

Certificate of Analysis

Project details

Customer Details

| | |
|---------------------|-----------------------------------|
| Customer reference: | WG1-22045 (WASTE CLASSIFICATION) |
| Quotation number: | Q2205-189 |
| Company name: | WALLACE AND GREEN (PTY) LTD |
| Contact address: | 10 CHERRON AVENUE, LA LUCIA, 4153 |
| Contact person: | NICOLE GEOFFREY |

Sampling Details

| | |
|----------------------------------|---------------------------------------|
| Sampled by: | CUSTOMER |
| Sampled date: | 2022/09/01 |
| Additional customer information: | W01820/22- SAMPLED BY: XOLISILE YENDE |

Sample Details

| | |
|-------------------------------------|---|
| Sample type(s): | WASTE STREAM SAMPLES |
| Date received: | 2022/09/02 |
| Delivered by: | CUSTOMER |
| Additional customer information: | WASTE STREAM: ILLOVO SUGAR - ESTON MILL: FILTER CAKE , LOW EXPECTED CONTAMINATION |
| Temperature at sample receipt (°C): | 18.1 |

Report Details

| | |
|--------------------|------------|
| Testing commenced: | 2022/09/02 |
| Report date: | 2022/09/27 |
| Our reference: | 007568/22 |

Analytical Results

| Methods | Determinands | Units | W01820/22 |
|-----------------|----------------------------|----------|--|
| | | | ILLOVO SUGAR - ESTON MILL: FILTER CAKE 12:30 01.09.2022 |
| Chemical | | | |
| - | Flashpoint at 22°C* | - | No Flash# |
| - | Flashpoint at 60°C* | - | No Flash# |
| - | Flashpoint at 93°C* | - | No Flash# |
| 200 | pH (Aqueous Leach) @ 25°C* | pH units | 5.6 |
| 137 | Moisture* | % m/m | 71 |
| - | Calorific Value* | MJ/kg | No CV# |
| 137 | Total Organic Carbon* | % g/g | 70 |



TOTAL CONCENTRATIONS

Total concentrations were determined as per the National Environmental Management Waste Act 59, 2008, for the National norms and standards for the assessment of waste for landfill disposal.

| Methods | Determinands | Units | W01820/22 |
|-----------------------------|---------------------------|----------|--|
| | | | ILLOVO SUGAR - ESTON MILL: FILTER CAKE 12:30 01.09.2022 |
| TOTAL CONCENTRATIONS | | | |
| Chemical | | | |
| 89 | Antimony, Sb* | mg Sb/kg | <5 |
| 88 | Arsenic, As* | mg As/kg | <8 |
| 87 | Barium, Ba* | mg Ba/kg | 20 |
| 87 | Boron, B* | mg B/kg | 27 |
| 87 | Cadmium, Cd* | mg Cd/kg | <17 |
| 87 | Chromium, Cr* | mg Cr/kg | <16 |
| 68G | Hexavalent Chromium, Cr6* | mg Cr/kg | <0.031 |
| 87 | Cobalt, Co* | mg Co/kg | <17 |
| 87 | Copper, Cu* | mg Cu/kg | <17 |
| 87 | Lead, Pb* | mg Pb/kg | <8 |
| 87 | Manganese, Mn* | mg Mn/kg | 379 |
| 86 | Mercury, Hg* | mg Hg/kg | 1.3 |
| 87 | Molybdenum, Mo* | mg Mo/kg | <31 |
| 87 | Nickel, Ni* | mg Ni/kg | <18 |
| 88 | Selenium, Se* | mg Se/kg | <63 |
| 87 | Vanadium, V* | mg V/kg | <2 |
| 87 | Zinc, Zn* | mg Zn/kg | 26 |
| 206 | Cyanide (Total)* | mg CN/kg | <10 |
| 18G | Fluoride* | mg F/kg | <0.6 |
| Organics | | | |
| 100 | Benzene* | mg/kg | <0.006 |
| 100 | Carbon tetrachloride* | mg/kg | <0.006 |
| 100 | Chlorobenzene* | mg/kg | <0.006 |



| Methods | Determinands | Units | W01820/22 |
|-----------------------------|------------------------------|-------|--|
| | | | ILLOVO SUGAR - ESTON MILL: FILTER CAKE 12:30 01.09.2022 |
| TOTAL CONCENTRATIONS | | | |
| Organics | | | |
| 100 | Chloroform* | mg/kg | <0.012 |
| 100 | 1,2 Dichlorobenzene* | mg/kg | <0.012 |
| 100 | 1,4 Dichlorobenzene* | mg/kg | <0.006 |
| 100 | 1,2-Dichloroethane* | mg/kg | <0.006 |
| 100 | Ethylbenzene* | mg/kg | <0.006 |
| 100 | Hexachlorobutadiene* | mg/kg | <0.006 |
| 100 | MTBE* | mg/kg | <0.006 |
| 100 | Naphthalene* | mg/kg | <0.006 |
| 100 | Styrene* | mg/kg | <0.006 |
| 100 | 1,1,1,2 Tetrachloroethane* | mg/kg | <0.006 |
| 100 | 1,1,2,2 Tetrachloroethane* | mg/kg | <0.006 |
| 100 | Toluene* | mg/kg | <0.006 |
| 100 | 1,1,1 Trichloroethane* | mg/kg | <0.006 |
| 100 | 1,1,2 Trichloroethane* | mg/kg | <0.006 |
| 100 | Xylenes total* | mg/kg | <0.012 |
| 100 | Trichlorobenzenes* | mg/kg | <0.019 |
| 100 | Dichloromethane* | mg/kg | <0.012 |
| 100 | 1,1-Dichloroethylene* | mg/kg | <0.006 |
| 100 | 1,2-Dichloroethylene* | mg/kg | <0.012 |
| 100 | Tetrachloroethylene* | mg/kg | <0.006 |
| 100 | Trichloroethylene* | mg/kg | <0.006 |
| - | Benzo[a]pyrene* | mg/kg | <0.4# |
| - | Di (2 ethylhexyl) phthalate* | mg/kg | <20# |
| - | PAH (Total)* | mg/kg | <8.0# |
| - | Nitrobenzene* | mg/kg | <1 |
| - | 2,4-Dinitrotoluene* | mg/kg | <4# |
| - | 2-Chlorophenol* | mg/kg | <0.005 |
| - | 2,4-Dichlorophenol* | mg/kg | <0.005 |



| Methods | Determinands | Units | W01820/22 |
|-----------------------------|---|-------|--|
| | | | ILLOVO SUGAR - ESTON MILL: FILTER CAKE 12:30 01.09.2022 |
| TOTAL CONCENTRATIONS | | | |
| Organics | | | |
| - | 2,4,6 Trichlorophenol* | mg/kg | <0.005 |
| - | Phenols Speciated(total,non-halogenated)* | mg/kg | <0.03 |
| 101 | Petroleum H/Cs, C6 to C9* | mg/kg | <0.708 |
| 101 | Petroleum H/Cs, C10 to C36* | mg/kg | <6.02 |
| - | Formaldehyde* | mg/kg | <5# |
| 100 | Methyl ethyl ketone* | mg/kg | 3.76 |
| - | Total PCB's* | mg/kg | <0.04# |
| 100 | Vinyl chloride* | mg/kg | <0.006 |



LEACHABLE CONCENTRATIONS

The Sample was subjected to an Australian Standard Leaching Procedure (ASLP2 Acetate pH 5.0 (P/NP)) as per National Environmental Management Waste Act 59 2008, for the National norms and Standard for the assessment for waste for landfill disposal. The resultant leachate was analyzed for various tests. The results are presented below.

| Methods | Determinands | Units | W01820/22 |
|---------------------------------|---------------------------|-----------------------|--|
| | | | ILLOVO SUGAR - ESTON MILL: FILTER CAKE 12:30 01.09.2022 |
| LEACHABLE CONCENTRATIONS | | | |
| Chemical | | | |
| 89 | Antimony, Sb* | mg Sb/l | <0.05 |
| 88 | Arsenic, As* | mg As/l | <0.08 |
| 87 | Barium, Ba* | mg Ba/l | 0.21 |
| 87 | Boron, B* | mg B/l | 0.98 |
| 87 | Cadmium, Cd* | mg Cd/l | <0.17 |
| 87 | Chromium, Cr* | mg Cr/l | <0.16 |
| 68G | Hexavalent Chromium, Cr6* | mg Cr/l | <0.0031 |
| 87 | Cobalt, Co* | mg Co/l | <0.17 |
| 87 | Copper, Cu* | mg Cu/l | <0.17 |
| 87 | Lead, Pb* | mg Pb/l | <0.08 |
| 87 | Manganese, Mn* | mg Mn/l | 16.0 |
| 86 | Mercury, Hg* | mg Hg/l | 0.01 |
| 87 | Molybdenum, Mo* | mg Mo/l | <0.31 |
| 87 | Nickel, Ni* | mg Ni/l | <0.18 |
| 88 | Selenium, Se* | mg Se/l | <0.63 |
| 87 | Vanadium, V* | mg V/l | <0.02 |
| 87 | Zinc, Zn* | mg Zn/l | 0.27 |
| 16G | Chloride* | mg Cl/l | 49 |
| 206 | Cyanide (Total)* | mg CN/l | <0.01 |
| 18G | Fluoride* | mg F/l | <0.06 |
| 65Gc | Nitrate* | mg N/l | <0.25 |
| 67G | Sulphate* | mg SO ₄ /l | <2.5 |
| 41 | Total Dissolved Solids* | mg/l | 7472 |



| Methods | Determinands | Units | W01820/22 |
|-----------------|------------------------------|-------|--|
| | | | ILLOVO SUGAR - ESTON MILL: FILTER CAKE 12:30 01.09.2022 |
| Organics | | | |
| 100 | Benzene* | mg/l | <0.0006 |
| 100 | Carbon tetrachloride* | mg/l | <0.0006 |
| 100 | Chlorobenzene* | mg/l | <0.0006 |
| 100 | Chloroform* | mg/l | <0.001 |
| 100 | 1,2 Dichlorobenzene* | mg/l | <0.001 |
| 100 | 1,4 Dichlorobenzene* | mg/l | <0.0006 |
| 100 | 1,2-Dichloroethane* | mg/l | <0.0006 |
| 100 | Ethylbenzene* | mg/l | <0.0006 |
| 100 | Hexachlorobutadiene* | mg/l | <0.0006 |
| 100 | MTBE* | mg/l | <0.0006 |
| 100 | Naphthalene* | mg/l | <0.0006 |
| 100 | Styrene* | mg/l | <0.0006 |
| 100 | 1,1,1,2 Tetrachloroethane* | mg/l | <0.0006 |
| 100 | 1,1,2,2 Tetrachloroethane* | mg/l | <0.0006 |
| 100 | Toluene* | mg/l | <0.0006 |
| 100 | 1,1,1 Trichloroethane* | mg/l | <0.0006 |
| 100 | 1,1,2 Trichloroethane* | mg/l | <0.0006 |
| 100 | Xylenes total* | mg/l | <0.001 |
| 100 | Trichlorobenzenes* | mg/l | <0.002 |
| 100 | Dichloromethane* | mg/l | <0.001 |
| 100 | 1,1-Dichloroethylene* | mg/l | <0.0006 |
| 100 | 1,2-Dichloroethylene* | mg/l | <0.001 |
| 100 | Tetrachloroethylene* | mg/l | <0.0006 |
| 100 | Trichloroethylene* | mg/l | <0.0006 |
| - | Benzo[a]pyrene* | mg/l | <0.001# |
| - | Di (2 ethylhexyl) phthalate* | mg/l | <0.2# |
| - | PAH (Total)* | mg/l | <0.02# |
| - | 2-Chlorophenol* | mg/l | <0.0005 |
| - | 2,4-Dichlorophenol* | mg/l | <0.0005 |



| Methods | Determinands | Units | W01820/22 |
|-----------------|---|-------|--|
| | | | ILLOVO SUGAR - ESTON MILL: FILTER CAKE 12:30 01.09.2022 |
| Organics | | | |
| - | 2,4,6 Trichlorophenol* | mg/l | <0.0005 |
| - | Phenols Speciated(total,non-halogenated)* | mg/l | <0.003 |
| - | Nitrobenzene* | mg/l | <0.001 |
| - | 2,4-Dinitrotoluene* | mg/l | <0.02# |
| 101 | Petroleum H/Cs, C6 to C9* | mg/l | <0.08 |
| 101 | Petroleum H/Cs, C10 to C36* | mg/l | <0.68 |
| - | Formaldehyde* | mg/l | <0.1# |
| 100 | Methyl ethyl ketone* | mg/l | <0.005 |
| - | Total PCB's* | mg/l | <0.001# |
| 100 | Vinyl chloride* | mg/l | <0.0006 |



Refer to the "Notes" section at the end of this report for further explanations.

Where the laboratory report limit for a test is higher than the required specification limit, the raw data is reviewed and the detection limit highlighted in bold font if outside of specification.

Specific Observations

Bold analytical results exceed at least the lowest applicable concentration threshold per Appendix 1 of this report.

Based on the results of sample W01820/22, analysis has identified one or more elements or chemical substances that exceed the TCT 0 and LCT 0 concentration threshold.



Quality Assurance

Technical signatories

Notes to this report

Limitations

This report shall not be reproduced except in full without prior written approval of the laboratory. Results in this report relate only to the samples as taken, and the condition received by the laboratory. Any opinions and interpretations expressed herein are outside the scope of SANAS accreditation. The decision rule applicable to this laboratory is available on request. Sample preparation may require filtration, dilution, digestion or similar. Final results are reported accordingly. Where the laboratory has undertaken the sampling, the location of sampling and sampling plan are available on request. Talbot Laboratories is guided by the National Standards SANS 5667-3:2006 Part 3 Guidance on the Preservation and Handling of Water Samples; SANS 5667-1:2008 Part 1 Guidance on the Design of Sampling Programmes and Sampling Techniques and SANS 5667-2:1991 Part 2: Guidance on Sampling Techniques. Customers to contact Talbot Laboratories for further information.

Uncertainty of measurement

Talbot Laboratories' Uncertainty of Measurement (UoM) values are:

- Identified for relevant tests.
- Calculated as a percentage of the respective results.
- Applicable to total, dissolved and acid soluble metals for ICP element analyses.
- Available upon request.

Analysis explanatory notes

Tests may be marked as follows:

| | |
|--------------|--|
| ^ | Tests conducted at our Port Elizabeth satellite laboratory. |
| * | Tests not included in our Schedule of Accreditation and therefore that are not SANAS accredited. |
| # | Tests that have been sub-contracted to a peer laboratory. |
| NR | Not required -shown, for example, where the schedule of analysis varied between samples. |
| σ | Field sampling point on-site results. |
| ^a | Testing has deviated from Method. |



Appendix 1: Specifications

| Determinand* | Total Concentration Threshold (TCT) limits (mg/kg) | | | Leachable Concentration Threshold (LCT) limits (mg/ℓ) | | | |
|--------------------------|--|--------|--------|---|-------|-------|--------|
| | TCT0 | TCT1 | TCT2 | LCT0 | LCT1 | LCT2 | LCT3 |
| Chemical | | | | | | | |
| Antimony, Sb | 10 | 75 | 300 | 0.02 | 1 | 2 | 8 |
| Arsenic, As | 5.8 | 500 | 2000 | 0.01 | 0.5 | 1 | 4 |
| Barium, Ba | 62.5 | 6250 | 25000 | 0.7 | 35 | 70 | 280 |
| Boron, B | 150 | 15000 | 60000 | 0.5 | 25 | 50 | 200 |
| Cadmium, Cd | 7.5 | 260 | 1040 | 0.003 | 0.15 | 0.3 | 1.2 |
| Chromium, Cr | 46000 | 800000 | N/A | 0.1 | 5 | 10 | 40 |
| Hexavalent Chromium, Cr6 | 6.5 | 500 | 2000 | 0.05 | 2.5 | 5 | 20 |
| Cobalt, Co | 50 | 5000 | 20000 | 0.5 | 25 | 50 | 200 |
| Copper, Cu | 16 | 19500 | 78000 | 2 | 100 | 200 | 800 |
| Lead, Pb | 20 | 1900 | 7600 | 0.01 | 0.5 | 1 | 4 |
| Manganese, Mn | 1000 | 25000 | 100000 | 0.5 | 25 | 50 | 200 |
| Mercury, Hg | 0.93 | 160 | 640 | 0.006 | 0.3 | 0.6 | 2.4 |
| Molybdenum, Mo | 40 | 1000 | 4000 | 0.07 | 3.5 | 7 | 28 |
| Nickel, Ni | 91 | 10600 | 42400 | 0.07 | 3.5 | 7 | 28 |
| Selenium, Se | 10 | 50 | 200 | 0.01 | 0.5 | 1 | 4 |
| Vanadium, V | 150 | 2680 | 10720 | 0.2 | 10 | 20 | 80 |
| Zinc, Zn | 240 | 160000 | 640000 | 5 | 250 | 500 | 2000 |
| Chloride | N/A | N/A | N/A | 300 | 15000 | 30000 | 120000 |
| Cyanide (Total) | 14 | 10500 | 42000 | 0.07 | 3.5 | 7 | 28 |
| Fluoride | 100 | 10000 | 40000 | 1.5 | 75 | 150 | 600 |
| Nitrate | N/A | N/A | N/A | 11 | 550 | 1100 | 4400 |
| Sulphate | N/A | N/A | N/A | 250 | 12500 | 25000 | 100000 |
| Total Dissolved Solids | N/A | N/A | N/A | 1000 | 12500 | 25000 | 100000 |
| pH @ 25°C | 6 < pH < 12 | | | N/A | N/A | N/A | N/A |

| Determinand (mg/ℓ)* | Total Concentration Threshold (TCT) limits (mg/kg) | | | Leachable Concentration Threshold (LCT) limits (mg/ℓ) | | |
|----------------------|--|------|-------|---|------|------|
| | TCT0 | TCT1 | TCT2 | LCT1 | LCT2 | LCT3 |
| Organics | | | | | | |
| Benzene | N/A | 10 | 40 | 0.01 | 0.02 | 0.08 |
| Benzo(a)pyrene | N/A | 1.7 | 6.8 | 0.035 | 0.07 | 0.28 |
| Carbon tetrachloride | N/A | 4 | 16 | 0.2 | 0.4 | 1.6 |
| Chlorobenzene | N/A | 8800 | 35200 | 5 | 10 | 40 |
| Chloroform | N/A | 700 | 2800 | 15 | 30 | 120 |



| Determinand (mg/ℓ)* | TCT0 | TCT1 | TCT2 | LCT1 | LCT2 | LCT3 |
|--|------|-------|--------|-------|------|------|
| 2-Chlorophenol | N/A | 2100 | 8400 | 15 | 30 | 120 |
| Di-(2-ethylhexyl) phthalate | N/A | 40 | 160 | 0.5 | 1 | 4 |
| 1,2-Dichlorobenzene | N/A | 31900 | 127600 | 5 | 10 | 40 |
| 1,4-Dichlorobenzene | N/A | 18400 | 73600 | 15 | 30 | 120 |
| 1,2-Dichloroethane | N/A | 3.7 | 14.8 | 1.5 | 3 | 12 |
| 1,1-Dichloroethylene | N/A | 150 | 600 | 0.35 | 0.7 | 2.8 |
| 1,2-Dichloroethylene | N/A | 3750 | 15000 | 2.5 | 5 | 20 |
| Dichloromethane | N/A | 16 | 64 | 0.25 | 0.5 | 2 |
| 2,4-Dichlorophenol | N/A | 800 | 3200 | 10 | 20 | 80 |
| 2,4-Dinitrotoluene | N/A | 5.2 | 20.8 | 0.065 | 0.13 | 0.52 |
| Ethylbenzene | N/A | 540 | 2160 | 3.5 | 7 | 28 |
| Formaldehyde | N/A | 2000 | 8000 | 25 | 50 | 200 |
| Hexachlorobutadiene | N/A | 2.8 | 5.4 | 0.03 | 0.06 | 0.24 |
| Methyl ethyl ketone (2-Butanone) | N/A | 8000 | 32000 | 100 | 200 | 800 |
| MTBE (Methyl t-butyl ether) | N/A | 1435 | 5740 | 2.5 | 5 | 20 |
| Naphthalene | N/A | N/A | N/A | N/A | N/A | N/A |
| Nitrobenzene | N/A | 45 | 180 | 1 | 2 | 8 |
| PAHs (Total) | N/A | 50 | 200 | N/A | N/A | N/A |
| Petroleum H/Cs, C6 to C9 | N/A | 650 | 2600 | N/A | N/A | N/A |
| Petroleum H/Cs, C10 to C36 | N/A | 10000 | 40000 | N/A | N/A | N/A |
| Phenols Speciated (total, non-halogenated) | N/A | 560 | 2240 | 7 | 14 | 56 |
| Polychlorinated biphenyls (PCBs) | N/A | 12 | 48 | 0.025 | 0.05 | 0.2 |
| Styrene | N/A | 120 | 480 | 1 | 2 | 8 |
| 1,1,1,2-Tetrachloroethane | N/A | 400 | 1600 | 5 | 10 | 40 |
| 1,1,1,2-Tetrachloroethane | N/A | 5 | 20 | 0.65 | 1.3 | 5.3 |
| Tetrachloroethylene | N/A | 200 | 800 | 0.25 | 0.5 | 2 |
| Toluene | N/A | 1150 | 4600 | 35 | 70 | 280 |
| Trichlorobenzenes (total) | N/A | 3300 | 13200 | 3.5 | 7 | 28 |
| 1,1,1-Trichloroethane | N/A | 1200 | 4800 | 15 | 30 | 120 |
| 1,1,2-Trichloroethane | N/A | 48 | 192 | 0.6 | 1 | 4 |
| Trichloroethylene | N/A | 11600 | 46400 | 0.25 | 2 | 8 |
| 2,4,6-Trichlorophenol | N/A | 1770 | 7080 | 10 | 20 | 80 |
| Vinyl chloride | N/A | 1.5 | 6 | 0.015 | 0.03 | 0.12 |
| Xylenes (Total) | N/A | 890 | 3560 | 25 | 50 | 200 |
| Aldrin + Dieldrin | 0.5 | 1.2 | 4.8 | 0.015 | 0.03 | 0.03 |
| DDT + DDD + DDE | 0.05 | 50 | 200 | 1 | 2 | 2 |
| Chlordane | 0.05 | 4 | 16 | 0.05 | 0.1 | 0.1 |
| Heptachlor | 0.05 | 1.2 | 4.8 | 0.015 | 0.03 | 0.03 |



*****End of Report*****

