Caskanette & Associates
CONSULTING ENGINEERS
*a division of 1581734 Ontario Inc.*

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August 16, 2024

Clayton Payer
Manager of Housing Initiatives
City of Brantford

Dear Mr. Payer,

*Re*: **Mould Assessment and Abatement Protocol**
Address: 359 Darling St., Brantford, ON
**Our File No: 24-248CG**

Caskanette & Associates Consulting Engineers (Caskanette) was retained on July 10, 2024, to conduct a site assessment and provide abatement procedures related to mould within the attic spaces located at 359 Darling St., Brantford, Ontario (herein referred to as "the Site"), following the discovery of visual mould evidence in the attic spaces of the 4-townhouse complex. Designated substance testing was not included in Caskanette's scope.

## REPORTED INFORMATION

On July 10, 2024, housing initiatives manager Clayton Payer contacted Caskanette after it came to the management's attention that visible mould was discovered in the attic spaces above some of the units in the complex.

Caskanette was informed that this was a public housing complex, constructed sometime in the 1970's, and consists of 4 two-storey buildings, containing 50 units in total.

## INITIAL SITE ASSESSMENTS

Caskanette attended the site on July 17 and 18, 2024 to conduct a visual assessment and gather mould-in-air samples in the attic spaces of all 4 buildings in the townhouse complex. Of the 50 units (#1-51, excluding number 13) a total of 47 samples were taken, including 2 exterior/background samples. Units 3, 5, 25, 31, and 33 were inaccessible for various reasons, discussed in more detail below. Of the 45 attics observed, 38 had varying amounts of visible mould.

*Photograph 1: Mould impacted sheathing and joists found in many of the attics inspected.*

In addition to our mould inspection, a limited investigation was done to determine the possible causes of the mould growth. The suspected primary cause is improper venting connections, or the absence thereof within the attic (resulting in high humidity) as well as possible leaks due to the age of the roofing.

The details of our site observations are outlined below in our unit observations.

**Table 1: Unit Observations**

| Unit # | Observations |
|---|---|
| 1 | Black staining on sheathing, appears to be rotting. Visible mould on trusses.<br>Vents appear connected. Can see light around vent connections.<br>NOTE* This is an end unit. |
| 2 | Sheathing has black mould. Slight mould on trusses. Vents appear connected. |
| 3 | Closet not cleaned out, unable to access. |
| 4 | White mould on wood. Vents appear connected. Not as bad as other units. |
| 5 | Residents sleeping, unable to access. |
| 6 | Black mould on all surfaces. Water staining and minor mould on trusses. Vents appear connected. Attic hatch broken; attic space open to living space. |

| | |
|---|---|
| 7 | Excessive mould in attic space. Evidence of water intrusion around attic vent. Water staining and slight mould on trusses. Rotting sheathing. |
| 8 | No visible mould growth and vents appear properly attached. In very good condition overall. |
| 9 | Mould on sheathing on one side. |
| 10 | Mould on sheathing. Water staining on trusses. Vent not connected. Indications of previous mould repairs. |
| 11 | Dry mould on all sheathing. Water staining on trusses and on bedroom ceiling. |
| 12 | Black mould on sheathing, possible hole in roof. Water staining on trusses. |
| 14 | Excessive mould. Water staining on trusses.<br>NOTE* This was an end unit. |
| 15 | Patchy mould, worse around vents. Vents appear to not be connected properly (fixed with duct tape and zip ties).<br>NOTE* This was an end unit. A split in a roof truss was also observed. |
| 16 | Extensive mould on sheathing. Wood appears rotted, and trusses appear warped. |
| 17 | Water staining on trusses. No other concerns. |
| 18 | Mould on sheathing above one corner. Slight water staining on trusses. |
| 19 | Mould in one corner and around one vent. Slight water staining on trusses. |
| 20 | Worst unit from units 1-20. Extensive mould on sheathing. Slight water staining on trusses. Vents not connected. |
| 21 | Mould in one corner and around one vent. Water staining on trusses around vent. |
| 22 | Mould in one corner. Vent not connected. Slight water staining on trusses. |
| 23 | Excessive mould in the attic. Vents disconnected.<br>NOTE* Unit 23 had been gutted after a flood. |
| 24 | Mould on lower sheathing throughout. |
| 25 | Could not get access. |
| 26 | Minor mould growth on wood surfaces.<br>NOTE* This was an end unit. |

| | |
|---|---|
| 27 | Prior mould abatement had clearly been conducted. Attic space painted entirely white with new vents installed.<br>NOTE* This was an end unit. |
| 28 | Water staining on trusses, but no noticeable mould. |
| 29 | Slight water staining, nothing excessive noticed. |
| 30 | Slight water staining at peak. |
| 31 | Attic hatch sealed shut with screws, unable to access. |
| 32 | Black rot around vent pipe, mould around 1 side of attic. |
| 33 | Dog and no answer from owner, unable to access. |
| 34 | Water staining on attic joists, no visible signs of mould. |
| 35 | Small amount of mould around sheathing on one side.<br>NOTE* A steel gas pipe was located in this attic that had a label declaring Asbestos content. |
| 36 | Very minor mould growth, a couple spots of black staining.<br>NOTE* This was an end unit. |
| 37 | Minor mould on sheathing. Prior mould contamination and abatement done by WINMAR. Roof redone, living space cleaned via wiping of walls. Drywall NOT replaced during prior mould abatement.<br>NOTE* This was an end unit. |
| 38 | Prior mould abatement conducted. Lower sheathing painted white. |
| 39 | Insulation disturbed; work has been conducted at some point. Minor mould on lower sheathing. |
| 40 | Unable to access. |
| 41 | Mould throughout attic space, on sheathing and on trusses. Water staining around vents. Hole in piping with a tunnel, suspected to have had vermin at some point. Gap/hole at edge of attic allows a view of exterior light, potential source of water and moisture ingress. |
| 42 | Worst unit yet out of units 1-42. Extreme levels of mould on sheathing and trusses. |
| 43 | Black mould on sheathing, water staining around vents. |
| 44 | Prior abatement conducted; most attic finishes painted white, presumably a sealer of some kind. |
| 45 | Minor mould. One sheathing section cracked. No signs of water leakage, vents well connected. |

| | |
|---|---|
| 46 | Mould sealer paint very poorly applied. Sealer paint missing entirely around vents. |
| 47 | Rotten wood around vents. Black staining, excessive mould. |
| 48 | One significant mould spot above bathroom. Peak of sheathing is black. NOTE* Dolls |
| 49 | Nothing of concern. |
| 50 | Vent dislodged, black mould all around it. Water staining on trusses. |
| 51 | Excessive mould growth, black on sheathing. Vent suspected to not be connected. Water staining on joists and trusses. |

## ANALYTICAL RESULTS

### *Air Sampling*

Samples were collected from stations situated in the attic areas above each unit of the structure, selected to provide a representative measurement of air quality conditions at the time of the assessment. The sampling stations were in every unit accessible to us during our investigation; 45 of 50 units, plus 2 exterior/background samples. Note that while samples were collected for units 11 and 27, the samples were overloaded (expected to be due to the highly friable insulation in the attics) with debris and could not be analyzed by the lab.

Spore trap samples were submitted to EMSL Canada Inc. for analysis of Fungal Spore and Particulates by Optical Microscopy (ASTM D7391). Table 1 below summarizes the results.

**Table 2: Spore Trap Sample Results – Mould in Air**

| Sample ID | Sample Location | Total Spore Count | Aspergillus | Stachybotrys Present (yes/no) |
|---|---|---|---|---|
| **Unit 1** | **Building 1 (running east-west, nearest Darling St.)** | 48290 | **8240** | No |
| **Unit 2** | **Building 1 (running east-west, nearest Darling St.)** | 27960 | **1000** | No |
| **Unit 4** | **Building 1 (running east-west, nearest Darling St.)** | 9160 | **5800** | No |
| **Unit 6** | **Building 1 (running east-west, nearest Darling St.)** | 14940 | **3800** | No |
| **Unit 7** | **Building 1 (running east-west, nearest Darling St.)** | 20310 | **1500** | **Yes** |
| **Unit 8** | **Building 1 (running east-west, nearest Darling St.)** | 17170 | **1800** | No |
| **Unit 9** | **Building 1 (running east-west, nearest Darling St.)** | 22080 | **1500** | No |
| **Unit 10** | **Building 1 (running east-west, nearest Darling St.)** | 15510 | **1700** | No |
| Unit 11 | Building 1 (running east-west, nearest Darling St.) | **SAMPLE OVERLOADED** | | |
| **Unit 12** | **Building 1 (running east-west, nearest Darling St.)** | 7690 | **2300** | **Yes** |

| | | | | |
|---|---|---|---|---|
| **Unit 14** | **Building 1 (running east-west, nearest Darling St.)** | 8250 | **1800** | No |
| **Unit 15** | **Building 2 (running east-west, second building south from Darling St.)** | 14040 | **6740** | No |
| **Unit 16** | **Building 2 (running east-west, second building south from Darling St.)** | 20130 | **7000** | No |
| **Unit 17** | **Building 2 (running east-west, second building south from Darling St.)** | 8090 | **1300** | No |
| **Unit 18** | **Building 2 (running east-west, second building south from Darling St.)** | 16130 | **1700** | No |
| **Unit 19** | **Building 2 (running east-west, second building south from Darling St.)** | 18590 | **2900** | No |
| **Unit 20** | **Building 2 (running east-west, second building south from Darling St.)** | 23550 | **13800** | **Yes** |
| **Unit 21** | **Building 2 (running east-west, second building south from Darling St.)** | 18160 | **3800** | **Yes** |
| **Unit 22** | **Building 2 (running east-west, second building south from Darling St.)** | 6760 | **770** | No |
| **Unit 23** | **Building 2 (running east-west, second building south from Darling St.)** | 15020 | **3500** | **Yes** |
| **Unit 24** | **Building 2 (running east-west, second building south from Darling St.)** | 12270 | **1400** | No |
| **Unit 26** | **Building 2 (running east-west, second building south from Darling St.)** | 5940 | **810** | No |
| EXT 17 | Exterior/background reading on July 17 | 63170 | 430 | No |
| Unit 27 | Building 3 (running east-west, third building south from Darling St.) | **SAMPLE OVERLOAD** | | |
| **Unit 28** | **Building 3 (running east-west, third building south from Darling St.)** | 5090 | 600 | No |
| **Unit 29** | **Building 3 (running east-west, third building south from Darling St.)** | **19050** | **2700** | **Yes** |
| **Unit 30** | **Building 3 (running east-west, third building south from Darling St.)** | **16150** | **2600** | No |
| **Unit 32** | **Building 3 (running east-west, third building south from Darling St.)** | **21150** | **1300** | No |

| | | | | |
|---|---|---|---|---|
| **Unit 34** | **Building 3 (running east-west, third building south from Darling St.)** | **14680** | **980** | No |
| **Unit 35** | **Building 3 (running east-west, third building south from Darling St.)** | 9760 | **2000** | **Yes** |
| **Unit 36** | **Building 3 (running east-west, third building south from Darling St.)** | 5040 | 100 | No |
| **Unit 37** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | 3900 | 770 | No |
| **Unit 38** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | 6270 | 470 | **Yes** |
| **Unit 39** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | 6110 | **1000** | No |
| Unit 41 | Building 4 (fourth building running north-south, east of buildings 1-3) | 1220 | 40 | No |
| **Unit 42** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | 5000 | **2500** | No |
| **Unit 43** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | 5760 | **2000** | No |
| **Unit 44** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | **16680** | 590 | No |
| **Unit 45** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | **19000** | **14000** | No |
| **Unit 46** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | **11470** | **3500** | No |
| **Unit 47** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | **21850** | **7130** | No |
| **Unit 48** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | **16100** | **1900** | No |
| Unit 49 | Building 4 (fourth building running north-south, east of buildings 1-3) | 4640 | 400 | No |
| **Unit 50** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | **11560** | **1700** | **No** |
| **Unit 51** | **Building 4 (fourth building running north-south, east of buildings 1-3)** | **53400** | **29600** | **No** |
| EXT 18 | Exterior/background reading on July 18 | **9920** | **600** | **No** |

Bold and Red numbers indicate exceedances of the background quality criteria.

The analytical results indicate extremely elevated mould elements within 72% of attics tested. Of 43 units* tested, 38 units exhibited significantly elevated mould concentrations. High Aspergillus levels were detected as well as Stachybotrys, Basidiospores, and Ascospores. Due to the level of contamination, this project must proceed as a **Level 3 Mould Abatement.** Please see **Appendix A-** Abatement Protocol below for more details.

*Excluding units 3, 5, 25, 31, and 33 for inaccessibility, and units 11 and 27 for sample overload.

## RELEVANT STANDARDS AND GUIDELINES

### *Mould*

Although there are no regulatory standards providing guidance regarding mould growth, several organizations provide their own guidelines to identify mould contamination and safeguard human health.

Generally, the fungal ecology of indoor air is considered normal when the type and concentrations of mould species within assessment samples are similar to those present in reference samples collected from outdoor air. The fungal ecology is considered problematic when a significant number of mould species within assessment samples is not present in reference samples, or when the concentrations of mould spores within assessment samples are significantly elevated in comparison to reference samples. It should be noted that this guideline may not apply during winter months. Colder outdoor temperatures are not favourable for mould growth, meaning outdoor mould concentrations may be significantly lower than those indoors during winter months. Exterior spore levels may also be reduced during events of precipitation.

The Centers for Disease Control and Prevention state that fungal ecology is considered problematic when *"the total mold spore concentration per cubic metre is above 10,000"*. Additionally, an article by Ronald E. Gots, M.D., Ph.D., Principal, International Center for Toxicology and Medicine (ICTM) recommends that *"one should be concerned about concentrations of mold* (specific species) *detected in indoor ambient air that … are greater than 100 to 200 CFU/$m^3$ or greater than 1000 spores/$m^3$".*

The following table is also referred to when concluding whether a mould problem exists in an indoor environment:

**Table 3 – Indoor Mould Classifications**

| | **Clean Environment** | **Mouldy Environment** |
|---|---|---|
| **Total Spores (per $m^3$ air)** | Less than 1,200 | Greater than 1,300 |
| **Aspergillus/Penicillium (per $m^3$ air)** | Less than 750 | Greater than 900 |
| **Ascospores/Basidiospores (per $m^3$ air)** | Less than 1,200 | Greater than 1,300 |

Finally, the consistent presence of Stachybotrys is an indicator that mould contamination exists. Stachybotrys is often found in water-damaged and mould-contaminated buildings and is therefore used as an indicator species for mould contamination.

In order to ensure protection of entrants and occupants of the building, Caskanette has chosen to use the most stringent of the above noted criteria in assessing mould samples.

Specifically, we deem the areas of concern to be free from mould-related hazards if all of the following conditions are met:

- No visible mould growth is observed within the building.
- The types and concentrations of mould species present in assessment samples are similar to those in reference samples.
- Total mould spore concentrations in indoor air are below 1,200 spores/$m^3$.
- Total Aspergillus/Penicillium spore concentrations in indoor air are less than 750 spores/$m^3$.
- Stachybotrys mould spores are not detected indoors in any concentration.

If these conditions are not met, further assessment or abatement is recommended.

## RESULTS

Based on Table 1 above, 36 units out of 45 units tested exhibited significant mould growth in the attic space. In relation to the entire complex, this means that 36 of 50 (or 72%) of attic spaces require abatement. Broken down, the amount of affected area per building is as follows:

- > 76% of Building 1 (east-west, nearest Darling St.).
- > 91% of Building 2 (east-west, second building south of Darling St.).
- 50% of Building 3 (east-west, third building south of Darling St.).
- > 66% of Building 4 (north-south, east of buildings 1-3).

## CONCLUSIONS & RECOMENDATIONS

Based on observations during the site assessment and a review of the analytical results, the following conclusions are presented for consideration:

- Visual mould growth was observed in many of all of the attics observed at the site.

- Mould in air sampling confirmed significantly elevated mould elements in 72% of the total structure (see the per building breakdown above).

- Visual inspection found that at least 13 units had vents that were either disconnected, improperly connected, or showed signs of water/moisture ingress around them. Based on visual and analytical results, issues with venting could be the cause or a contributing factor to mould growth.

- Visual inspection suggests that portions of roofing on all 4 buildings are close to or in need of repair/replacement. Based on visual and analytical results, issues with the roofing could be a cause or contributing factor to mould growth.

- Based on the site observations and conclusions above, Caskanette recommends the removal of mould and impacted building materials be completed as a Level 3 Mould Abatement. Refer to **Appendix A** – Abatement Protocol for greater detail on the requirements of a Level 3 abatement as well as the Environmental Abatement Council of Canada (EACC) Mould Abatement Guidelines, Edition 3 (2015).

- Post abatement mould clearance inspection and air sampling is strongly recommended.

## CLOSURE

This completes our preliminary assessment, at this time. **We will await your direction to confirm if post-abatement inspection and clearance air testing is required**. Until then, if you have any questions or require anything further, please advise.

Yours truly,

David Giles
Senior Environmental Consultant
Caskanette Udall Consulting Engineers

Professional Engineers Ontario
Licensed Engineering Technologist
Name: R. J. CASKANETTE
Number: 100166011
Limitations: Environmental consulting in spill remediation projects of soil and water. Indoor air quality, mold and asbestos abatement projects. Fire and explosion investigations of structures, vehicles and equipment.
Association of Professional Engineers of Ontario

Bob Caskanette, B.A.Sc., AMRT, CEC, CRS, CMS, CAQS, CIEC, C.E.T., EP, LET

# Appendix A

## Level 3 – Mould Abatement Protocol

## ABATEMENT PROTOCOL

Based on the results of the initial air sampling results and the area of mould impacted building materials, expected to exceed 10m$^2$ in size, remediation of mould contaminated building materials, along with general cleaning of the loss-affected areas, should follow the Level 3 Mould Abatement guidelines, in accordance with the Environmental Abatement Council of Canada (EACC) Mould Abatement Guidelines, Edition 3 (2015). A copy can be provided upon request.

### *Contractor Requirements*

This protocol does not detail the totality of all required measures and procedures outlined within the EACC Mould document. As such, this protocol should be used as a guideline and should be referred to in conjunction with the EACC document.

It is the responsibility of the contractor to confirm that all work conducted at the subject property is in accordance with applicable guidelines and regulation, such as the Ontario Building and Fire Codes, EACC, O.Reg. 490/09, Regulation 347 and the Occupational Health and Safety Act of Ontario.

Only Individuals who have received appropriate training regarding the hazards, personal hygiene, work practice requirement and use and care of personal protective equipment required in mould abatement operations, should be engaged to conduct the pending remedial work.

The following items must be implemented by the Contractor, prior to conduction any remedial work:

- The work area must be encompassed in a containment envelope, to prevent further cross-contamination or spread of mould spores from impacted areas to non-impacted areas of the building. Given the number of units requiring abatement, this requires the containment of all attic spaces.

- Access to and egress from the enclosure must pass through a decontamination facility, to allow for the removal of spores and debris from workers' outerwear.

- All air vents and ducts within the enclosure must be sealed, prior to disturbing any material. As this was not conducted at the onset of the project, duct cleaning and filter changes will be required.

- The enclosure must be maintained under negative pressure (-5 pascals).

- A site-specific work plan must be established, and a copy kept on site for the duration of the project, including:

    - Site Layout,
    - Containment and ventilation details
        - Log of daily filter inspections
        - Log of daily pre-work and post-work enclosure inspections, and
        - Log of pressure readings
    - Worker protection requirements, and
    - Procedures and protocols to be followed during the work (i.e. A copy of this abatement protocol document and the EACC guidelines)

***Mould Abatement (Level 3)***

The mould abatement shall include the following:

a) Remove and dispose of all remaining water-damaged building materials and finishes throughout the loss-impacted area.

   i. Remove all water damaged drywall at least 15cm beyond the edge of visible water damage or microbial growth.

   ii. Remove and dispose of any mould-impacted insulation (**all attic insulation in affected units**).

b) Mould impacted wood, if determined to be structurally sound, must be abraded (wire brushed, dry ice, etc.) and sanitized, to prevent reoccurrence of microbial growth. All visible mould impacts must be removed. Chemical cleaning with a **strong disinfectant** such as MMR or Revitalize SR must also be considered, if more feasible. It is expected that this will be the best method for the majority of impacted wood surfaces.

c) A final top-down cleaning shall be completed within the containment and throughout the enclosure (full structure) by sanitizing, wet wiping and **HEPA vacuuming** where necessary as per the EACC guidelines.

Following the completion of the abatement activities and final cleaning, Caskanette recommends returning to conduct the following:

- A visual assessment within the work area, to ensure that the extent of water and mould damage has been appropriately remediated.

- **Collection of post abatement air samples to document the air quality and confirm loss-related mould has been effectively removed**.

# Appendix B

## Laboratory Analytical Reports (EMSL)

**EMSL Canada Inc.**
2756 Slough Street Mississauga, ON L4T 1G3
Tel/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

**EMSL Order:** 552411265
**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
Caskanette & Assoc Consulting Engineers
290 King St East
Kitchener, ON N2G 2L3

**Phone:** (519) 496-7007
**Fax:**
**Collected Date:** 07/17/2024
**Received Date:** 07/22/2024 10:24 AM
**Analyzed Date:** 07/23/2024 - 07/25/2024

**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0001 | | | 552411265-0002 | | | 552411265-0003 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 1 | | | 2 | | | 4 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 1 | | | Attic of Unit 2 | | | Attic of Unit 2 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 59 | 2500 | 5.2 | - | - | - | 12 | 510 | 5.6 |
| Ascospores | 113(242) | 10300 | 21.3 | 106(199) | 8490 | 30.4 | 8 | 300 | 3.3 |
| Aspergillus/Penicillium++ | 103(193) | 8240 | 17.1 | 24 | 1000 | 3.6 | 109(136) | 5800 | 63.3 |
| Basidiospores | 101(505) | 21500 | 44.5 | 110(413) | 17600 | 62.9 | 44 | 1900 | 20.7 |
| Chaetomium++ | 2 | 90 | 0.2 | - | - | - | - | - | - |
| Cladosporium | 92 | 3900 | 8.1 | 11 | 470 | 1.7 | 10 | 430 | 4.7 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | 1 | 40 | 0.1 | - | - | - | 2 | 90 | 1 |
| Ganoderma | 11 | 470 | 1 | 5 | 200 | 0.7 | - | - | - |
| Myxomycetes++ | 27 | 1200 | 2.5 | 4 | 200 | 0.7 | 2 | 90 | 1 |
| Pithomyces++ | 1 | 10* | 0 | - | - | - | - | - | - |
| Rust | - | - | - | - | - | - | 1 | 40 | 0.4 |
| Scopulariopsis/Microascus | - | - | - | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Bispora | - | - | - | - | - | - | - | - | - |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Nigrospora | - | - | - | - | - | - | - | - | - |
| Polythrincium | 1 | 40 | 0.1 | - | - | - | - | - | - |
| Spegazzinia | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | - | - | - | - | - | - |
| **Total Fungi** | **1134** | **48290** | **100** | **656** | **27960** | **100** | **215** | **9160** | **100** |
| Hyphal Fragment | 4 | 200 | - | 1 | 40 | - | - | - | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | 1 | 10* | - | - | - | - | - | - | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



Initial report from: 07/25/2024 10:54 AM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

**EMSL Canada Inc.**
2756 Slough Street Mississauga, ON L4T 1G3
Tel/Fax: (289) 997-4602 / (289) 997-4607
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| Lab Sample Number: | 552411265-0001 | | | 552411265-0002 | | | 552411265-0003 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 1 | | | 2 | | | 4 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 1 | | | Attic of Unit 2 | | | Attic of Unit 2 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 2 | - | - | 2 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Background (1-5) | - | 4 | - | - | 4 | - | - | 4 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



Initial report from: 07/25/2024 10:54 AM

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http://www.EMSL.com / torontolab@emsl.com

**EMSL Order:** 552411265
**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
Caskanette & Assoc Consulting Engineers
290 King St East
Kitchener, ON N2G 2L3

**Phone:** (519) 496-7007
**Fax:**
**Collected Date:** 07/17/2024
**Received Date:** 07/22/2024 10:24 AM
**Analyzed Date:** 07/23/2024 - 07/25/2024

**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0004 | | | 552411265-0005 | | | 552411265-0006 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 6 | | | 7 | | | 8 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 2 | | | Attic of Unit 2 | | | Attic of Unit 2 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 4 | 200 | 1.3 | 9 | 400 | 2 | 6 | 300 | 1.7 |
| Ascospores | 40 | 1700 | 11.4 | 75 | 3200 | 15.8 | 53 | 2300 | 13.4 |
| Aspergillus/Penicillium++ | 88 | 3800 | 25.4 | 36 | 1500 | 7.4 | 43 | 1800 | 10.5 |
| Basidiospores | 100(150) | 6400 | 42.8 | 108(231) | 9860 | 48.5 | 108(203) | 8660 | 50.4 |
| Chaetomium++ | 1 | 40 | 0.3 | - | - | - | - | - | - |
| Cladosporium | 51 | 2200 | 14.7 | 104 | 4440 | 21.9 | 83 | 3500 | 20.4 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | 1 | 40 | 0.3 | 1 | 40 | 0.2 | - | - | - |
| Ganoderma | 2 | 90 | 0.6 | 11 | 470 | 2.3 | 8 | 300 | 1.7 |
| Myxomycetes++ | 5 | 200 | 1.3 | 5 | 200 | 1 | 7 | 300 | 1.7 |
| Pithomyces++ | 2 | 90 | 0.6 | 1 | 40 | 0.2 | - | - | - |
| Rust | 1 | 10* | 0.1 | 1 | 40 | 0.2 | - | - | - |
| Scopulariopsis/Microascus | 1 | 40 | 0.3 | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | 1 | 40 | 0.2 | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | 1 | 10* | 0.1 |
| Bispora | 1 | 40 | 0.3 | - | - | - | - | - | - |
| Botrytis | 2 | 90 | 0.6 | 1 | 40 | 0.2 | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Nigrospora | - | - | - | 1 | 40 | 0.2 | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Spegazzinia | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | - | - | - | - | - | - |
| **Total Fungi** | **349** | **14940** | **100** | **477** | **20310** | **100** | **404** | **17170** | **100** |
| Hyphal Fragment | 3 | 100 | - | 4 | 200 | - | 1 | 40 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | 1 | 40 | - | - | - | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
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**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0004 | | | 552411265-0005 | | | 552411265-0006 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 6 | | | 7 | | | 8 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 2 | | | Attic of Unit 2 | | | Attic of Unit 2 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 3 | - | - | 3 | - | - | 2 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Background (1-5) | - | 4 | - | - | 4 | - | - | 4 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0007 | | | 552411265-0008 | | | 552411265-0009 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 9 | | | 10 | | | 11 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 10 | 430 | 1.9 | 11 | 470 | 3 | Present | Present | - |
| Ascospores | 47 | 2000 | 9.1 | 32 | 1400 | 9 | Present | Present | - |
| Aspergillus/Penicillium++ | 36 | 1500 | 6.8 | 41 | 1700 | 11 | Present | Present | - |
| Basidiospores | 105(197) | 8410 | 38.1 | 109(182) | 7770 | 50.1 | Present | Present | - |
| Chaetomium++ | - | - | - | - | - | - | - | - | - |
| Cladosporium | 107(201) | 8580 | 38.9 | 84 | 3600 | 23.2 | Present | Present | - |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | 1 | 40 | 0.2 | 2 | 30* | 0.2 | Present* | Present* | - |
| Ganoderma | 7 | 300 | 1.4 | 8 | 300 | 1.9 | - | - | - |
| Myxomycetes++ | 18 | 770 | 3.5 | 5 | 200 | 1.3 | Present | Present | - |
| Pithomyces++ | - | - | - | 1 | 40 | 0.3 | - | - | - |
| Rust | - | - | - | - | - | - | - | - | - |
| Scopulariopsis/Microascus | 1 | 40 | 0.2 | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | Present | Present | - |
| Bispora | - | - | - | - | - | - | - | - | - |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Nigrospora | 1 | 10* | 0 | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Spegazzinia | - | - | - | - | - | - | Present | Present | - |
| Torula++ | - | - | - | - | - | - | - | - | - |
| **Total Fungi** | **519** | **22080** | **100** | **366** | **15510** | **100** | **-** | **-** | **-** |
| Hyphal Fragment | 4 | 200 | - | 3 | 100 | - | - | - | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | - | - | - |

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0007 | | | 552411265-0008 | | | 552411265-0009 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 9 | | | 10 | | | 11 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 2 | - | - | 3 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Background (1-5) | - | 4 | - | - | 4 | - | - | 5 | - |

552411265-0009 - Overloaded

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0010 | | | 552411265-0011 | | | 552411265-0012 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 12 | | | 14 | | | 15 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 11 | 470 | 6.1 | 1 | 10* | 0.1 | 1 | 40 | 0.3 |
| Ascospores | 15 | 640 | 8.3 | 27 | 1200 | 14.5 | 21 | 900 | 6.4 |
| Aspergillus/Penicillium++ | 53 | 2300 | 29.9 | 42 | 1800 | 21.8 | 105(158) | 6740 | 48 |
| Basidiospores | 50 | 2100 | 27.3 | 51 | 2200 | 26.7 | 100 | 4270 | 30.4 |
| Chaetomium++ | - | - | - | 1 | 40 | 0.5 | - | - | - |
| Cladosporium | 40 | 1700 | 22.1 | 63 | 2700 | 32.7 | 44 | 1900 | 13.5 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | 5 | 200 | 2.6 | 2 | 90 | 1.1 | 1 | 40 | 0.3 |
| Ganoderma | - | - | - | 2 | 90 | 1.1 | 3 | 100 | 0.7 |
| Myxomycetes++ | 4 | 200 | 2.6 | - | - | - | 1 | 10* | 0.1 |
| Pithomyces++ | - | - | - | 1 | 40 | 0.5 | - | - | - |
| Rust | - | - | - | - | - | - | - | - | - |
| Scopulariopsis/Microascus | - | - | - | 1 | 40 | 0.5 | 1 | 40 | 0.3 |
| Stachybotrys/Memnoniella | 1 | 40 | 0.5 | - | - | - | - | - | - |
| Unidentifiable Spores | 1 | 40 | 0.5 | - | - | - | - | - | - |
| Bispora | - | - | - | 1 | 40 | 0.5 | - | - | - |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Nigrospora | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Spegazzinia | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | - | - | - | - | - | - |
| **Total Fungi** | **180** | **7690** | **100** | **192** | **8250** | **100** | **330** | **14040** | **100** |
| Hyphal Fragment | 3 | 100 | - | 1 | 40 | - | 1 | 40 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | - | - | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



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**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0010 | | | 552411265-0011 | | | 552411265-0012 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 12 | | | 14 | | | 15 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 1 | - | - | 3 | - | - | 3 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 2 | - | - | 1 | - |
| Background (1-5) | - | 4 | - | - | 4 | - | - | 3 | - |

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

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**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0013 | | | 552411265-0014 | | | 552411265-0015 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 16 | | | 17 | | | 18 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 1 | 40 | 0.2 | 2 | 90 | 1.1 | - | - | - |
| Ascospores | 71 | 3000 | 14.9 | 24 | 1000 | 12.4 | 44 | 1900 | 11.8 |
| Aspergillus/Penicillium++ | 120(164) | 7000 | 34.8 | 30 | 1300 | 16.1 | 40 | 1700 | 10.5 |
| Basidiospores | 109(182) | 7770 | 38.6 | 64 | 2700 | 33.4 | 107(134) | 5720 | 35.5 |
| Chaetomium++ | - | - | - | 3 | 100 | 1.2 | - | - | - |
| Cladosporium | 47 | 2000 | 9.9 | 63 | 2700 | 33.4 | 107(146) | 6230 | 38.6 |
| Curvularia | 1 | 10* | 0 | - | - | - | - | - | - |
| Epicoccum | 1 | 40 | 0.2 | - | - | - | - | - | - |
| Ganoderma | 3 | 100 | 0.5 | 3 | 100 | 1.2 | 6 | 300 | 1.9 |
| Myxomycetes++ | 2 | 90 | 0.4 | 3 | 100 | 1.2 | 4 | 200 | 1.2 |
| Pithomyces++ | - | - | - | - | - | - | - | - | - |
| Rust | 1 | 40 | 0.2 | - | - | - | - | - | - |
| Scopulariopsis/Microascus | - | - | - | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Bispora | - | - | - | - | - | - | 1 | 40 | 0.2 |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Nigrospora | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | 1 | 40 | 0.2 |
| Spegazzinia | - | - | - | - | - | - | - | - | - |
| Torula++ | 1 | 40 | 0.2 | - | - | - | - | - | - |
| **Total Fungi** | **474** | **20130** | **100** | **192** | **8090** | **100** | **376** | **16130** | **100** |
| Hyphal Fragment | 1 | 40 | - | 2 | 90 | - | 1 | 40 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | 1 | 10* | - | - | - | - | - | - | - |

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

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**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0013 | | | 552411265-0014 | | | 552411265-0015 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 16 | | | 17 | | | 18 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 2 | - | - | 2 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 2 | - | - | 1 | - |
| Background (1-5) | - | 3 | - | - | 4 | - | - | 3 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



Initial report from: 07/25/2024 10:54 AM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

**EMSL Canada Inc.**
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http://www.EMSL.com / torontolab@emsl.com

**EMSL Order:** 552411265
**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
Caskanette & Assoc Consulting Engineers
290 King St East
Kitchener, ON N2G 2L3

**Phone:** (519) 496-7007
**Fax:**
**Collected Date:** 07/17/2024
**Received Date:** 07/22/2024 10:24 AM
**Analyzed Date:** 07/23/2024 - 07/25/2024

**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0016 | | | 552411265-0017 | | | 552411265-0018 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 19 | | | 20 | | | 21 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 1 | 40 | 0.2 | 1 | 40 | 0.2 | 21 | 900 | 5 |
| Ascospores | 40 | 1700 | 9.1 | 24 | 1000 | 4.2 | 26 | 1100 | 6.1 |
| Aspergillus/Penicillium++ | 69 | 2900 | 15.6 | 151(324) | 13800 | 58.6 | 89 | 3800 | 20.9 |
| Basidiospores | 104(111) | 4740 | 25.5 | 64 | 2700 | 11.5 | 83 | 3500 | 19.3 |
| Chaetomium++ | 1 | 10* | 0.1 | 15 | 640 | 2.7 | 9 | 400 | 2.2 |
| Cladosporium | 104(195) | 8320 | 44.8 | 85 | 3600 | 15.3 | 105(158) | 6740 | 37.1 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | - | - | - | 1 | 40 | 0.2 | 11 | 470 | 2.6 |
| Ganoderma | 9 | 400 | 2.2 | 2 | 90 | 0.4 | 5 | 200 | 1.1 |
| Myxomycetes++ | 7 | 300 | 1.6 | 4 | 200 | 0.8 | 15 | 640 | 3.5 |
| Pithomyces++ | - | - | - | - | - | - | 1 | 40 | 0.2 |
| Rust | - | - | - | - | - | - | - | - | - |
| Scopulariopsis/Microascus | 1 | 40 | 0.2 | 33 | 1400 | 5.9 | 2 | 90 | 0.5 |
| Stachybotrys/Memnoniella | - | - | - | 1 | 40 | 0.2 | 1 | 40 | 0.2 |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Bispora | - | - | - | - | - | - | 4 | 200 | 1.1 |
| Botrytis | 1 | 10* | 0.1 | - | - | - | - | - | - |
| Cercospora++ | 1 | 40 | 0.2 | - | - | - | - | - | - |
| Nigrospora | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | 1 | 40 | 0.2 |
| Spegazzinia | - | - | - | - | - | - | - | - | - |
| Torula++ | 2 | 90 | 0.5 | - | - | - | - | - | - |
| **Total Fungi** | **438** | **18590** | **100** | **554** | **23550** | **100** | **426** | **18160** | **100** |
| Hyphal Fragment | 4 | 200 | - | 6 | 300 | - | 3 | 100 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | - | - | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



Initial report from: 07/25/2024 10:54 AM

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http://www.EMSL.com / torontolab@emsl.com

**EMSL Order:** 552411265
**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
Caskanette & Assoc Consulting Engineers
290 King St East
Kitchener, ON N2G 2L3

**Project:** 24-248CG Brantford

**Phone:** (519) 496-7007
**Fax:**
**Collected Date:** 07/17/2024
**Received Date:** 07/22/2024 10:24 AM
**Analyzed Date:** 07/23/2024 - 07/25/2024

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0016 | | | 552411265-0017 | | | 552411265-0018 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 19 | | | 20 | | | 21 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 2 | - | - | 2 | - | - | 2 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 2 | - | - | 3 | - |
| Background (1-5) | - | 4 | - | - | 4 | - | - | 4 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



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**Collected Date:** 07/17/2024
**Received Date:** 07/22/2024 10:24 AM
**Analyzed Date:** 07/23/2024 - 07/25/2024

**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0019 | | | 552411265-0020 | | | 552411265-0021 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 22 | | | 23 | | | 24 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | - | - | - | 1 | 40 | 0.3 | - | - | - |
| Ascospores | 19 | 810 | 12 | 40 | 1700 | 11.3 | 56 | 2400 | 19.6 |
| Aspergillus/Penicillium++ | 18 | 770 | 11.4 | 82 | 3500 | 23.3 | 32 | 1400 | 11.4 |
| Basidiospores | 74 | 3200 | 47.3 | 78 | 3300 | 22 | 103 | 4400 | 35.9 |
| Chaetomium++ | - | - | - | 8 | 300 | 2 | - | - | - |
| Cladosporium | 40 | 1700 | 25.1 | 100(115) | 4910 | 32.7 | 88 | 3800 | 31 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | - | - | - | 1 | 10* | 0.1 | 1 | 40 | 0.3 |
| Ganoderma | 5 | 200 | 3 | 5 | 200 | 1.3 | 2 | 90 | 0.7 |
| Myxomycetes++ | 1 | 40 | 0.6 | 8 | 300 | 2 | 2 | 90 | 0.7 |
| Pithomyces++ | - | - | - | - | - | - | 1 | 10* | 0.1 |
| Rust | - | - | - | - | - | - | - | - | - |
| Scopulariopsis/Microascus | - | - | - | 16 | 680 | 4.5 | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | 1 | 40 | 0.3 | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Bispora | - | - | - | 1 | 40 | 0.3 | - | - | - |
| Botrytis | 1 | 40 | 0.6 | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Nigrospora | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Spegazzinia | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | - | - | - | 1 | 40 | 0.3 |
| **Total Fungi** | **158** | **6760** | **100** | **356** | **15020** | **100** | **286** | **12270** | **100** |
| Hyphal Fragment | 2 | 90 | - | 6 | 300 | - | - | - | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | 1 | 10* | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



Initial report from: 07/25/2024 10:54 AM

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**EMSL Order:** 552411265
**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
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**Project:** 24-248CG Brantford

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**Collected Date:** 07/17/2024
**Received Date:** 07/22/2024 10:24 AM
**Analyzed Date:** 07/23/2024 - 07/25/2024

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0019 | | | 552411265-0020 | | | 552411265-0021 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 22 | | | 23 | | | 24 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Attic of Unit 9 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 2 | - | - | 2 | - | - | 2 | - |
| Fibrous Particulate (1-4) | - | 2 | - | - | 2 | - | - | 2 | - |
| Background (1-5) | - | 3 | - | - | 4 | - | - | 3 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

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Kitchener, ON N2G 2L3

**Phone:** (519) 496-7007
**Fax:**
**Collected Date:** 07/17/2024
**Received Date:** 07/22/2024 10:24 AM
**Analyzed Date:** 07/23/2024 - 07/25/2024

**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0022 | | | 552411265-0023 | | | 552411265-0024 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 25 | | | 26 | | | EXT-17 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Exterior Background | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | - | - | - | 2 | 90 | 1.5 | - | - | - |
| Ascospores | - | - | - | 20 | 850 | 14.3 | 111(416) | 17800 | 28.2 |
| Aspergillus/Penicillium++ | - | - | - | 19 | 810 | 13.6 | 10 | 430 | 0.7 |
| Basidiospores | - | - | - | 54 | 2300 | 38.7 | 128(960) | 41000 | 64.9 |
| Chaetomium++ | - | - | - | 1 | 40 | 0.7 | - | - | - |
| Cladosporium | - | - | - | 39 | 1700 | 28.6 | 71 | 3000 | 4.7 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | - | - | - | - | - | - | - | - | - |
| Ganoderma | - | - | - | 3 | 100 | 1.7 | 21 | 900 | 1.4 |
| Myxomycetes++ | - | - | - | 1 | 10* | 0.2 | - | - | - |
| Pithomyces++ | - | - | - | - | - | - | - | - | - |
| Rust | - | - | - | - | - | - | 1 | 40 | 0.1 |
| Scopulariopsis/Microascus | - | - | - | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Bispora | - | - | - | - | - | - | - | - | - |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Nigrospora | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Spegazzinia | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | 1 | 40 | 0.7 | - | - | - |
| **Total Fungi** | **-** | **-** | **-** | **140** | **5940** | **100** | **1479** | **63170** | **100** |
| Hyphal Fragment | - | - | - | 1 | 40 | - | 1 | 40 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | 1 | 40 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



Initial report from: 07/25/2024 10:54 AM

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**EMSL Order:** 552411265
**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
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290 King St East
Kitchener, ON N2G 2L3

**Project:** 24-248CG Brantford

**Phone:** (519) 496-7007
**Fax:**
**Collected Date:** 07/17/2024
**Received Date:** 07/22/2024 10:24 AM
**Analyzed Date:** 07/23/2024 - 07/25/2024

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411265-0022 | | | 552411265-0023 | | | 552411265-0024 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 25 | | | 26 | | | EXT-17 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 9 | | | Attic of Unit 9 | | | Exterior Background | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | - | - | - | 3 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | - | - | - | 2 | - | - | 1 | - |
| Background (1-5) | - | - | - | - | 4 | - | - | 2 | - |

552411265-0022 - Not Submitted

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



Initial report from: 07/25/2024 10:54 AM

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http://www.EMSL.com / torontolab@emsl.com

**EMSL Order:** 552411269
**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
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**Phone:** (519) 496-7007
**Fax:**
**Collected Date:** 07/18/2024
**Received Date:** 07/22/2024 10:21 AM
**Analyzed Date:** 07/22/2024 - 07/24/2024

**Project:** 24-248CG Brantford

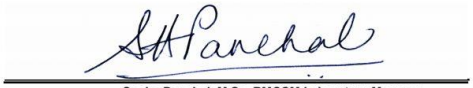
**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411269-0001 | | | 552411269-0002 | | | 552411269-0003 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | Ext. 18 | | | 27 | | | 28 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Exterior Background | | | Attic of Unit 27 | | | Attic of Unit 28 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 6 | 300 | 3 | Present | Present | - | - | - | - |
| Ascospores | 41 | 1700 | 17.1 | Present | Present | - | 11 | 470 | 9.2 |
| Aspergillus/Penicillium++ | 14 | 600 | 6 | Present | Present | - | 14 | 600 | 11.8 |
| Basidiospores | 104(142) | 6060 | 61.1 | Present | Present | - | 36 | 1500 | 29.5 |
| Bipolaris++ | - | - | - | - | - | - | - | - | - |
| Chaetomium++ | - | - | - | Present | Present | - | 1 | 10* | 0.2 |
| Cladosporium | 22 | 940 | 9.5 | Present | Present | - | 54 | 2300 | 45.2 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | 1 | 40 | 0.4 | - | - | - | 1 | 40 | 0.8 |
| Fusarium++ | - | - | - | - | - | - | - | - | - |
| Ganoderma | 2 | 90 | 0.9 | Present | Present | - | 1 | 40 | 0.8 |
| Myxomycetes++ | 2 | 90 | 0.9 | Present | Present | - | 2 | 90 | 1.8 |
| Pithomyces++ | 1 | 10* | 0.1 | - | - | - | 1 | 40 | 0.8 |
| Rust | 2 | 90 | 0.9 | - | - | - | - | - | - |
| Scopulariopsis/Microascus | - | - | - | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | Present | Present | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | Present | Present | - | - | - | - |
| **Total Fungi** | **233** | **9920** | **100** | **-** | **-** | **-** | **121** | **5090** | **100** |
| Hyphal Fragment | 1 | 40 | - | Present | Present | - | 1 | 10* | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | - | - | - |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Background (1-5) | - | 1 | - | - | 5 | - | - | 4 | - |

552411269-0002 - Overloaded

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory

No discernable field blank was submitted with this group of samples.



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**EMSL Order:** 552411269
**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
Caskanette & Assoc Consulting Engineers
290 King St East
Kitchener, ON N2G 2L3

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**Fax:**
**Collected Date:** 07/18/2024
**Received Date:** 07/22/2024 10:21 AM
**Analyzed Date:** 07/22/2024 - 07/24/2024

**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411269-0004 | | | 552411269-0005 | | | 552411269-0006 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 29 | | | 30 | | | 32 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 28 | | | Attic of Unit 28 | | | Attic of Unit 28 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 4 | 200 | 1 | 13 | 560 | 3.5 | 3 | 100 | 0.5 |
| Ascospores | 42 | 1800 | 9.4 | 35 | 1500 | 9.3 | 79 | 3400 | 16.1 |
| Aspergillus/Penicillium++ | 63 | 2700 | 14.2 | 60 | 2600 | 16.1 | 31 | 1300 | 6.1 |
| Basidiospores | 100(115) | 4910 | 25.8 | 74 | 3200 | 19.8 | 111(208) | 8880 | 42 |
| Bipolaris++ | - | - | - | - | - | - | - | - | - |
| Chaetomium++ | 1 | 40 | 0.2 | - | - | - | - | - | - |
| Cladosporium | 105(197) | 8410 | 44.1 | 103(172) | 7340 | 45.4 | 108(162) | 6910 | 32.7 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | - | - | - | 4 | 200 | 1.2 | - | - | - |
| Fusarium++ | - | - | - | - | - | - | - | - | - |
| Ganoderma | 7 | 300 | 1.6 | 5 | 200 | 1.2 | 5 | 200 | 0.9 |
| Myxomycetes++ | 8 | 300 | 1.6 | 12 | 510 | 3.2 | 6 | 300 | 1.4 |
| Pithomyces++ | - | - | - | - | - | - | - | - | - |
| Rust | - | - | - | 1 | 40 | 0.2 | 1 | 10* | 0 |
| Scopulariopsis/Microascus | - | - | - | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | 2 | 90 | 0.5 | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Botrytis | 7 | 300 | 1.6 | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | 1 | 40 | 0.2 |
| Torula++ | - | - | - | - | - | - | 1 | 10* | 0 |
| **Total Fungi** | **446** | **19050** | **100** | **376** | **16150** | **100** | **497** | **21150** | **100** |
| Hyphal Fragment | 7 | 300 | - | 9 | 400 | - | 4 | 200 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | 1 | 10* | - | 1 | 10* | - |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 2 | - | - | 3 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 2 | - | - | 1 | - |
| Background (1-5) | - | 4 | - | - | 4 | - | - | 3 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



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**Analyzed Date:** 07/22/2024 - 07/24/2024

**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411269-0007 | | | 552411269-0008 | | | 552411269-0009 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 34 | | | 35 | | | 36 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 34 | | | Attic of Unit 34 | | | Attic of Unit 34 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 1 | 40 | 0.3 | 3 | 100 | 1 | 3 | 100 | 2 |
| Ascospores | 74 | 3200 | 21.8 | 29 | 1200 | 12.3 | 17 | 720 | 14.3 |
| Aspergillus/Penicillium++ | 23 | 980 | 6.7 | 47 | 2000 | 20.5 | 3 | 100 | 2 |
| Basidiospores | 112(210) | 8960 | 61 | 63 | 2700 | 27.7 | 34 | 1400 | 27.8 |
| Bipolaris++ | - | - | - | - | - | - | - | - | - |
| Chaetomium++ | - | - | - | - | - | - | - | - | - |
| Cladosporium | 26 | 1100 | 7.5 | 73 | 3100 | 31.8 | 53 | 2200 | 43.7 |
| Curvularia | - | - | - | - | - | - | 1 | 10* | 0.2 |
| Epicoccum | - | - | - | 3 | 100 | 1 | 1 | 10* | 0.2 |
| Fusarium++ | - | - | - | - | - | - | - | - | - |
| Ganoderma | 3 | 100 | 0.7 | 6 | 300 | 3.1 | 8 | 300 | 6 |
| Myxomycetes++ | 8 | 300 | 2 | 3 | 100 | 1 | 4 | 200 | 4 |
| Pithomyces++ | - | - | - | - | - | - | - | - | - |
| Rust | - | - | - | 1 | 40 | 0.4 | - | - | - |
| Scopulariopsis/Microascus | - | - | - | 2 | 80 | 0.8 | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | 1 | 40 | 0.4 | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | - | - | - | - | - | - |
| **Total Fungi** | **345** | **14680** | **100** | **231** | **9760** | **100** | **124** | **5040** | **100** |
| Hyphal Fragment | - | - | - | 3 | 100 | - | 6 | 300 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | - | - | - |
| Analyt. Sensitivity 600x | - | 43 | - | - | 42 | - | - | 42 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 2 | - | - | 2 | - |
| Background (1-5) | - | 2 | - | - | 4 | - | - | 4 | - |

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



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**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
Caskanette & Assoc Consulting Engineers
290 King St East
Kitchener, ON N2G 2L3

**Project:** 24-248CG Brantford

**Phone:** (519) 496-7007
**Fax:**
**Collected Date:** 07/18/2024
**Received Date:** 07/22/2024 10:21 AM
**Analyzed Date:** 07/22/2024 - 07/24/2024

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411269-0010 | | | 552411269-0011 | | | 552411269-0012 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 37 | | | 38 | | | 39 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 34 | | | Attic of Unit 34 | | | Attic of Unit 34 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 1 | 10* | 0.3 | 2 | 90 | 1.4 | - | - | - |
| Ascospores | 11 | 470 | 12.1 | 15 | 640 | 10.2 | 8 | 300 | 4.9 |
| Aspergillus/Penicillium++ | 18 | 770 | 19.7 | 11 | 470 | 7.5 | 24 | 1000 | 16.4 |
| Basidiospores | 47 | 2000 | 51.3 | 41 | 1700 | 27.1 | 55 | 2300 | 37.6 |
| Bipolaris++ | - | - | - | - | - | - | - | - | - |
| Chaetomium++ | 1 | 10* | 0.3 | 2 | 90 | 1.4 | 1 | 40 | 0.7 |
| Cladosporium | 14 | 600 | 15.4 | 67 | 2900 | 46.3 | 51 | 2200 | 36 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | - | - | - | 1 | 40 | 0.6 | 2 | 90 | 1.5 |
| Fusarium++ | - | - | - | - | - | - | - | - | - |
| Ganoderma | 1 | 40 | 1 | 4 | 200 | 3.2 | 2 | 90 | 1.5 |
| Myxomycetes++ | - | - | - | 1 | 40 | 0.6 | 2 | 90 | 1.5 |
| Pithomyces++ | - | - | - | - | - | - | - | - | - |
| Rust | - | - | - | - | - | - | - | - | - |
| Scopulariopsis/Microascus | - | - | - | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | 1 | 10* | 0.2 | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Botrytis | - | - | - | 1 | 40 | 0.6 | - | - | - |
| Cercospora++ | - | - | - | 1 | 10* | 0.2 | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | 1 | 40 | 0.6 | - | - | - |
| **Total Fungi** | **93** | **3900** | **100** | **148** | **6270** | **100** | **145** | **6110** | **100** |
| Hyphal Fragment | - | - | - | 2 | 90 | - | 2 | 90 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | 1 | 40 | - | - | - | - |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 2 | - | - | 2 | - | - | 2 | - |
| Fibrous Particulate (1-4) | - | 2 | - | - | 2 | - | - | 2 | - |
| Background (1-5) | - | 3 | - | - | 3 | - | - | 4 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
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**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411269-0013 | | | 552411269-0014 | | | 552411269-0015 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 41 | | | 42 | | | 43 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 34 | | | Attic of Unit 34 | | | Attic of Unit 34 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | - | - | - | 1 | 10* | 0.2 | 1 | 40 | 0.7 |
| Ascospores | 6 | 300 | 24.6 | 6 | 300 | 6 | 8 | 300 | 5.2 |
| Aspergillus/Penicillium++ | 1 | 40 | 3.3 | 59 | 2500 | 50 | 46 | 2000 | 34.7 |
| Basidiospores | 13 | 560 | 45.9 | 28 | 1200 | 24 | 35 | 1500 | 26 |
| Bipolaris++ | - | - | - | - | - | - | - | - | - |
| Chaetomium++ | - | - | - | - | - | - | - | - | - |
| Cladosporium | 7 | 300 | 24.6 | 21 | 900 | 18 | 39 | 1700 | 29.5 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | - | - | - | 1 | 40 | 0.8 | 2 | 90 | 1.6 |
| Fusarium++ | - | - | - | - | - | - | - | - | - |
| Ganoderma | - | - | - | - | - | - | 1 | 40 | 0.7 |
| Myxomycetes++ | 1 | 10* | 0.8 | - | - | - | 2 | 90 | 1.6 |
| Pithomyces++ | - | - | - | 1 | 10* | 0.2 | - | - | - |
| Rust | - | - | - | - | - | - | - | - | - |
| Scopulariopsis/Microascus | - | - | - | 1 | 40 | 0.8 | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | 1 | 10* | 0.8 | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | - | - | - | - | - | - |
| **Total Fungi** | **29** | **1220** | **100** | **118** | **5000** | **100** | **134** | **5760** | **100** |
| Hyphal Fragment | - | - | - | - | - | - | 1 | 10* | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | - | - | - |
| Analyt. Sensitivity 600x | - | 43 | - | - | 43 | - | - | 43 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 2 | - | - | 2 | - | - | 2 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 1 | - | - | 2 | - |
| Background (1-5) | - | 2 | - | - | 3 | - | - | 4 | - |

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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**Analyzed Date:** 07/22/2024 - 07/24/2024

**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411269-0016 | | | 552411269-0017 | | | 552411269-0018 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 44 | | | 45 | | | 46 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 34 | | | Attic of Unit 34 | | | Attic of Unit 34 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 1 | 10* | 0.1 | 1 | 40 | 0.2 | 2 | 80 | 0.7 |
| Ascospores | 31 | 1300 | 7.8 | 8 | 300 | 1.6 | 15 | 630 | 5.5 |
| Aspergillus/Penicillium++ | 14 | 590 | 3.5 | 102(332) | 14000 | 73.7 | 82 | 3500 | 30.5 |
| Basidiospores | 106(153) | 6460 | 38.7 | 41 | 1700 | 8.9 | 71 | 3000 | 26.2 |
| Bipolaris++ | - | - | - | - | - | - | - | - | - |
| Chaetomium++ | - | - | - | 1 | 40 | 0.2 | 2 | 80 | 0.7 |
| Cladosporium | 116(189) | 7980 | 47.8 | 67 | 2800 | 14.7 | 98 | 4100 | 35.7 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | 1 | 40 | 0.2 | - | - | - | - | - | - |
| Fusarium++ | - | - | - | - | - | - | - | - | - |
| Ganoderma | 8 | 300 | 1.8 | 2 | 80 | 0.4 | 1 | 40 | 0.3 |
| Myxomycetes++ | - | - | - | 1 | 40 | 0.2 | 1 | 40 | 0.3 |
| Pithomyces++ | - | - | - | - | - | - | - | - | - |
| Rust | - | - | - | - | - | - | - | - | - |
| Scopulariopsis/Microascus | - | - | - | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Torula++ | - | - | - | - | - | - | - | - | - |
| **Total Fungi** | **397** | **16680** | **100** | **453** | **19000** | **100** | **272** | **11470** | **100** |
| Hyphal Fragment | 8 | 300 | - | 1 | 40 | - | 3 | 100 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | - | - | - | - | - | - | - | - | - |
| Analyt. Sensitivity 600x | - | 42 | - | - | 42 | - | - | 42 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Background (1-5) | - | 4 | - | - | 4 | - | - | 4 | - |

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++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

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**Project:** 24-248CG Brantford

**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411269-0019 | | | 552411269-0020 | | | 552411269-0021 | | |
|---|---|---|---|---|---|---|---|---|---|
| Client Sample ID: | 47 | | | 48 | | | 49 | | |
| Volume (L): | 75 | | | 75 | | | 75 | | |
| Sample Location: | Attic of Unit 34 | | | Attic of Unit 34 | | | Attic of Unit 34 | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** |
| Alternaria (Ulocladium) | 21 | 890 | 4.1 | 1 | 40 | 0.2 | - | - | - |
| Ascospores | 29 | 1200 | 5.5 | 18 | 760 | 4.7 | 10 | 420 | 9.1 |
| Aspergillus/Penicillium++ | 104(169) | 7130 | 32.6 | 44 | 1900 | 11.8 | 9 | 400 | 8.6 |
| Basidiospores | 100(108) | 4560 | 20.9 | 48 | 2000 | 12.4 | 16 | 680 | 14.7 |
| Bipolaris++ | - | - | - | - | - | - | - | - | - |
| Chaetomium++ | 1 | 40 | 0.2 | - | - | - | - | - | - |
| Cladosporium | 110(179) | 7550 | 34.6 | 116(251) | 10600 | 65.8 | 73 | 3100 | 66.8 |
| Curvularia | - | - | - | - | - | - | - | - | - |
| Epicoccum | 2 | 80 | 0.4 | - | - | - | 1 | 40 | 0.9 |
| Fusarium++ | - | - | - | - | - | - | - | - | - |
| Ganoderma | 5 | 200 | 0.9 | 9 | 400 | 2.5 | - | - | - |
| Myxomycetes++ | 1 | 40 | 0.2 | 6 | 300 | 1.9 | - | - | - |
| Pithomyces++ | - | - | - | - | - | - | - | - | - |
| Rust | - | - | - | - | - | - | - | - | - |
| Scopulariopsis/Microascus | 2 | 80 | 0.4 | - | - | - | - | - | - |
| Stachybotrys/Memnoniella | - | - | - | - | - | - | - | - | - |
| Unidentifiable Spores | - | - | - | - | - | - | - | - | - |
| Botrytis | - | - | - | - | - | - | - | - | - |
| Cercospora++ | - | - | - | - | - | - | - | - | - |
| Polythrincium | - | - | - | - | - | - | - | - | - |
| Torula++ | 2 | 80 | 0.4 | 3 | 100 | 0.6 | - | - | - |
| **Total Fungi** | **519** | **21850** | **100** | **380** | **16100** | **100** | **109** | **4640** | **100** |
| Hyphal Fragment | 14 | 590 | - | 1 | 40 | - | 2 | 80 | - |
| Insect Fragment | - | - | - | - | - | - | - | - | - |
| Pollen | 1 | 40 | - | - | - | - | - | - | - |
| Analyt. Sensitivity 600x | - | 42 | - | - | 42 | - | - | 42 | - |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | - | 13* | - |
| Skin Fragments (1-4) | - | 1 | - | - | 1 | - | - | 1 | - |
| Fibrous Particulate (1-4) | - | 2 | - | - | 1 | - | - | 1 | - |
| Background (1-5) | - | 4 | - | - | 4 | - | - | 3 | - |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

Sneha Panchal, M.Sc.,RMCCM Laboratory Manager
or other Approved Signatory



Initial report from: 07/25/2024 10:47 AM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

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http://www.EMSL.com / torontolab@emsl.com

**EMSL Order:** 552411269
**Customer ID:** 55CUCE75
**Customer PO:** 24-248CG
**Project ID:**

**Attention:** Dave Giles
Caskanette & Assoc Consulting Engineers
290 King St East
Kitchener, ON N2G 2L3

**Phone:** (519) 496-7007
**Fax:**
**Collected Date:** 07/18/2024
**Received Date:** 07/22/2024 10:21 AM
**Analyzed Date:** 07/22/2024 - 07/24/2024

**Project:** 24-248CG Brantford

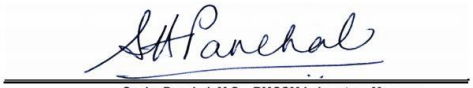
**Test Report:Air-O-Cell(™) Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)**

| Lab Sample Number: | 552411269-0022 | | | 552411269-0023 | | | |
|---|---|---|---|---|---|---|---|
| Client Sample ID: | 50 | | | 51 | | | |
| Volume (L): | 75 | | | 75 | | | |
| Sample Location: | Attic of Unit 34 | | | Attic of Unit 34 | | | |
| **Spore Types** | **Raw Count†** | **Count/m³** | **% of Total** | **Raw Count†** | **Count/m³** | **% of Total** | |
| Alternaria (Ulocladium) | 6 | 300 | 2.6 | 43 | 1800 | 3.4 | |
| Ascospores | 7 | 300 | 2.6 | 30 | 1300 | 2.4 | |
| Aspergillus/Penicillium++ | 41 | 1700 | 14.7 | 108(702) | 29600 | 55.4 | |
| Basidiospores | 37 | 1600 | 13.8 | 38 | 1600 | 3 | |
| Bipolaris++ | - | - | - | - | - | - | |
| Chaetomium++ | 1 | 40 | 0.3 | - | - | - | |
| Cladosporium | 120(173) | 7300 | 63.1 | 102(442) | 18700 | 35 | |
| Curvularia | - | - | - | - | - | - | |
| Epicoccum | - | - | - | - | - | - | |
| Fusarium++ | - | - | - | - | - | - | |
| Ganoderma | 2 | 80 | 0.7 | 5 | 200 | 0.4 | |
| Myxomycetes++ | 4 | 200 | 1.7 | 4 | 200 | 0.4 | |
| Pithomyces++ | - | - | - | - | - | - | |
| Rust | - | - | - | - | - | - | |
| Scopulariopsis/Microascus | - | - | - | - | - | - | |
| Stachybotrys/Memnoniella | - | - | - | - | - | - | |
| Unidentifiable Spores | - | - | - | - | - | - | |
| Botrytis | - | - | - | - | - | - | |
| Cercospora++ | - | - | - | - | - | - | |
| Polythrincium | - | - | - | - | - | - | |
| Torula++ | 1 | 40 | 0.3 | - | - | - | |
| **Total Fungi** | **272** | **11560** | **100** | **1264** | **53400** | **100** | |
| Hyphal Fragment | 4 | 200 | - | 5 | 200 | - | |
| Insect Fragment | - | - | - | - | - | - | |
| Pollen | - | - | - | - | - | - | |
| Analyt. Sensitivity 600x | - | 42 | - | - | 42 | - | |
| Analyt. Sensitivity 300x | - | 13* | - | - | 13* | - | |
| Skin Fragments (1-4) | - | 2 | - | - | 1 | - | |
| Fibrous Particulate (1-4) | - | 1 | - | - | 1 | - | |
| Background (1-5) | - | 4 | - | - | 3 | - | |

† Due to method stopping rules, extrapolated raw counts are reported in parenthesis.

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.



**Sneha Panchal, M.Sc.,RMCCM Laboratory Manager**
**or other Approved Signatory**



Initial report from: 07/25/2024 10:47 AM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

## Limitations

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:

   (a) The Scope of Services, and time and budgetary limitations discussed at the time of our retainer; and,

   (b) The Limitations stated herein.

2. No other warranties or representations, either expressed or implied, are made as to the professional services provided, or the conclusions presented.

3. The opinions presented in this report were based, in part, on visual observations of the site and attendant structures. Our conclusions cannot and are not extended to include those portions of the site or structures which were not reasonably available, in our opinion, for direct observation.

4. In so far as the investigation included obtaining information from third parties and employees or agents of the owner, no attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.

5. Because of the limitations referred to above, different building conditions from those stated in our report may exist. Should such different conditions be encountered, we must be notified in order that we may determine if modifications to the conclusions in the report are necessary.

6. The utilization of our services during the implementation of any remedial measures will allow us to observe compliance with the conclusions and recommendations contained in the report. Our involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.

7. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report. Any use which any third party makes of the report, in whole or in part, or any reliance thereon, or decisions made based on any information of conclusions in the report, is the sole responsibility of such third party. We accept no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.

8. **Waiver of Consequential Damages**

   Notwithstanding any other provision of this Agreement, and to the fullest extent permitted by law, neither the Client or the Consultant, their respective officers, directors, partners, employees, contractors or subconsultants shall be liable to the other or shall make any claim for any incidental, indirect or consequential damages arising out of or connected in any way to the project or this assignment. This mutual waiver of consequential damages shall include, but is not limited to, loss of use, loss of profit, loss of business, loss of income, loss of reputation and any other consequential damages that either party may have incurred from any cause of action including negligence, strict liability, breach of contract and breach of strict or implied warranty. Both the Client and the Consultant shall require similar waivers of consequential damages protecting all the entities or persons named herein in all contracts and subcontracts with others involved in this project.

9. **Limitation of Liability**

   To the maximum extent permitted by law, the Client agrees to limit the Consultant's liability for the Client's damages to the sum of the Consultant's fee or the available proceeds of insurance at the time a claim is made, whichever is greater. This limitation shall apply regardless of the cause of action.

10. **Corporate Protection Provision**

    It is intended by the parties to this Agreement that the Consultant's services in connection with the Project shall not subject the Consultant's individual employees, officers or directors to any personal legal exposure for the risks associated with this Project. Therefore, and notwithstanding anything to the contrary contained herein, the Client agrees that as the Client's sole and exclusive remedy, any claim, demand or suit shall be directed and/or asserted only against the Consultant, Caskanette & Associates Consulting Engineers, and not against any of the Consultant's individual employees, officers or directors.