

2.0 SUMMARY AND DISCUSSION OF TEST RESULTS

2.1 Objectives and Test Matrix

The purpose of this test was to determine the TGO DE of the RTO associated with EUCOATINGLINE and the VOC CE (as propane) of the EUCOATINGLINE during maximum production operations. Testing was performed to satisfy the emissions testing requirements pursuant to MDEQ PTI No. 247-04.

The specific test objectives for this test were to:

Simultaneously measure the concentrations of TGO at the EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack

Simultaneously measure the actual and dry standard volumetric flow rate of the stack gas at the EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack.

Utilize EPA Method 204A to determine the average VOC content (% by weight as propane) of the coating samples collected.

Utilize the above variables to determine the TGO DE of the RTO associated with the EUCOATINGLINE during maximum production rate operations.

Utilize the above variables and recorded coating usage rates to determine the VOC CE (as propane) of the EUCOATINGLINE during maximum production rate operations.

Table 2.1 presents the sampling and analytical matrix log for this test.

2.2 Field Test Changes and Problems

A process data collection error occurred during CE Run 3. Therefore, the Run 3 VOC CE could not be calculated. The reference method data recorded during Run 3 is displayed in Table 2.2.2. This data is displayed for informational purposes.

2.3 Presentation of Results

Two (2) sampling trains were utilized during each run at the EUCOATINGLINE SV-RTO Inlet Duct and at the EUCOATINGLINE SV-RTO Exhaust Stack to determine the TGO DE of the RTO associated with the EUCOATINGLINE and the overall VOC CE of the EUCOATINGLINE during maximum production operations. At each location, one sampling train measured the stack gas dry molecular weight and moisture content while the second sampling train measured the stack gas concentration of TGO. Stack gas volumetric flow rates were measured at the inlet and exhaust prior to or during each concentration run.

Table 2.2.1 displays the TGO DE of the RTO associated with the EUCOATINGLINE during maximum production operations.

The TGO CE (as VOC) of the EUCOATINGLINE and total weight rates of VOCs applied during each run is summarized in Table 2.2.2. The resulting CE displayed in Table 2.2.2 was calculated utilizing the lower confidence limit (LCL) approach as described in Section 3.2 of EPA document "Guidelines for Determining Capture Efficiency" dated January 9, 1995. The LCL is utilized when the data quality objective (DQO) indicator statistic (P) is >5% and the average measured CE is less than 100%.

Table 2.2.2 also displays the calculated LCL TGO CE utilizing only Runs 4-6. See attached cover letter for details.

The graphs that follow Table 2.2.2 present the raw, uncorrected concentration data measured in the field by the EPA method 25A sampling systems at the EUCOATINGLINE SV-RTO Inlet Duct and EUCOATINGLINE SV-RTO Exhaust Stack.

			EPA TEST METHODS UTILIZED			
			M1/M2 (Flow)	M3 (Dry Mol. Wt.)	M4 (%H ₂ O)	M25A (TGO)
Date	Run No.	Sampling Location	Sampling Time / Duration (min)	Sampling Time / Duration (min)	Sampling Time / Duration (min)	Sampling Time / Duration (min)
7/2/2013	1	EUCOATINGLINE SV-RTO Inlet Duct	7:15 - 7:21 6	8:25 - 9:10 45	8:25 - 9:10 45	8:25 - 9:10 45
7/2/2013	2	EUCOATINGLINE SV-RTO Inlet Duct	9:23 - 9:31 8	10:33 - 11:18 45	10:33 - 11:18 45	10:29 - 11:14 45
7/2/2013	3	EUCOATINGLINE SV-RTO Inlet Duct	11:46 - 11:53 7	11:33 - 12:38 60	11:33 - 12:38 60	11:33 - 12:33 60
7/2/2013	4	EUCOATINGLINE SV-RTO Inlet Duct	13:34 - 13:41 7	13:15 - 14:15 60	13:15 - 14:15 60	13:15 - 14:15 60
7/2/2013	5	EUCOATINGLINE SV-RTO Inlet Duct	14:42 - 14:48 6	14:39 - 15:24 45	14:39 - 15:24 45	14:39 - 15:24 45
7/2/2013	6	EUCOATINGLINE SV-RTO Inlet Duct	16:21 - 16:29 8	16:00 - 17:00 60	16:00 - 17:00 60	16:00 - 17:00 60
7/2/2013	1	EUCOATINGLINE SV-RTO Exhaust Stack	11:46 - 11:53 7	11:33 - 12:33 60	11:33 - 12:33 60	11:33 - 12:33 60
7/2/2013	2	EUCOATINGLINE SV-RTO Exhaust Stack	13:34 - 13:41 7	13:15 - 14:15 60	13:15 - 14:15 60	13:15 - 14:15 60
7/2/2013	3	EUCOATINGLINE SV-RTO Exhaust Stack	16:21 - 16:29 8	16:00 - 17:00 60	16:00 - 17:00 60	16:00 - 17:00 60

All times are Eastern Daylight Time.

Table 2.1 - Sampling and Analytical Matrix

	EUCOATINGLINE SV-RTO Inlet Duct				EUCOATINGLINE SV-RTO Exhaust Stack			
	Run 3	Run 4	Run 6	Average	Run 1	Run 2	Run 3	Average
TGO Destruction Efficiency (%)	-	-	-	-	94.3	94.2	93.9	94.1
TGO Mass Emission Rate (lb/hr as propane)	100.6	110.0	89.9	100.2	5.75	6.40	5.46	5.87
TGO Concentration (ppmvd as propane)	718.3	789.5	635.8	714.6	41.2	45.6	38.4	41.7
Stack Gas Average Flow Rate (acfm)	23,915	24,006	24,211	24,044	28,951	29,460	29,910	29,440
Stack Gas Average Flow Rate (scfm)	21,311	21,273	21,457	21,347	21,237	21,385	21,696	21,439
Stack Gas Average Flow Rate (dscfm)	20,395	20,298	20,588	20,427	20,299	20,432	20,726	20,485
Stack Gas Average Velocity (fpm)	3,045	3,056	3,082	3,061	2,373	2,414	2,451	2,413
Stack Gas Average Static Pressure (in-H ₂ O)	-1.7	-2.3	-2.5	-2.2	-0.41	-0.40	-0.35	-0.39
Stack Gas Average Temperature (°F)	113	114	115	114	238	244	245	242
Stack Gas Percent by Volume Moisture (%H ₂ O)	4.30	4.58	4.05	4.31	4.42	4.46	4.47	4.45
Measured Stack Inner Diameter (in)*	38.1 x 37.8	38.1 x 37.8	38.1 x 37.8	38.1 x 37.8	47.3	47.3	47.3	47.3
Percent by Volume Carbon Dioxide in Stack Gas (%-dry)	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.17
Percent by Volume Oxygen in Stack Gas (%-dry)	20.33	20.50	20.00	20.28	20.00	20.00	20.00	20.00
Percent by Volume Nitrogen in Stack Gas (%-dry)	79.67	79.50	80.00	79.72	79.50	80.00	80.00	79.83

* The EUCOATINGLINE SV-RTO Inlet Duct was elliptical in shape.

Table 2.2.1 - TGO Destruction Efficiency Results

	EU COATING LINE SV-RTO Inlet Duct						
	Run 1	Run 2	Run 3*	Run 4	Run 5	Run 6	Runs 4-6
Rolling Value - Calculated Lower Confidence Limit (LCL) VOC Capture Efficiency (%)	-	73.4	-	81.3	84.1	86.3	91.1
Measured VOC Capture Efficiency (%)	81.1	88.5	-	91.0	95.3	96.6	-
Rolling Average VOC Capture Efficiency (%)	81.1	84.8	-	86.9	89.0	90.5	94.3
Rolling DQO Indicator Statistic (P)	-	55.67	-	14.73	10.65	8.47	7.71
Coating Usage Rate (lb/hr)	450.7	364.0	-	426.5	354.0	273.0	
Weight Rate of VOC Applied During Test Run (lb/hr as propane)	128.8	127.0	-	120.9	108.3	93.1	
TGO Mass Emission Rate (lb/hr as propane)	104.4	112.4	100.6	110.0	103.2	89.9	
TGO Concentration (ppmvd as propane)	719	770	718	790	722	636	
Stack Gas Average Flow Rate (acfm)	24,837	24,908	23,915	24,006	24,552	24,211	
Stack Gas Average Flow Rate (scfm)	22,067	22,156	21,311	21,273	21,746	21,457	
Stack Gas Average Flow Rate (dscfm)	21,147	21,255	20,395	20,298	20,807	20,588	
Stack Gas Average Velocity (fpm)	3,162	3,171	3,045	3,056	3,126	3,082	
Stack Gas Average Static Pressure (in-H ₂ O)	-2.40	-2.50	-1.70	-2.25	-2.40	-2.50	
Stack Gas Average Temperature (°F)	113	113	113	114	114	115	
Stack Gas Percent by Volume Moisture (%H ₂ O)	4.17	4.07	4.30	4.58	4.32	4.05	
Measured Stack Inner Diameter (in)**	38.1 x 37.8	38.1 x 37.8	38.1 x 37.8	38.1 x 37.8	38.1 x 37.8	38.1 x 37.8	

* Process data recording error. See Section 2.2 for details.

** The EU COATING LINE SV-RTO Inlet Duct was elliptical in shape.

Table 2.2.2 - VOC Capture Efficiency Results