Table 4
Validated Asbestos in Air Results
Columbian Enameling - RS
Terre Haute, Vigo County, Indiana

| | | | Analyte | Total Asbestos |
|---|---|---|---|---|
| | | | Screening Level | 0.001 f/cc |
| **Sample ID** | **Date Collected** | **Sample Location** | **Result** | **Sensitivity (f/cc)** |
| CE-AA-N-01-20240829 | 8/29/2024 | North Perimeter | ND | 0.0003183 |
| CE-AA-S-01-20240829 | 8/29/2024 | South Perimeter | ND | 0.0003287 |
| CE-AA-E-01-20240829 | 8/29/2024 | East Perimeter | ND | 0.0003218 |
| CE-AA-W-01-20240829 | 8/29/2024 | West Perimeter | ND | 0.0003235 |
| CE-AA-GS-01-20240829 | 8/29/2024 | Gradeschool | ND | 0.0003293 |
| CE-AA-GS-01-20240829-D | 8/29/2024 | Gradeschool Duplicate | ND | 0.0003246 |
| CE-LB-01-20240829 | 8/29/2024 | Lot Blank | ND | NA |
| CE-LB-02-20240829 | 8/29/2024 | Lot Blank | ND | NA |
| CE-FB-01-20240829 | 8/29/2024 | Field Blank | ND | NA |

**Notes:**

f/cc: Fibers per cubic centimeter
NA: Not applicable
ND: Not detected above the lab sensitivity

TETRA TECH

October 7, 2024

Mr. Leonard Zintak
On-Scene Coordinator
U.S. Environmental Protection Agency, Region 5
Superfund and Emergency Management Division
77 West Jackson Boulevard
Chicago, Illinois 60604

**Subject:** **Data Validation Report**
**Site Assessment Columbian Enameling**
**EPA Contract No.: 68HE0519D0005**
**Task Order/Task Order Line Item No.: 68HE0520F0032/0001EC254**
**Document Tracking No. 2936**

Dear Mr. Zintak:

Tetra Tech, Inc. (Tetra Tech) is submitting this data validation report for nine high volume air samples (including one field duplicate sample, two lot blank samples, and one field blank sample) collected at the Columbian Enameling site. The samples were collected on August 29, 2024, and were analyzed for asbestos by EMSL Analytical, Inc. The final laboratory data package was received on September 24, 2024.

This checklist summarizes the Stage 2B data validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the Tetra Tech *Quality Assurance Project Plan (QAPP), Superfund Technical Assessment and Response Team (START V), EPA Region 5, Revision 5* (August 2023), the Tetra Tech site-specific requirements in the *Air Monitoring and Sampling and Analysis Plan, Addendum No. 2, Columbian Enameling Site – RS* (August 2024), and the U.S. EPA *TEM Validation Process Guidelines for Asbestos Data Review* (October 2016).

No rejection or qualification of results was required for this data package. The results may be used as reported by the laboratory.

If you have any questions regarding this data validation report, please contact the project manager.

Sincerely,

Enclosure
cc: Karl Schultz, Tetra Tech Program Manager
Alexia Scholl, Tetra Tech Project Manager
Georgia Goldrick, Tetra Tech Project Manager
Mayra ArroyoOrtiz, Tetra Tech Project Document Control Coordinator TO-TOLIN File

Tetra Tech, Inc.
1 South Wacker Dr. Suite 3700, Chicago, IL 60606
Tel 312.201.7479 | Fax 312.201.0031
www.tetratech.com

# ATTACHMENT

# DATA VALIDATION REPORT
# EMSL ANALYTICAL, INC. REPORT NO. 042418277

# ASBESTOS DATA VALIDATION CHECKLIST – STAGE 2B
# EPA REGION 5 START CONTRACT

| | | | |
|---|---|---|---|
| **Site Name** | Site Assessment Columbian Enameling | **TO/TOLIN No.** | 68HE0520F0032 / 0001EC254 |
| **Document Tracking No.** | 2936 | | |
| **Data Reviewer (name and date)** | Celina Barnett-Cashman<br>September 30, 2024 | **Technical Reviewer (name and date)** | Taylor Cooper<br>October 3, 2024 |
| **Laboratory Report No.** | 042418277 | **Laboratory** | EMSL Analytical, Inc. - Cinnaminson, NJ |
| **Analyses** | Asbestos analysis of air samples by transmission electron microscopy (TEM) ISO 10312 method | | |
| **Samples and Matrix** | Nine high volume air samples (including one field duplicate pair, one field blank, and two lot blanks) | | |
| **Collection Date(s)** | August 29, 2024 | | |
| **Field Duplicate Pairs** | CE-AS-GS-01-20240829 and CE-AA-GS-01-20240829-D | | |
| **Field QC Blanks** | CE-FB-01-20240829, CE-LB-01-20240829 and CE-LB-02-20240829 | | |

**INTRODUCTION**

This checklist summarizes the Stage 2B data validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the Tetra Tech *Quality Assurance Project Plan, Superfund Technical Assessment and Response Team (START V), EPA Region 5, Revision 5* (August 2023), the Tetra Tech site-specific requirements in the *Air Monitoring and Sampling and Analysis Plan, Addendum No. 2, Columbian Enameling Site – RS* (August 2024), and the U.S. EPA *TEM Validation Process Guidelines for Asbestos Data Review* (October 2016).

**OVERALL EVALUATION**

No rejection or qualification of results was required for this data package. The results may be used as reported by the laboratory.

**Data completeness:**

| Within Criteria | Exceedance/Notes |
|---|---|
| Y | |

**Sample receipt, and holding times:**

| Within Criteria | Exceedance/Notes |
|---|---|
| Y | |

# ASBESTOS DATA VALIDATION CHECKLIST – STAGE 2B
# EPA REGION 5 START CONTRACT

**Sample preparation:**

| Within Criteria | Exceedance/Notes |
|---|---|
| Y | |

**Microscope Alignment:**

| Within Criteria | Exceedance/Notes |
|---|---|
| Y | |

**Instrument/Standard Calibration:**

| Within Criteria | Exceedance/Notes |
|---|---|
| N | The camera constant evaluation taken on September 16, 2024, reported a warning flag. No qualifications were applied because the sampling and analysis plan indicates that 5 percent (%) from the baseline aperture diameter is allowable. |

**Analytical Sensitivity:**

| Within Criteria | Exceedance/Notes |
|---|---|
| Y | |

**Structure Recording and Identification:**

| Within Criteria | Exceedance/Notes |
|---|---|
| Y | |

**Method blanks:**

| Within Criteria | Exceedance/Notes |
|---|---|
| Y | A concentration per cubic centimeter cannot be reported because no air volume was pulled through the method blank sample. For laboratory method blanks, field blanks and field lot blanks, results are reported in terms of density (structures per square millimeter of the filter). |

**Field blanks:**

| Within Criteria | Exceedance/Notes |
|---|---|
| Y | Although no results were provided in the electronic data deliverable (EDD) for the field blank sample and lot blank samples, the laboratory report indicated all field blank sample and lot blank sample results as zero. All results for the field blank and lot blanks were also verified nondetect by the raw data provided. Therefore, validated results for the field blank were set at zero (0) and qualified as nondetect (flagged U). |

**Field duplicates:**

| Within Criteria | Exceedance/Notes |
|---|---|
| Y | |

**Recount/Repreparation Analysis:**

| Within Criteria | Exceedance/Notes |
|---|---|
| NA | |

**Other ["User Defined" Analysis]:**

| Within Criteria | Exceedance/Notes |
|---|---|
| N | The "User Defined" analysis listed in the data package and attached electronic data deliverable (EDD) table was clarified with the laboratory to be phase contrast microscopy equivalent with binning rules specific to the SS-QAPP. |

# ASBESTOS DATA VALIDATION CHECKLIST – STAGE 2B
# EPA REGION 5 START CONTRACT

**Overall Qualifications:**
See the results summary pages attached for changes to the laboratory qualifiers based on this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

| | |
|---|---|
| J | The associated analyte concentrations may be inaccurate or imprecise due to the quality of the data generated because certain Quality Control (QC) criteria were not met. |
| N | The associated analyte identification may be inaccurate and the associated concentration represents an approximated value. |
| UJ | The non-detect result may be inaccurate or imprecise due to the quality of the data generated because certain QC criteria were not met. |
| R | The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample. |
| X | Reviewer defined. |

If the data reviewer chooses to use additional reason codes, a complete explanation of those reason codes must accompany the data review. The following is a list of reason codes and definitions that may be used for the validation of this data package:

| | |
|---|---|
| MC | Structure/fiber counts and reported concentrations may be inaccurate due to improper or infrequent scope alignment and/or magnification calibrations. |
| IC | Identification by elemental composition, diffraction pattern or optical properties may be inaccurate due to improper or infrequent EDXA, and camera constant. |
| PA | Structure/fiber counts and reported concentrations may be inaccurate due to improper or infrequent calibration of the plasma asher. |
| DR | The reported concentrations or structure/fiber identification may be inaccurate due to infrequent or discordant intra- and/or inter-analyst, laboratory duplicate, and/or reference material analyses. |
| FB | The reported concentration may be inaccurate due to the presence of analyte structures/fibers in the associate field blank. |
| LB | The reported concentration may be inaccurate due to the presence of analyte structures/fibers in the associate laboratory blank. |
| SC | The reported concentration may be inaccurate due to the condition of samples upon receipt at the laboratory and/or improper storage prior to sample preparation and/or analysis. |
| DL | The number of grid openings analyzed is insufficient to meet the required limit of detection (LOD). |
| ID | The asbestos identification and concentrations may be inaccurate because the recorded structure types are not consistent with those described in TEM SOW and/or method. |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-AA-E-01-20240829 | PCME | Total Asbestos | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | Total Chrysotile (CH) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | Total Amphibole | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | actinolite (AC) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | amosite (AM) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | anthophyllite (AN) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | crocidolite (CR) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | tremolite (TR) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | winchite/richterite/tremolite/actinolite (WRTA) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | other amphibole (OA) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | Solid Soln: Amosite | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | Solid Soln: Trem-Act | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | PCME | other mineral class (OM) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | Total Asbestos | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | Total Chrysotile (CH) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | Total Amphibole | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | actinolite (AC) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | amosite (AM) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | anthophyllite (AN) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | crocidolite (CR) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | tremolite (TR) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | winchite/richterite/tremolite/actinolite (WRTA) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | other amphibole (OA) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | Solid Soln: Amosite | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | Solid Soln: Trem-Act | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | Total TEM | other mineral class (OM) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | Total Asbestos | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | Total Chrysotile (CH) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | Total Amphibole | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | actinolite (AC) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | amosite (AM) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | anthophyllite (AN) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | crocidolite (CR) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | tremolite (TR) | 9.60E-04 | U | s/cc | 9.60E-04 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-AA-E-01-20240829 | USER DEFINED | winchite/richterite/tremolite/actinolite (WRTA) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | other amphibole (OA) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | Solid Soln: Amosite | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | Solid Soln: Trem-Act | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-E-01-20240829 | USER DEFINED | other mineral class (OM) | 9.60E-04 | U | s/cc | 9.60E-04 | U |
| CE-AA-GS-01-20240829 | PCME | Total Asbestos | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | Total Chrysotile (CH) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | Total Amphibole | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | actinolite (AC) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | amosite (AM) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | anthophyllite (AN) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | crocidolite (CR) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | tremolite (TR) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | winchite/richterite/tremolite/actinolite (WRTA) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | other amphibole (OA) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | Solid Soln: Amosite | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | Solid Soln: Trem-Act | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | PCME | other mineral class (OM) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | Total Asbestos | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | Total Chrysotile (CH) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | Total Amphibole | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | actinolite (AC) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | amosite (AM) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | anthophyllite (AN) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | crocidolite (CR) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | tremolite (TR) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | winchite/richterite/tremolite/actinolite (WRTA) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | other amphibole (OA) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | Solid Soln: Amosite | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | Solid Soln: Trem-Act | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | Total TEM | other mineral class (OM) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | Total Asbestos | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | Total Chrysotile (CH) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | Total Amphibole | 9.90E-04 | U | s/cc | 9.90E-04 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-AA-GS-01-20240829 | USER DEFINED | actinolite (AC) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | amosite (AM) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | anthophyllite (AN) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | crocidolite (CR) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | tremolite (TR) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | winchite/richterite/tremolite/actinolite (WRTA) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | other amphibole (OA) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | Solid Soln: Amosite | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | Solid Soln: Trem-Act | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829 | USER DEFINED | other mineral class (OM) | 9.90E-04 | U | s/cc | 9.90E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | Total Asbestos | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | Total Chrysotile (CH) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | Total Amphibole | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | actinolite (AC) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | amosite (AM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | anthophyllite (AN) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | crocidolite (CR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | tremolite (TR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | winchite/richterite/tremolite/actinolite (WRTA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | other amphibole (OA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | Solid Soln: Amosite | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | Solid Soln: Trem-Act | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | PCME | other mineral class (OM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | Total Asbestos | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | Total Chrysotile (CH) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | Total Amphibole | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | actinolite (AC) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | amosite (AM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | anthophyllite (AN) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | crocidolite (CR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | tremolite (TR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | winchite/richterite/tremolite/actinolite (WRTA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | other amphibole (OA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | Solid Soln: Amosite | 9.70E-04 | U | s/cc | 9.70E-04 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-AA-GS-01-20240829-D | Total TEM | Solid Soln: Trem-Act | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | Total TEM | other mineral class (OM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | Total Asbestos | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | Total Chrysotile (CH) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | Total Amphibole | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | actinolite (AC) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | amosite (AM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | anthophyllite (AN) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | crocidolite (CR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | tremolite (TR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | winchite/richterite/tremolite/actinolite (WRTA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | other amphibole (OA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | Solid Soln: Amosite | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | Solid Soln: Trem-Act | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-GS-01-20240829-D | USER DEFINED | other mineral class (OM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-N-01-20240829 | PCME | Total Asbestos | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | Total Chrysotile (CH) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | Total Amphibole | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | actinolite (AC) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | amosite (AM) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | anthophyllite (AN) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | crocidolite (CR) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | tremolite (TR) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | winchite/richterite/tremolite/actinolite (WRTA) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | other amphibole (OA) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | Solid Soln: Amosite | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | Solid Soln: Trem-Act | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | PCME | other mineral class (OM) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | Total Asbestos | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | Total Chrysotile (CH) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | Total Amphibole | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | actinolite (AC) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | amosite (AM) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | anthophyllite (AN) | 9.50E-04 | U | s/cc | 9.50E-04 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-AA-N-01-20240829 | Total TEM | crocidolite (CR) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | tremolite (TR) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | winchite/richterite/tremolite/actinolite (WRTA) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | other amphibole (OA) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | Solid Soln: Amosite | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | Solid Soln: Trem-Act | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | Total TEM | other mineral class (OM) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | Total Asbestos | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | Total Chrysotile (CH) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | Total Amphibole | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | actinolite (AC) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | amosite (AM) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | anthophyllite (AN) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | crocidolite (CR) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | tremolite (TR) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | winchite/richterite/tremolite/actinolite (WRTA) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | other amphibole (OA) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | Solid Soln: Amosite | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | Solid Soln: Trem-Act | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-N-01-20240829 | USER DEFINED | other mineral class (OM) | 9.50E-04 | U | s/cc | 9.50E-04 | U |
| CE-AA-S-01-20240829 | PCME | Total Asbestos | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | Total Chrysotile (CH) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | Total Amphibole | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | actinolite (AC) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | amosite (AM) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | anthophyllite (AN) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | crocidolite (CR) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | tremolite (TR) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | winchite/richterite/tremolite/actinolite (WRTA) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | other amphibole (OA) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | Solid Soln: Amosite | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | Solid Soln: Trem-Act | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | PCME | other mineral class (OM) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | Total Asbestos | 9.80E-04 | U | s/cc | 9.80E-04 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-AA-S-01-20240829 | Total TEM | Total Chrysotile (CH) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | Total Amphibole | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | actinolite (AC) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | amosite (AM) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | anthophyllite (AN) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | crocidolite (CR) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | tremolite (TR) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | winchite/richterite/tremolite/actinolite (WRTA) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | other amphibole (OA) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | Solid Soln: Amosite | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | Solid Soln: Trem-Act | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | Total TEM | other mineral class (OM) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | Total Asbestos | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | Total Chrysotile (CH) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | Total Amphibole | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | actinolite (AC) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | amosite (AM) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | anthophyllite (AN) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | crocidolite (CR) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | tremolite (TR) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | winchite/richterite/tremolite/actinolite (WRTA) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | other amphibole (OA) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | Solid Soln: Amosite | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | Solid Soln: Trem-Act | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-S-01-20240829 | USER DEFINED | other mineral class (OM) | 9.80E-04 | U | s/cc | 9.80E-04 | U |
| CE-AA-W-01-20240829 | PCME | Total Asbestos | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | Total Chrysotile (CH) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | Total Amphibole | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | actinolite (AC) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | amosite (AM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | anthophyllite (AN) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | crocidolite (CR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | tremolite (TR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | winchite/richterite/tremolite/actinolite (WRTA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-AA-W-01-20240829 | PCME | other amphibole (OA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | Solid Soln: Amosite | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | Solid Soln: Trem-Act | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | PCME | other mineral class (OM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | Total Asbestos | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | Total Chrysotile (CH) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | Total Amphibole | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | actinolite (AC) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | amosite (AM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | anthophyllite (AN) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | crocidolite (CR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | tremolite (TR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | winchite/richterite/tremolite/actinolite (WRTA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | other amphibole (OA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | Solid Soln: Amosite | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | Solid Soln: Trem-Act | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | Total TEM | other mineral class (OM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | Total Asbestos | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | Total Chrysotile (CH) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | Total Amphibole | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | actinolite (AC) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | amosite (AM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | anthophyllite (AN) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | crocidolite (CR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | tremolite (TR) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | winchite/richterite/tremolite/actinolite (WRTA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | other amphibole (OA) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | Solid Soln: Amosite | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | Solid Soln: Trem-Act | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-AA-W-01-20240829 | USER DEFINED | other mineral class (OM) | 9.70E-04 | U | s/cc | 9.70E-04 | U |
| CE-FB-01-20240829 | PCME | Total Asbestos | #VALUE! | | structures/$mm^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | Total Chrysotile (CH) | #VALUE! | | structures/$mm^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | Total Amphibole | #VALUE! | | structures/$mm^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | actinolite (AC) | #VALUE! | | structures/$mm^2$ | 0 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-FB-01-20240829 | PCME | amosite (AM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | anthophyllite (AN) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | crocidolite (CR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | tremolite (TR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | winchite/richterite/tremolite/actinolite (WRTA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | other amphibole (OA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | Solid Soln: Amosite | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | Solid Soln: Trem-Act | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | PCME | other mineral class (OM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | Total Asbestos | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | Total Chrysotile (CH) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | Total Amphibole | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | actinolite (AC) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | amosite (AM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | anthophyllite (AN) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | crocidolite (CR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | tremolite (TR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | winchite/richterite/tremolite/actinolite (WRTA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | other amphibole (OA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | Solid Soln: Amosite | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | Solid Soln: Trem-Act | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | Total TEM | other mineral class (OM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | Total Asbestos | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | Total Chrysotile (CH) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | Total Amphibole | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | actinolite (AC) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | amosite (AM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | anthophyllite (AN) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | crocidolite (CR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | tremolite (TR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | winchite/richterite/tremolite/actinolite (WRTA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | other amphibole (OA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | Solid Soln: Amosite | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-FB-01-20240829 | USER DEFINED | Solid Soln: Trem-Act | #VALUE! | | structures/mm$^2$ | 0 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-FB-01-20240829 | USER DEFINED | other mineral class (OM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | Total Asbestos | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | Total Chrysotile (CH) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | Total Amphibole | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | actinolite (AC) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | amosite (AM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | anthophyllite (AN) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | crocidolite (CR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | tremolite (TR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | winchite/richterite/tremolite/actinolite (WRTA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | other amphibole (OA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | Solid Soln: Amosite | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | Solid Soln: Trem-Act | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | PCME | other mineral class (OM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | Total Asbestos | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | Total Chrysotile (CH) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | Total Amphibole | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | actinolite (AC) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | amosite (AM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | anthophyllite (AN) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | crocidolite (CR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | tremolite (TR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | winchite/richterite/tremolite/actinolite (WRTA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | other amphibole (OA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | Solid Soln: Amosite | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | Solid Soln: Trem-Act | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | Total TEM | other mineral class (OM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | Total Asbestos | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | Total Chrysotile (CH) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | Total Amphibole | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | actinolite (AC) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | amosite (AM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | anthophyllite (AN) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | crocidolite (CR) | #VALUE! | | structures/mm$^2$ | 0 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-LB-01-20240829 | USER DEFINED | tremolite (TR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | winchite/richterite/tremolite/actinolite (WRTA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | other amphibole (OA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | Solid Soln: Amosite | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | Solid Soln: Trem-Act | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-01-20240829 | USER DEFINED | other mineral class (OM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | Total Asbestos | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | Total Chrysotile (CH) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | Total Amphibole | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | actinolite (AC) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | amosite (AM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | anthophyllite (AN) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | crocidolite (CR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | tremolite (TR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | winchite/richterite/tremolite/actinolite (WRTA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | other amphibole (OA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | Solid Soln: Amosite | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | Solid Soln: Trem-Act | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | PCME | other mineral class (OM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | Total Asbestos | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | Total Chrysotile (CH) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | Total Amphibole | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | actinolite (AC) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | amosite (AM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | anthophyllite (AN) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | crocidolite (CR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | tremolite (TR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | winchite/richterite/tremolite/actinolite (WRTA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | other amphibole (OA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | Solid Soln: Amosite | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | Solid Soln: Trem-Act | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | Total TEM | other mineral class (OM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | Total Asbestos | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | Total Chrysotile (CH) | #VALUE! | | structures/mm$^2$ | 0 | U |

SITE ASSESSMENT COLUMBIAN ENAMLING AIR ANALYTICAL RESULTS SUMMARY

EMSL ANALYTICAL, INC REPORT NO. 042418277

| Sample_ID | Method | Analyte | Lab_Result | Lab_Qual | Units | Val_Result | Val_Qual |
|---|---|---|---|---|---|---|---|
| CE-LB-02-20240829 | USER DEFINED | Total Amphibole | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | actinolite (AC) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | amosite (AM) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | anthophyllite (AN) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | crocidolite (CR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | tremolite (TR) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | winchite/richterite/tremolite/actinolite (WRTA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | other amphibole (OA) | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | Solid Soln: Amosite | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | Solid Soln: Trem-Act | #VALUE! | | structures/mm$^2$ | 0 | U |
| CE-LB-02-20240829 | USER DEFINED | other mineral class (OM) | #VALUE! | | structures/mm$^2$ | 0 | U |

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_CE-AA-N-01-20240829_09-12-24_042418277_Air__TEM_D.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | Air | **Lab Sample Number** | 042418277-0001 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Field Sample | **Client Sample Number** | CE-AA-N-01-20240829 | **F-factor** | 1.00E+00 |
| **Air Volume (L)** | 3906.98 | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | Not QC | **Analysis Date** | 9/12/2024 | **# GOs counted High Magnification** | 24 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 24 |
| ***High Magnification*** | 3.1E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | 0.0003183 |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | 0.0003183 |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | Air Conc (c) (s/cc) | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures** - based on High Magnification GOs Only | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| **PCM Equivalent Structures (PCME)** - based on PCME fibers in either High or Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| **USER DEFINED (e)** - based on High and Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.5E-04 |

Desired Confidence Interval (%): 95

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.

(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.

(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).

(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.

(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_CE-AA-S-01-20240829_09-12-24_042418277_Air__TEM_D.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | Air | **Lab Sample Number** | 042418277-0002 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Field Sample | **Client Sample Number** | CE-AA-S-01-20240829 | **F-factor** | 1.00E+00 |
| **Air Volume (L)** | 3631.62 | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | Not QC | **Analysis Date** | 9/12/2024 | **# GOs counted High Magnification** | 25 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 25 |
| ***High Magnification*** | 3.2E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | 0.0003287 |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | 0.0003287 |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | Air Conc (c) (s/cc) | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures** - based on High Magnification GOs Only | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| **PCM Equivalent Structures (PCME)** - based on PCME fibers in either High or Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| **USER DEFINED (e)** - based on High and Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.8E-04 |

Desired Confidence Interval (%): 95

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.

(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.

(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).

(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.

(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_CE-AA-E-01-20240829_09-12-24_042418277_Air__TEM_D.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | Air | **Lab Sample Number** | 042418277-0003 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Field Sample | **Client Sample Number** | CE-AA-E-01-20240829 | **F-factor** | 1.00E+00 |
| **Air Volume (L)** | 3709.26 | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | Not QC | **Analysis Date** | 9/12/2024 | **# GOs counted High Magnification** | 25 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 25 |
| ***High Magnification*** | 3.2E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | 0.0003218 |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | 0.0003218 |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | Air Conc (c) (s/cc) | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures** - based on High Magnification GOs Only | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| **PCM Equivalent Structures (PCME)** - based on PCME fibers in either High or Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| **USER DEFINED (e)** - based on High and Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.6E-04 |

Desired Confidence Interval (%): 95

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.

(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.

(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).

(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.

(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_CE-AA-W-01-20240829_09-13-24_042418277_Air__TEM_D.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | Air | **Lab Sample Number** | 042418277-0004 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Field Sample | **Client Sample Number** | CE-AA-W-01-20240829 | **F-factor** | 1.00E+00 |
| **Air Volume (L)** | 3180.85 | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | Not QC | **Analysis Date** | 9/13/2024 | **# GOs counted High Magnification** | 29 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 29 |
| ***High Magnification*** | 3.7E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | 0.0003235 |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | 0.0003235 |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | Air Conc (c) (s/cc) | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures** - based on High Magnification GOs Only | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| **PCM Equivalent Structures (PCME)** - based on PCME fibers in either High or Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| **USER DEFINED (e)** - based on High and Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |

Desired Confidence Interval (%): 95

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.
(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.
(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).
(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.
(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_CE-AA-GS-01-20240829_09-13-24_042418277_Air__TEM_D.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | Air | **Lab Sample Number** | 042418277-0005 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Field Sample | **Client Sample Number** | CE-AA-GS-01-20240829 | **F-factor** | 1.00E+00 |
| **Air Volume (L)** | 3625.13 | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | Not QC | **Analysis Date** | 9/13/2024 | **# GOs counted High Magnification** | 25 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 25 |
| ***High Magnification*** | 3.2E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | 0.0003293 |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | 0.0003293 |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | Air Conc (c) (s/cc) | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures** - based on High Magnification GOs Only | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| **PCM Equivalent Structures (PCME)** - based on PCME fibers in either High or Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| **USER DEFINED (e)** - based on High and Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.9E-04 |

Desired Confidence Interval (%): 95

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.

(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.

(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).

(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.

(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_CE-AA-GS-01-20240829-D_09-16-24_042418277_Air__TEM_D.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | Air | **Lab Sample Number** | 042418277-0006 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Field Sample | **Client Sample Number** | CE-AA-GS-01-20240829-D | **F-factor** | 1.00E+00 |
| **Air Volume (L)** | 3405.79 | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | Not QC | **Analysis Date** | 9/16/2024 | **# GOs counted High Magnification** | 27 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 27 |
| ***High Magnification*** | 3.5E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | 0.0003246 |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | 0.0003246 |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | Air Conc (c) (s/cc) | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures** - based on High Magnification GOs Only | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| **PCM Equivalent Structures (PCME)** - based on PCME fibers in either High or Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| **USER DEFINED (e)** - based on High and Low Magnification GOs | | | | |
| Total Asbestos | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Chrysotile (CH) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Total Amphibole | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| actinolite (AC) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| amosite (AM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| anthophyllite (AN) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| crocidolite (CR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| tremolite (TR) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other amphibole (OA) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Amosite | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |
| other mineral class (OM) | 0 | 0.0E+00 | 0.0E+00 | < 9.7E-04 |

Desired Confidence Interval (%): 95

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.
(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.
(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).
(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.
(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_CE-LB-01-20240829_09-16-24_042418277_TEM_D.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | N/A | **Lab Sample Number** | 042418277-0007 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Lot Blank | **Client Sample Number** | CE-LB-01-20240829 | **F-factor** | 1.00E+00 |
| | | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | Not QC | **Analysis Date** | 9/16/2024 | **# GOs counted High Magnification** | 10 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 10 |
| ***High Magnification*** | 1.3E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | blank |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | blank |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures - based on High Magnification GOs Only** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |
| **PCM Equivalent Structures (PCME) - based on PCME fibers in either High or Low Magnification GOs** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |
| **USER DEFINED (e) - based on High and Low Magnification GOs** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |

Desired Confidence Interval (%): 95

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.
(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.
(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).
(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.
(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_CE-LB-02-20240829_09-16-24_042418277_TEM_D.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | N/A | **Lab Sample Number** | 042418277-0008 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Lot Blank | **Client Sample Number** | CE-LB-02-20240829 | **F-factor** | 1.00E+00 |
| | | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | Not QC | **Analysis Date** | 9/16/2024 | **# GOs counted High Magnification** | 10 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 10 |
| ***High Magnification*** | 1.3E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | blank |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | blank |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures - based on High Magnification GOs Only** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |
| **PCM Equivalent Structures (PCME) - based on PCME fibers in either High or Low Magnification GOs** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |
| **USER DEFINED (e) - based on High and Low Magnification GOs** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |

Desired Confidence Interval (%): 95

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.
(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.
(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).
(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.
(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_CE-FB-01-20240829_09-16-24_042418277_Air__TEM_D.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | Air | **Lab Sample Number** | 042418277-0009 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Field Blank | **Client Sample Number** | CE-FB-01-20240829 | **F-factor** | 1.00E+00 |
| **Air Volume (L)** | | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | Not QC | **Analysis Date** | 9/16/2024 | **# GOs counted High Magnification** | 10 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 10 |
| ***High Magnification*** | 1.3E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | blank |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | blank |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

Desired Confidence Interval (%): 95

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | Air Conc (c) (s/cc) | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures - based on High Magnification GOs Only** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |
| **PCM Equivalent Structures (PCME) - based on PCME fibers in either High or Low Magnification GOs** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |
| **USER DEFINED (e) - based on High and Low Magnification GOs** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.

(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.

(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).

(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.

(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.

version
AirDustTEM_v1
5i-DRAFT

# Columbian Enameling [103X903100320001 EC254]

***National Asbestos Data Entry Spreadsheet (NADES) for Air & Dust Analysis by TEM***

**ANALYTICAL REPORT**

**FILE NAME: _EMSL04_Lab Blank_09-12-24_042418277_TEM_D_LB.xlsm**

| SAMPLE/ANALYSIS INFORMATION | | | | ANALYSIS PARAMETERS | |
|---|---|---|---|---|---|
| **Media** | N/A | **Lab Sample Number** | 042418277 | **Effective filter area (mm2)** | 385 |
| **Sample Type** | Lab QC | **Client Sample Number** | Lab Blank | **F-factor** | 1.00E+00 |
| | | **Preparation** | Direct | **Grid opening area (mm2)** | 0.0129 |
| **QA Sample Type** | LB | **Analysis Date** | 9/12/2024 | **# GOs counted High Magnification** | 10 |
| **Sample Status** | Analyzed | **Method SOP** | Modified ISO 10312 | **# GOs counted Low Magnification** | 0 |
| **Maximum Area Examined** | | | | **# GOs counted High + Low Magnification** | 10 |
| ***High Magnification*** | 1.3E-01 | | | | |
| ***Low Magnification*** | 0.0E+00 | | | **Sensitivity (1/cc)** | |
| **Stopping Rule(s):** | Max Area = n/a, Structures = n/a, Sensitivity = 3.30E-04 | | | **Total Asbestos** | blank |
| **Recording Rule(s):** | Min Aspect Ratio = >= 3:1, Min Length = 0.5µm, Min Width = 0µm | | | **PCME/User Defined** | blank |

**Number of Structures with Fatal Data Entry Errors** 0 *(Structures with fatal errors are excluded from calculations below)*

| Mineral Class | Number of Structures (a) | Loading on Filter (b) (s/mm$^2$) | | 95% Poisson Confidence Interval for this Sample (d) |
|---|---|---|---|---|
| **Total TEM Structures - based on High Magnification GOs Only** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |
| **PCM Equivalent Structures (PCME) - based on PCME fibers in either High or Low Magnification GOs** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |
| **USER DEFINED (e) - based on High and Low Magnification GOs** | | | | |
| Total Asbestos | 0 | 0.0E+00 | blank | blank |
| Total Chrysotile (CH) | 0 | 0.0E+00 | blank | blank |
| Total Amphibole | 0 | 0.0E+00 | blank | blank |
| actinolite (AC) | 0 | 0.0E+00 | blank | blank |
| amosite (AM) | 0 | 0.0E+00 | blank | blank |
| anthophyllite (AN) | 0 | 0.0E+00 | blank | blank |
| crocidolite (CR) | 0 | 0.0E+00 | blank | blank |
| tremolite (TR) | 0 | 0.0E+00 | blank | blank |
| winchite/richterite/tremolite/actinolite (WRTA) | 0 | 0.0E+00 | blank | blank |
| other amphibole (OA) | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Amosite | 0 | 0.0E+00 | blank | blank |
| Solid Soln: Trem-Act | 0 | 0.0E+00 | blank | blank |
| other mineral class (OM) | 0 | 0.0E+00 | blank | blank |

Desired Confidence Interval (%): 95

**Binning Rule Description:**

Apply to fibers (F) only:
L ≥ 0.5µm, AR ≥ 3:1
No restrictions for other structure types.

**ChiSq test for even filter loading for Total TEM Structures (see Annex F2 in ISO 10312)**

| p value: | 1.0E+00 |
|---|---|

**Filter loading is OK**

**Binning Rule Description:**

Apply to all structures where Total column > 0
L > 5µm, W ≥ 0.25µm and W ≤ 3µm, AR ≥ 3:1

**ChiSq test for even filter loading for PCMe Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

**Binning Rule Description:**

Apply binning rules to: all structures

| Length restrictions: | Width restrictions: |
|---|---|
| lower bound -- >5 µm | lower bound -- >=0.2 um |
| upper bound -- none | upper bound -- <=3 um |

Aspect Ratio criterion: >=3

**ChiSq test for even filter loading for User Defined Structures (see Annex F2 in ISO 10312)**

| p value: | -- |
|---|---|

(a) Based on countable structures only.
(b) Loading on Filter (s/mm$^2$) = N structures / (GOs Counted * GO Area). Results for indirect samples are based on the secondary filter.
(c) Air Concentration (s/cc) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Air Volume * 1000).
Dust Loading (s/cm2) = (N structures * EFA) / (GOs Counted * GO Area * F-factor * Dust Collection Area).
(d) If the result is shown as '<', the value shown is the one-sided upper 95% confidence limit of the Poisson distribution. For structure counts>30, ISO recommends calculating both Gaussian and Poisson distributions for comparison. NADES calculates only the Poisson.
(e) It is assumed that low magnification analysis is capable of detecting all user-defined structures. If not, the results for user-defined concentrations could be biased low.