

# PMD (UK) LTD PROCESS DATA

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**230(EX)-07/02**  
**ISSUE 3**  
**PREV 2**

# PROCIRC SP230 (EX)

## BLACK OXIDE

### INTRODUCTION

Procirc SP230 (EX) Black Oxide is a revolutionary oxide treatment which has been specially formulated to eliminate the variable performance associated with standard two component oxide systems.

It is a specially developed replenisher system designed to overcome high drag in factors associated with certain installations.

The single component system is easily controlled using a simple chemical test.

Procirc SP230 (EX) Black Oxide is a highly active yet self limiting oxide treatment. This ensures excellent coverage with a consistent grain structure which gives high bond strengths before and after thermal shock. It offers maximum reliability to high quality multilayer manufacture.

### BENEFITS

Single component replenisher - easy to use.

Consistent oxide formation despite high bath throughputs.

Simple method of control and replenishment.

Self limiting oxide growth prevents any thermal shock failure.

Uniform black finish with consistent crystal structure.

No problems with dilution factors associated with 2 part systems.

Buffered to prevent atmospheric carbon dioxide absorption problems.

Low chemical consumption ensures cost effective performance.

Can be used in simple immersion or flood conveyor systems.

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**SOLUTION MAKE-UP**

Procirc SP230 (EX) Black Oxide	50 - 60% v/v
Procirc SP2302 Make Up Additive	10-12% v/v
Deionised Water	28 - 40% v/v
Procirc SP2301 Stabiliser	15 g/l (Optional)

**OPERATING DATA**

Concentration	50 - 60% v/v
Temperature	65 - 80 deg C
Time	1 - 6 mins
Agitation	Optional
Filtration	Continuous through a 5 - 10 micron filter
Extraction	Recommended

**EQUIPMENT**

Tanks	Polypropylene, stainless steel, titanium or hastelloy.
Heating	PTFE, stainless steel or titanium immersion heaters with thermostatic control.
Filters	1 - 2 turnovers per hour through 5 - 10 micron cartridges.

**INSTALLATION**

It is essential that the tanks to be used for Procirc SP230 (EX) Black Oxide are thoroughly cleaned and leached before any chemistry is introduced.

Contact PMD (UK) Limited Technical Department for appropriate procedure.

1. Fill the clean empty tank with the appropriate volume of D.I. Water.
2. Add the appropriate volume of Procirc SP230 (EX) Black Oxide and mix thoroughly.
3. Add the appropriate volume of Procirc SP2302 Make Up Additive and mix thoroughly.
4. Check the concentration of the solution (See Analysis Methods) and adjust as necessary.
5. Heat the solution to operating temperature.

## **PROCESS SEQUENCE**

1. Acid or Alkali clean (optional).
2. Rinse.
3. Rinse.
4. Procirc 921 or Procirc SP263 Microetch.
5. Rinse.
6. Rinse.
7. Predip 2 - 3 % sodium hydroxide solution. (aqueous)
8. Procirc SP230 (EX) Black Oxide.
9. Rinse.
10. Rinse.
11. Dry.

## **MAINTENANCE AND CONTROL**

The solution should be regularly analysed and replenished as necessary.

Evaporation losses should be replaced using DI water.

Concentration losses should be replaced with Procirc SP230 (EX) Black Oxide.

## **THROUGHPUT**

Drag out factors will influence overall costs but figures of 5 - 12 ml Procirc SP230 (EX) Black Oxide per sq.ft. laminate are typical.

## **ANALYSIS METHODS**

### Procirc SP230 (EX) Black Oxide Concentration

#### Reagents

- 20% v/v sulphuric acid
- Solid potassium iodide (Regent grade)
- Iodine indicator
- 0.1 N Sodium Thiosulphate solution (standard volumetric solution)

#### Method

1. Cool bath sample to room temperature.
2. Pipette 5 ml of the sample into a clean 100 ml volumetric flask and make up to the mark with DI water.
3. Mix well.
4. Pipette 5 ml of this diluted solution into a clean 500 ml conical flask and add approximately 100 ml DI water.
5. Add approximately 3 g solid potassium iodide and totally dissolve.
6. Add 25 ml of 20% sulphuric acid solution and thoroughly mix.

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## **ANALYSIS METHODS CONTINUED**

7. Titrate with 0.1N sodium thiosulphate to a pale straw colour.
8. Add the iodine indicator and continue the titration from a blue to a colourless end-point.
9. Record titre = t mls.

### Calculation

$t \times 3.77 = \% \text{ concentration Procirc SP230 (EX) Black Oxide.}$

Replenishment (For a 55% concentration solution)

$\frac{55 - \% \text{ Concentration}}{100} \times \text{tank volume (lts)} = \text{lts Procirc SP230 (EX) Black Oxide required}$

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## **DISPOSAL**

Dispose of in accordance with local authority requirements.

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## **PRODUCT FAMILIES**

The following products or product families are referred to in this data sheet.

<u>Product Name</u>	<u>Product Number</u>
Procirc SP230 (EX) Black Oxide (1000 ltr IBC)	955007
Procirc SP230 (EX) Black Oxide (200 ltr drum)	955009
Procirc SP2302 Make Up Additive	955008
Procirc SP2301 Stabiliser	950001
Procirc 921 Microetch	923001
Procirc SP263 Microetch	923003

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