



KTA-TATOR, INC.

115 Technology Drive, Pittsburgh, PA 15275

August 28, 2002

Mr. Brett A. Christman
J&L Specialty Steel, Inc.
1200 Midland Avenue
Midland, PA 15059

**SUBJECT: KTA-Tator, Inc. Test Report for GM9540P Testing of
Neukote™ – J&L Specialty Steel, Inc. Project No. 211113**

Dear Mr. Christman:

In accordance with KTA-Tator, Inc. Proposal No. PN01283 and J&L Specialty Steel, Inc. Purchase Order No. 373813, KTA-Tator, Inc. (KTA) has completed performance evaluations of twenty (20) coated 409 Stainless Steel panels subjected for 80 cycles to GM9540P testing. This test report contains a description of the testing protocol, as well as the results of the performance evaluations for Neukote™.

SPECIMENS

Twenty (20) 4" x 8" test panels, coated black on one side, representing Neukote™. Numerical identification was stamped on the back top corner of each panel. Individual panel identification is listed in the attached table of data.

Mass loss coupons, 1/16" x 1" x 2", fabricated by KTA from AISI 1006/1010 carbon steel, were stamped with an identification number 1-20, solvent wiped, vapor degreased, and weighed prior to introducing them to the testing along with the test panels. Two coupons were removed after every 8 cycles of testing and the weight change determined.

It should be noted that KTA did not prepare nor witness the preparation of the panels. Prior to testing, a 4-inch long vertical scribe that extended to the substrate was placed in the center of each coated panel by KTA. In addition, the edges of all of the test panels were dipped in Glyptal 1201 enamel. Glyptal is an insulating varnish that KTA uses to protect bare metal from undue corrosion during accelerated weathering testing.

TESTING AND EVALUATION PROCEDURES

The test panels were tested according to General Motors Engineering Standard GM9540P, Appendix A, Section A4.10, Option X, "Muffler/Tailpipe Test Modifications."

A single test cycle consisted of an oven soak at 430°F for 4 hours, immediately followed by 20 hours of testing in a Model CCT Q-Fog Chamber. The Q-Fog Chamber was programmed with the following test parameters. Ambient soak for 4 hours, approximately 72°F and 40% RH. The panels were sprayed with the GM9540P solution for 15 minutes at the end of each hour of the four hours in the ambient soak period. The panels were then subjected to a wet soak, (8 hours at 120°F, 100% RH), with a 1-hour ramp up time to attain wet soak conditions. This was followed by a dry soak, (8 hours at 140°F, 30% RH) with 3 hours ramp up time to attain dry soak conditions.

The test cycles were conducted daily, excluding weekends. The test panels have not been rinsed, scrubbed, nor the surface of the test panels cleaned in any manner prior to testing, during testing, or during visual evaluations.

The test solution consisted of 0.9% sodium chloride, 0.1% calcium chloride, and 0.25% sodium bicarbonate dissolved in reverse osmosis water. The pH of the test solution was 7.2.

The deposition rate of the test solution during spray periods was approximately 6 ml per hour.

The mass loss of the control coupons is listed below.

Mass Loss Control Coupons

Coupon No.	Cycles	Mass Loss (mg)
1	8	921
2	8	936
3	16	1632
4	16	1689
5	24	2119
6	24	2200
7	32	2891
8	32	2887
9	40	3502
10	40	3489
11	48	4099
12	48	4149
13	56	4769
14	56	4745
15	64	5249
16	64	5393
17	72	5848
18	72	5836
19	80	6420
20	80	6405

The method used to evaluate the test panels for red rust was SSPC-VIS2, "Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces." This standard provides a method to evaluate the degree of rusting using reference color and corresponding black and white images. The actual percentage of visible rust on the surface is listed in Table 1.

TEST RESULTS

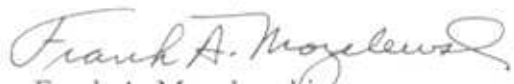
The percent red rust present on the test panel surface was determined visually using the SSPC-VIS 2 standard and is listed in Table 1.

The test panels were visually evaluated after 16, 40, and 80 cycles of testing. The results of the visual evaluation are contained in Table 1, attached.

If you have any questions concerning the testing or this report, please call me at 412/788-1300, ext. 181.

Very truly yours,

KTA-TATOR, INC.


Frank A. Mozelewski
Senior Chemist

FAM/WDC:fm

Jas04025

NOTICE: This report represents the opinion of KTA-TATOR, INC. This report is issued in conformance with generally acceptable industry practices. While customary precautions were taken to insure that the information gathered and presented is accurate, complete, and technically correct, it is based on the information, data, time, materials, and/or samples afforded. This report should not be reproduced except in full.

TABLE 1: ACCELERATED CORROSION TEST – GM9540P, APPENDIX A4.10, OPTION X

RESULTS OF VISUAL EVALUATIONS FOLLOWING THE LISTED CYCLES FOR Neukote™

Coating 1B, Group E	16	40	80
R665	No red rust; No Pits	2% red rust; no visible pits	5% red rust; no visible pits
R666	No red rust; No Pits	2% red rust; no visible pits	4% red rust; no visible pits
R667	0.03% red rust; No Pits	2% red rust; no visible pits	4% red rust; no visible pits
R668	0.03% red rust; No Pits	2% red rust; no visible pits	4% red rust; no visible pits
R669	0.03% red rust; No Pits	3% red rust; no visible pits	4% red rust; no visible pits
R670	No red rust; No Pits	3% red rust; no visible pits	4% red rust; no visible pits
R671	No red rust; No Pits	2% red rust; no visible pits	4% red rust; no visible pits
R672	No red rust; No Pits	3% red rust; no visible pits	4% red rust; no visible pits
R673	No red rust; No Pits	Removed from test after 16 cycles for analysis	Removed from test after 16 cycles for analysis
R674	0.03% red rust; No Pits	2% red rust; no visible pits	4% red rust; no visible pits
Coating 1B, Group F	16	40	80
R960	No red rust; No Pits	4% red rust; few shallow pits 1" from panel edge	4% red rust and pitting
R961	No red rust; No Pits	2% red rust; no visible pits	4% red rust and pitting
R962	No red rust; No Pits	2% red rust; few pits	4% red rust and pitting
R963	No red rust; No Pits	4% red rust; few shallow pits	4% red rust and pitting
R964	No red rust; No Pits	4% red rust; few shallow pits	4% red rust and pitting
R965	No red rust; No Pits	3% red rust; few pits	4% red rust and pitting
R966	No red rust; No Pits	2% red rust; very few pits	4% red rust and pitting
R967	No red rust; No Pits	2% red rust; few shallow pits	4% red rust and pitting
R968	No red rust; No Pits	1% red rust; few pits	4% red rust and pitting
R969	No red rust; No Pits	0% red rust; no pits	4% red rust and pitting

Very little undercutting of the coating at the scribe was noted on any of the panels after 80 cycles of testing.

No undercutting at the scribe was evident after 16 cycles of testing.

Undercutting after 40 cycles of testing was generally less than 1 mm.

The average undercutting of the coating at the scribe after 80 cycles of testing was 1 mm.

Average coating thicknesses for each panel are listed in the attached letter from Neely Industries, Inc.



Neely Industries, Inc.

c/o AGR International, P.O. Box 149
615 Whitestown Road, Butler, PA 16003
Telephone: (724) 482-2163
Fax: (724) 482-2767
E-mail: neelyindus@aol.com

January 16, 2004

Brett,

The following thickness information on J&L 409 steel panels is provided as requested. These measurements were made on a Gardner magnetic gage, Model number DF-6001FNS

R665 - R674

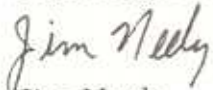
665 - 0.90 mil
666 - 1.0 mil
667 - 1.05 mil
668 - 0.95 mil
669 - 0.95 mil
670 - 0.95 mil
671 - 1.0 mil
672 - 0.90 mil
673 - 1.05 mil
674 - 1.1 mil

R960 - R969

960 - 0.35 mil
961 - 0.35 mil
962 - 0.35 mil
963 - 0.35 mil
964 - 0.35 mil
965 - 0.45 mil
966 - 0.35 mil
967 - 0.35 mil
968 - 0.40 mil
969 - 0.50 mil

Samples R960 to R969 were sent to KTA Tator as Coating 1B, Group F. Samples R665 through R674 were sent to KTA Tator as Coating 1B, Group E. If you have any questions, please call.

Best Regards,


Jim Neely