every millimetre of sediment (slag, soot sediment) of the boiler’s wall increases fuel consumption by 10%.

## **APPLICATION**

The first application of “SADPAL” in the given boiler should feature such an amount of the product, which allows for the combustion gases, emitted from the furnace, to be of white colour (for example, for the boiler with total area of 25m<sup>2</sup>, approximately 6 kilograms of the product should be introduced). Then,

“SADPAL” is introduced into the furnace mixed with the fuel at the ratio of 1-2 kilograms of the product per 1 tonne of coal. In large heat generating plants the product might be introduced into the boiler with the use of a perpetual screw, driven by the direct current (DC) engine (with varying speed), placed over the coal (fuel) feeding mechanism. The product is introduced into smaller boilers by hand dusting the powder onto the proper amount of coal (in the wheel-barrow, in a heap with the proper ratio of 1-2 kilograms of coal per 1 tonne of fuel).

The combustion gases emitted from the chimney ducts ought to be of white colour, when “SADPAL” is applied.

### **COST EFFECTIVENESS OF “SADPAL” APPLICATION**

#### **ECOLOGICAL EFFECTS**

- elimination of soot due to its complete combustion;
- elimination of benzopirane;
- reduction in carbon monoxide emission, reduction in total emission of combustion gases by approximately 10- 20% due to savings on solid fuel consumption;
- reduction in emissions of SO<sub>2</sub> by approximately 10-20% and NO<sub>x</sub> by approximately 5-10%;
- reduction in the total amount of slag and ash production due to savings on solid fuel consumption;
- reduction in emission of ashes;

#### **ECONOMICAL EFFECTS**

- payment reductions ranging from 25 to 55% due to elimination of soot, benzopirane, reduction in CO, SO<sub>2</sub> and NO<sub>x</sub> emissions, reduction in total dust content;
- coal consumption savings ranging from 10 to 20%;
- maintaining boilers and furnaces in working order during the heating season due to elimination of slag sediments;
- elimination of mechanical cleaning of boilers and furnaces;
- reduction in down-time related to mechanical removal of soot and slag sediments in the boilers and furnaces;
- extension in life expectancies for steel construction elements of grate furnaces in boilers and combustion gases disposal installations;
- improvement in the efficiency of dust removing mechanisms;

#### **ECONOMICAL EFFECTS – SIMPLIFIED VERSION**

Let's consider a heat generating plant burning 1000 tonnes of coal (solid fuels).

Assuming a minimum 12% fuel savings when applying 2 kilograms of “SADPAL” per 1 tonne of coal:

1000 tonnes x 12% = 120 tonnes x 300 PLN/tonne = 36000,00 PLN

“SADPAL” – cost of purchasing 2000 kilograms x 3,30 PLN/kg = 8000,00 PLN

Transportation costs with average distance of 500 km (both ways) – 500 km x 1,80 PLN/km = 900 PLN

Charge reductions due to application of “SADPAL” product (charge reduction rates from 1993):

- without “SADPAL” 8 PLN

- with “SADPAL” 4 PLN

- profit 4 PLN

1000 tonnes x 4 PLN/tonne = 4000,00 PLN

Economical effects = 27100,00 PLN

The remaining effects related to protection of the natural environment: elimination of down-time, extension in life expectancies of heat generating elements, decreased transportation load of coal and waste; therefore it is necessary to assume a corrective coefficient ranging from 1,6 to 2,0 for the calculated economical effects.

The economical and extraeconomical effects in the elaborated example are estimated at approximately 74200,00 PLN.

- extraeconomical effects  $27100 \times 1,6 = 43360,00$  PLN

- economical effects 27100,00 PLN

### **PACKAGING, STORING AND TRANSPORTATION**

“SADPAL” is packed in large, collective sacks of 30 kilograms. The collective sacks contain the following customer packages:

- customer package, 250 grams:

- customer package, 500 grams: -

customer package, 750 grams:

customer package, 1000 grams :

- customer package, 2000 grams:

“SADPAL” might also be packed in collective cartons of 18 kilograms. Each collective carton contains 1 kilogram packages, which include the following customer packages:

- customer package, 250 grams:

- customer package, 500 grams:

- customer package, 1000 grams:

“SADPAL” ought to be stored in cool, dry places, not extremely airy and it ought to be protected against water.

“SADPAL” ought to be transported with covered means of transport in accordance with the legally valid regulations.

### **ORDERS AND PRODUCT COLLECTION**

Product manufacturer: “SKWAT” Gwardiak S., Gwardiak W. Legal Company, Żółtki Kolonia 22, 16-070 Choroszcz (road access: road from Warsaw to Białystok, 10 kilometres from Białystok, turn at the junction Choroszcz – Dzikie and follow the road for approximately 300 meters in the direction of Dzikie). Telephone/fax (+48 85) 7191383, 7193940. All parties interested in purchasing the product are asked to place orders to the above-mentioned address or any of the distribution points in the territory of Poland.

### **TERMS OF PAYMENT**

It is possible to negotiate the method of payment and payment period: by cash, by a telegraph, a bank transfer (after presenting the bank transfer order executed at the customer’s bank – only the original is valid).

We are in possession of the quality management systems PN-EN ISO 9001:2001, PN-EN ISO 14001:1998 and PN-N 18001:1999.

### **SKWAT**

„SADPAL” II

**catalyst for soot combustion (P165406, P365431)**

**additive to solid fuels for small furnaces and fireplaces**

It is typically used for complete afterburning of soot in every location in the fireplace (furnace, combustion chamber, chimney canals)

**IT IS NEITHER EXPLOSIVE NOR FLAMMABLE**

### **CERTIFICATES**

- “SADPAL” is certified by Warsaw Technical University and Institute of Inorganic Technology - ITN/99/90;

- “SADPAL” has an expert opinion of the Institute of Material Science,

School of Mining and Metallurgy in Cracow, regarding the boiler corrosion;

- "SADPAL" has an expert opinion of Warsaw Technical University - Faculty Of Environmental Engineering, regarding liquidation of higher fractions of aromatic polycyclic aromatic hydrocarbons /PAH/, including 3,4-benzopirane;

- "SADPAL" has an opinion of Warsaw Technical University - Faculty Of Environmental Engineering, regarding natural environment impact;

#### **APPLICATION OF "SADPAL" ELIMINATES**

1. polluting atmosphere with soot (black smoke);
2. higher fractions of aromatic polycyclic aromatic hydrocarbons /PAH/, including 3,4-benzopirane;
3. emission of carbon monoxide into atmosphere;
4. requirement to perform mechanical removal of soot sediments from furnaces and fireplaces;
5. soot combustion in the chimney canal.

#### **IT ALSO CAUSES REDUCTION IN:**

1. emission in sulphur dioxide into the atmosphere by approximately 12 – 20% due to coal savings;
2. coal consumption, ranging from 12 to 20% depending on its caloric value;
3. the content of SO<sub>2</sub> and NO<sub>x</sub> in combustion fumes, ranging from 10 to 20%;
4. corrosion speed of steel construction elements of grate furnaces in boilers and combustion gases disposal installations;
5. temperature of combustion gases by 100şC (reduction in fuel consumption by approximately 5%).

#### **UTILITARIAN PROPERTIES AND APPLICATION RANGE OF "SADPAL"**

The very essence of the "SADPAL" II product is the grain size reduction to 100 microns and humidity ranging from 12 to 16 mass fractions.

This grain size reduction is especially important in fireplaces heated with wood. The smaller the grain size, the better the adhesion, hence the contact area between the product grain and wood increases, improving the product's overall effectiveness by 25 – 30%.

Application of "SADPAL" does not pose threat to grate furnaces and combustion gases disposal installations; quite on the contrary – it extends their life cycle (expert opinion of the Institute of Material Science, School of Mining and Metallurgy in Cracow from the 20<sup>th</sup> of February 1991).

It is not a flammable or toxic product (evaluation issued by the National Institute of Hygiene in Warsaw, number 24/B-23/91), is not explosive and does not pose threat related to its improper application or over-dosage. It has been successfully used by thousands of individual customers.

"SADPAL" eliminates soot and fly-ash through their combustion.

Uncombusted hydrocarbons, including benzopirane, are combusted together with soot deposits. Carbon monoxide is combusted to carbon dioxide.

Reduction in the level of SO<sub>2</sub> by approximately 10-20% and NO<sub>x</sub> by approximately 5 -10% in the combustion gases is the direct result of their being bound by the chemical components of "SADPAL".

"SADPAL" demonstrates activity in the following groups:

- cleaning of the boiler surfaces;
- enhancement of the combustion processes – decrease in the amount

of solid molecules included in the combustion gases and decrease in the carbon dioxide concentration;

- reduction in the SO<sub>2</sub> and NO<sub>x</sub> concentrations;
- reduction in the high and low temperature corrosion;
- reduction in the total dust content;

Regular application of "SADPAL" with the application ratio of 1 – 2 kilograms per a tone of coal eliminates any deposits in the furnace and heating pipes, maintaining them in working order during the heating season.

### **PRODUCT APPLICATION**

The whole package of product is applied into the fireplace or small central heating furnace (the paper package), then, after approximately 30-40 minutes another package of product is applied if required.

The package size depends on the furnace or fireplace size. The product is sold in the following weights: 25, 50, 75 and 100 grams. The estimated dosage is approximated at 25 grams per 4-6 kilograms of combustion products.

The final dosage must be settled in an experimental manner, there is no threat related to overdosing, the shortage of the product is visible on the furnace walls.

Addition of the „SADPAL" II product brings about visual changes in the flame colour (yellowish blue flames).

### **COST EFFECTIVENESS OF "SADPAL" APPLICATION**

#### **ECOLOGICAL EFFECTS**

- elimination of soot due to its complete combustion;
- elimination of benzopirane;
- reduction in carbon monoxide emission, reduction in total emission of combustion gases by approximately 10- 20% due to savings on solid fuel consumption;
- reduction in emissions of SO<sub>2</sub> by approximately 10-20% and NO<sub>x</sub> by approximately 5-10%;
- reduction in the total amount of slag and ash production due to savings on solid fuel consumption;
- reduction in emission of ashes;

#### **ECONOMICAL EFFECTS**

- payment reductions ranging from 25 to 55% due to elimination of soot, benzopirane, reduction in CO, SO<sub>2</sub> and NO<sub>x</sub> emissions, reduction in total dust content;
- coal consumption savings ranging from 10 to 20%;
- maintaining boilers and furnaces in working order during the heating season due to elimination of slag sediments;
- elimination of mechanical cleaning of boilers and furnaces;
- reduction in down-time related to mechanical removal of soot and slag sediments in the boilers and furnaces;
- extension in life expectancies for steel construction elements of grate furnaces in boilers and combustion gases disposal installations;
- improvement in the efficiency of dust removing mechanisms;

### **PACKAGING, STORING AND TRANSPORTATION**

"SADPAL" is packed in collective cartons of 18 kilograms. Each collective carton contains 36 packages of 0,5 kilogram each or 18 packages of 1 kilogram each.

The price of "SADPAL" II in 0,5 kilogram packages is estimated by the manufacturer at:

- customer package, 25 grams, 20 pieces: 9,00 PLN + 22% VAT
- customer package, 50 grams, 10 pieces: 6,50 PLN + 22% VAT
- customer package, 100 grams, 5 pieces: 5,00 PLN + 22% VAT

The price of "SADPAL" II in 0,75 kilogram packages is estimated by the manufacturer at

- customer package, 75 grams, 10 pieces: 9,00 PLN + 22% VAT

The price of "SADPAL" II in 1-kilogram packages is estimated by the manufacturer at

- customer package, 25 grams, 40 pieces: 18,00 PLN + 22% VAT
- customer package, 50 grams, 20 pieces: 13,00 PLN + 22% VAT
- customer package, 100 grams, 10 pieces: 10,00 PLN + 22% VAT

Providing that the manufacturer conducts the deliveries, the net prices will increase by 0,35 PLN/kg.

"SADPAL" II ought to be stored in cool, dry places, not extremely airy and it ought to be protected against water.

"SADPAL" II ought to be transported with covered means of transport in accordance with the legally valid regulations.

### **ORDERS AND PRODUCT COLLECTION**

Product manufacturer: "SKWAT" Gwardiak S., Gwardiak W. Legal Company, Żółtki Kolonia 22, 16-070 Choroszcz (road access: road from Warsaw to Białystok, 10 kilometres from Białystok, turn at the junction Choroszcz – Dzikie and follow the road for approximately 300 meters in the direction of Dzikie). Telephone/fax (+48 85) 7191383, 7193940. All parties interested in purchasing the product are asked to place orders to the above-mentioned address or any of the distribution points in the territory of Poland.

### **TERMS OF PAYMENT**

It is possible to negotiate the method of payment and the payment period: by cash, by a telegraph, a bank transfer (after presenting the bank transfer order effected at the customer's bank – only the original is valid).

We would like to inform hereby that cooperation with "SKWAT" Gwardiak S., Gwardiak W. Legal Company ZPChr provides measurable benefits in the form of reductions in payments for PFRON in accordance with Legislation Journal number 123 from 1998, which on average are estimated at 2,018% of net value of products and services purchased in our company.

We are in possession of the quality management systems PN-EN ISO 9001:2001, PN-EN ISO 14001:1998 and PN-N 18001:1999.

### **SKWAT**

#### **„SADPAL" II**

#### **catalyst for soot combustion (P165406, P365431)**

#### **additive to solid fuels for fireplaces and central heating furnaces**

#### **IT IS NEITHER EXPLOSIVE NOR FLAMMABLE**

### **CERTIFICATES**

It is typically used for complete afterburning of soot in every location in the fireplace (furnace, combustion chamber, chimney canals).

The very essence of the "SADPAL" II product is the grain size reduction to 100 microns and humidity ranging from 12 to 16 mass fractions.

This grain size reduction is related to large area when recalculated into unitary weight and this – in turns – results in efficiency and increased application ratio. The small grain size is necessary in order to improve adhesion and contact area when heating up fireplaces with wood. In all other situations (combustion of coal, peat, sawdust), small grain size and low humidity content are of lesser importance apart from the fact that reduction in

grain size brings about improvement in the overall effectiveness ranging from 25 to 30%.

“SADPAL” possesses high penetration properties and is capable of destroying any slag deposits present in the fireplace and boilers. By combusting the soot it loosens and destroys the slag deposit structure hence cleaning up the walls of heating elements of fireplaces and boilers. The catalyst eliminates atmospheric pollution with soot and carbon monoxide. Along with total elimination of soot, a complete elimination of pitch-related substances also occurs.

The product decreases the fuel consumption because of the improvement in heat conduction coefficient due to lack of slag and soot deposits and complete combustion of coal and carbon monoxide.

“SADPAL” demonstrates activity in the following groups:

- cleaning of the boiler surfaces;
- enhancement of the combustion processes – decrease in the amount of solid molecules included in the combustion gases and decrease in the carbon dioxide concentration;
- reduction in the SO<sub>2</sub> and NO<sub>x</sub> concentrations;
- reduction in the high and low temperature corrosion;
- reduction in the total dust content;
- decrease in the temperature of combustion gases by 100şC (reduction in the temperature of combustion gases by every 17şC provides savings in fuel consumption of 1%).

Due to the above-mentioned advantages it is widely used in fireplaces and boilers heated with solid fuels (coal, peat, wood, sawdust). Every millimetre of sediment (slag, soot sediment) of the wall of a boiler or small central heating furnace increases fuel consumption by 10%.

Paper packages are recommended for application of the product in the fireplaces and small central heating furnaces. Foil packages are not recommended for application in fireplaces because the remains of melted, uncombusted foil might get stuck in the furnace core or grate where it is difficult to remove them.

However, the foil packages pose no threat to small or larger central heating furnaces.

The whole product package is applied into the fireplace or small central heating furnace (the customer package), then, after approximately 30-40 minutes another product package is applied if required.

The package size depends on the furnace or fireplace size. The product is sold in the following weights: 25, 50, 75 and 100 grams. The estimated dosage is approximated at 25 grams per 4-6 kilograms of combustion products.

The final dosage must be settled in an experimental manner and adjusted to the given fireplace or central heating furnace; there is no threat related to overdosing – the excess amount of the product will simply fall down to the ash box.

The product is neither flammable nor explosive.

Regular application of “SADPAL” II with the application ratio of 2 – 2,5 kilograms per a tone of solid fuel eliminates any soot or slag deposits in furnaces or fireplaces. When applying the product package into the furnace, it is necessary to provide sufficient airflow so that the product works well.

#### **ORDERS AND PRODUCT COLLECTION**

Product manufacturer: “SKWAT” Gwardiak S., Gwardiak W. Legal Company,



Żółtki Kolonia 22, 16-070 Choroszcz (road access: road from Warsaw to Białystok, 10 kilometres from Białystok, turn at the junction Choroszcz – Dzikie and follow the road for approximately 300 meters in the direction of Dzikie). Telephone/fax (+48 85) 7191383, 7193940. All parties interested in purchasing the product are asked to place orders to the above-mentioned address or any of the distribution points in the territory of Poland.

#### **TERMS OF PAYMENT**

It is possible to negotiate the method of payment and the payment period: by cash, by a telegraph, a bank transfer (after presenting the bank transfer order effected at the customer's bank – only the original is valid).

We would like to inform hereby that cooperation with "SKWAT" Gwardiak S., Gwardiak W. Legal Company ZPChr provides measurable benefits in the form of reductions in payments for PFRON in accordance with Legislation Journal number 123 from 1998, which on average are estimated at 2,018% of net value of products and services purchased in our company.

We are in possession of the quality management systems PN-EN ISO 9001:2001, PN-EN ISO 14001:1998 and PN-N 18001:1999.

**YOU'RE WELCOME TO COOPERATE WITH US**