

Talbot Laboratories (Pty) Ltd • Company Registration Number: 2016/334237/07  
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## **SAPPI SOUTHERN AFRICA LTD NGODWANA MILL**

### **CLASSIFICATION REPORT**

Waste Stream: FLY ASH

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The Fly Ash stream ex: Sappi Southern Africa Ltd Ngodwana Mill is generated via the generator proprietary process. Given the stream is a mixture; the stream is subject the harmonised criteria for the classification of such mixtures, as detailed within the scope of the GHS.

A desktop study has indicated that such process streams, as a whole, have not been classified to determine their intrinsic physical, health and environmental hazards, as defined within the scope of the SANS 10234 (GHS) document.

Research has also indicated the non-existence of test data for similar mixtures or streams. The implication is the Bridging Principles established as relevant for each hazard class, as defined within the scope of SANS 10234 (GHS), will be inapplicable. An ingredient based approach to the classification of the stream is, therefore, requisite. Analysis of a representative composite sample was mandatory.

In lieu of the previous statement, only ingredients that are quantifiable can be utilised in the classification process to assign the hazard associated with the ingredient, as identified within the scope of the GHS, to the mixture as a whole; and only ingredients present in a mixture at or above a predetermined concentration cut-off limit will trigger classification of the mixture itself towards the specific health and environmental hazard endpoints ascribed to the ingredient.

Per Talbot analytical report W02796/18, only the metal oxide components present at concentrations  $\geq 0.1\%$  will contribute to the classification of the stream as a whole. The SiO<sub>2</sub> component, however, will not contribute to stream classification as it is present in its amorphous form.

The pH of the stream, per W02796/18, is 12.8. Given the pH of the stream is  $> 11.5$ , the stream is considered to possess inherent corrosive properties.

#### **Stream Components Contributing to Stream Classification:**

Titanium Dioxide is classified to the following hazard endpoints within the scope of the GHS:

Skin Irritation, Category 3

Carcinogenicity, Category 2

Aluminium Oxide is classified to the following hazard endpoints within the scope of the GHS:

Specific Target Organ Toxicity – Single Exposure, Category 1

Specific Target Organ Toxicity – Repeated Exposure, Category 1

Iron (III) Oxide is classified to the following hazard endpoints within the scope of the GHS:

Skin Irritation, Category 2

Eye Damage, Category 1

Specific Target Organ Toxicity – Single Exposure, Category 3

Specific Target Organ Toxicity – Repeated Exposure, Category 1

Magnesium Oxide is classified to the following hazard endpoints within the scope of the GHS:

Substances that on contact with water emit flammable gases 2

Skin Irritation, Category 2

Eye Irritation, Category 2A

Calcium Oxide is classified to the following hazard endpoints within the scope of the GHS:

Skin Irritation, Category 2

Eye Damage, Category 1

Specific Target Organ Toxicity – Single Exposure, Category 3

Potassium Oxide is classified to the following hazard endpoints within the scope of the GHS:

Skin Corrosion, Category 1

Phosphorous Pentoxide is classified to the following hazard endpoints within the scope of the GHS:

Skin Corrosion, Category 1

Eye Damage, Category 1

Sulphur Trioxide is classified to the following hazard endpoints within the scope of the GHS:

Skin Corrosion, Category 1

Specific Target Organ Toxicity – Single Exposure, Category 3

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**Classification of the Stream****Skin Corrosion/Irritation:**

The pH of the stream dictates classification to the Skin Corrosion, Category 1, endpoint.

**Serious Eye Damage/Eye Irritation:**

The pH of the stream dictates classification to the Skin Corrosion, Category 1, endpoint.

**Carcinogenicity:**

Per table 39 of SANS 10234, substances classified to the Carcinogenicity, Category 2 endpoint must be present in a mixture at a concentration  $\geq 0.1\%$  to trigger classification of the stream mixture to the Carcinogenicity, Category 2 endpoint. The Titanium Dioxide component is present in the mixture at a concentration of 1.13%; the stream thus can be classified to the Carcinogenicity, Category 2 endpoint.

**Specific Target Organ Toxicity – Single Exposure:**

Per 10.8.3.4.5 of SANS 10234, substances classified to the Specific Target Organ Toxicity – Single Exposure, Category 3 endpoint must be present in a mixture at a concentration  $\geq 20\%$  to trigger classification of the stream mixture to the same endpoint. The Calcium Oxide component is present in the mixture at a concentration of 4.16%; the stream thus cannot be classified to the Specific Target Organ Toxicity – Single Exposure, Category 3 endpoint.

**Specific Target Organ Toxicity – Repeated Exposure:**

Per Table 51 of SANS 10234, substances classified to the Specific Target Organ Toxicity – Repeated Exposure, Category 1 endpoint must be present in a mixture at a concentration  $\geq 1\%$  to trigger classification of the stream mixture to the same endpoint. The Iron (III) Oxide component is present in the mixture at a concentration of 4.67%; the stream thus can be classified to the Specific Target Organ Toxicity – Repeated Exposure, Category 1 endpoint.

**Classification Proposal for the Stream:**

Skin Corrosion, Category 1

Serious Eye Damage, Category 1

Carcinogenicity, Category 2

Specific Target Organ Toxicity – Repeated Exposure, Category 1

**Proposed Classification for the Stream per SANS 10228:**

The stream is not classified, per SANS 10234, as an Acute Toxicity Hazard of a specific Category, via any identified route. Since acute toxicity values primarily for hazard category 1 are used by the transport sector to allocate packing groups, classification of the waste as Class 6.1: Toxic Substances is not possible as the assignment of a packing group for division 6.1, in accordance with the degree of toxic hazard posed during transport, is inapplicable.

The stream is not classified as a Flammable Solid. The stream thus cannot be classified under SANS 10228 Class 4: Flammable Solid.

The stream is classified to the Skin Corrosion and Serious Eye Damage endpoints as dictated per SANS 10234. The stream thus can be classified under SANS 10228 Class 8: Corrosives.

The stream is also not classified, per SANS 10234, as an acute or chronic aquatic environmental hazard. Note; the acute aquatic environmental toxicity would have represented the crucial attribute in defining the hazard where the transport of the waste may give rise to short-term dangers from potential accidents or spillages of said waste.

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**References:**

1 – W02796/18 (Talbot Laboratories analytical report)