



**Corteva Agriscience
Harbor Beach, MI
TTUs 850, 855, 860, 865, & 870
Emission Profile Stack Test
December 12th – 15th, 2023
PROJ-023583**

Scope

Montrose Air Quality Services (MAQS, Mt. Pleasant, MI) was contracted to perform a Relative Accuracy Test Audit (RATA) of the Formaldehyde (CH₂O) and Methanol (MeOH) Continuous Emissions Monitoring System (CEMS) for the TTU 850, TTU 855, TTU 860, TTU 865, and TTU 870 Stack Outlets at Corteva Agriscience in Harbor Beach, MI. A full emission profile stack test was performed December 12th, 13th, 14th, and 15th, 2023 to determine concentrations of gaseous Formaldehyde (CH₂O), Methanol (MeOH), Nitrogen Oxides (NO_x), Carbon Monoxide (CO), Carbon Dioxide (CO₂), Ammonia (NH₃), Methane (CH₄), Oxygen (O₂), Carbon Dioxide (CO₂), and moisture (H₂O) content from the outlet of each unit. See Table 1 below for the test summary table.

Table 1 – Test Summary Table

Test Parameters	TTU850	TTU855	TTU860	TTU865	TTU870
PROCESS DATA*					
Fire Box Temperature (°F)	676.1	686.3	674.7	675.2	1550.1
Catalyst Inlet Temperature (°F)	676.1	686.3	674.7	675.2	NA
Catalyst Outlet Temperature (°F)	672.9	675.2	666.0	669.3	NA
Catalyst Temperature Differential (°F)	-3.2	-11.1	-8.7	-5.9	NA
Natural Gas Flow (scf/hr)	5893.0	2609.9	3482.2	4686.6	2686.8
Combustion Air Rate (scf/hr)	61633.8	29589.6	35728.6	45554.7	50813.1
Process Vent Rate (lb/hr)	26803.6	22714.8	13765.4	21073.3	20336.5
Performance Test Load (%)	100%	100%	100%	100%	100%
EMISSIONS DATA					
NO _x (ppmv)	14.70	7.11	7.27	12.49	6.97
NO _x (lb/hr)	2.00	0.91	0.69	1.64	1.60
CO (ppmv)	0.53	0.50	0.64	0.93	32.52
CO (lb/hr)	0.05	0.04	0.04	0.07	4.60
CH ₂ O (ppmv)	1.63	1.31	3.65	2.74	0.72
CH ₂ O (lb/hr)	0.18	0.11	0.23	0.24	0.11
RATA (%)	1.80	1.96	2.48	1.50	1.08
NH ₃ (ppmv)	0.20	0.22	0.20	0.20	1.57
NH ₃ (lb/hr)	<0.01	0.01	<0.01	<0.01	0.13
MeOH (ppmv)	0.22	1.86	0.27	4.77	7.13
MeOH (lb/hr)	0.02	0.17	0.02	0.44	1.15
RATA (%)	0.23	2.05	1.13	2.53	2.20
CH ₄ (ppmv)	8.42	2.24	2.29	3.09	0.41
CH ₄ (lb/hr)	0.41	0.11	0.08	0.14	0.03



Corteva Agriscience
Harbor Beach, MI
TTUs 850, 855, 860, 865, & 870
Formaldehyde & Methanol Relative Accuracy Test Audit
December 12th – 15th, 2023
PROJ-023583

Scope

Montrose Air Quality Services (MAQS, Mt. Pleasant, MI) was contracted to perform Relative Accuracy Audit (RAA) of the formaldehyde and methanol Continuous Emissions Monitoring System (CEMS) for the TTU 850, TTU 855, TTU 860, TTU 865, and TTU 870 at Corteva Agriscience, Harbor Beach, MI. Testing was performed December 12th, 13th, 14th, and 15th, 2023 to determine concentrations of gaseous formaldehyde (CH₂O) and methanol (MeOH) content from the outlet of each unit.

Extractive Fourier transform infrared (FTIR) spectrometry following USEPA Method 320 was the Reference Method performed to quantify the concentration levels of the target analytes from the outlet of the unit. Shane Douglas (MAQS) performed data collection. Andrew Leffel (MAQS) performed FTIR data validation and report generation. Phillip Kauppi (MAQS) reviewed the test data and report. A summary of testing below in Table 1.

Table 1 – Test Summary Table

Test Parameters	TTU850	TTU855	TTU860	TTU865	TTU870
PROCESS DATA*					
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Performance Load (%)	100%	100%	100%	100%	100%
EMISSIONS DATA					
CH ₂ O (ppmv)	1.63	1.31	3.65	2.74	0.72
RATA (%)	1.80	1.96	2.48	1.50	1.08
MeOH (ppmv)	0.22	1.86	0.27	4.77	7.13
RATA (%)	0.23	2.05	1.13	2.53	2.20

*All process data were provided directly by Corteva Agriscience and is considered confidential. Reach out to Corteva directly with any production related questions.