

APPENDIX 1

APPENDIX 1 INCLUDES TENSILE TESTING AND CHEMICAL
ANALYSIS SUPPLIED BY A THIRD PARTY TESTING FACILITY.
(4 PAGES ELEMENT MATERIALS TECHNOLOGY
REPORT NUMBERS GRE161-12-10-45304-1 &
GRE161-12-12-45960-1)



Element Materials Technology
51229 Century Court
Wixom, MI
48393-2074 USA

P 248 960 4900
F 248 960 4970
T 877 960 4900
info.wixom@element.com
element.com

Contact: Kevin Machus
Greening Testing Laboratories Inc
19465 Mount Elliott Ave
DETROIT, MI 48234-2786

TEST CERTIFICATE — EAR-CONTROLLED DATA

P.O. No.: 19806
Report No.: GRE161-12-10-45304-1
Date Received: 10/25/2012
Report Date: 11/7/2012

Report Delivered Via: kmachus@greeninginc.com
Attachments: none

Work Requested: Tensile Testing and Chemical Analysis

Sample ID	Customer ID:
1	Brake Rotor
2	(2) A-Bars

Chemical Analysis Results		
Element	1	Method
	(wt-%)	
C	3.32	L
S	0.066	L
P	0.044	ISO1
Si	2.24	ISO1
Mn	0.81	ISO1
Cr	0.27	ISO1
Cu	0.24	ISO1
Ni	0.03	ISO1
Mo	0.02	ISO1
V	0.013	ISO1
Al	<0.005	ISO1
Ti	0.018	ISO1
Sb	<0.005	ISO1
Sn	0.029	ISO1
Mg	<0.005	ISO1
Ce	0.002	ISO1

Method(s)

- ISO1 = Bulk chemical analysis by Glow Discharge - Optical Emission Spectrometry (GD-OES) in accordance with SOP CH-IO-002 Leco GDS-850A Glow Discharge Spectrometer
- L = ASTM E1019-11 Determination of Carbon, Sulfur, Nitrogen, and Oxygen in Steel and in Iron, Nickel, and Cobalt Alloys.

Respectfully submitted

William Pederson (248) 560-4012

The test report shall not be reproduced except in full, without the written approval of Element Materials Technology; The results relate only to the items tested; The recording of false, fictitious, or fraudulent statements or entries on the report may be punished as a felony under federal law. Our policy is to retain components and sample remnants for 180 days from the report date, after which time they will be discarded. If you would like to make alternate arrangements for disposition of the material, please let us know. This project shall be governed exclusively by the General Terms and Conditions of Sale and Performance of Testing Services by Element Materials Technology a Kentucky business corporation d.d. 12/02/2011. In no event shall Element be liable for any consequential, special or indirect loss or any damages above the cost of the work.



Element Materials Technology
51229 Century Court
Wixom, MI
48393-2074 USA

P 248 960 4900
F 248 960 4970
T 877 960 4900
info.wixom@element.com
element.com

Report No.: GRE161-12-10-45304-1 **TEST CERTIFICATE — EAR-CONTROLLED DATA**

Mechanical Test Results

Sample ID	Diameter (in)	UTS (ksi)
2a	0.784	35.6
2b	0.775	38.2
Methods	-	A370

Method(s)

- A370 = ASTM A370-11 Standard Test Methods and Definitions for Mechanical Testing of Steel Products

This document contains technical data whose export and re-export/ retransfer is subject to control by the U.S. Department of Commerce under the Export Administration Act and the Export Administration Regulations. The Department of Commerce's prior written approval may be required for the export or re-export/retransfer of such technical data to any foreign person, foreign entity or foreign organization whether in the United States or abroad.

Respectfully submitted

William Pederson (248) 560-4012

The test report shall not be reproduced except in full, without the written approval of Element Materials Technology; The results relate only to the items tested; The recording of false, fictitious, or fraudulent statements or entries on the report may be punished as a felony under federal law. Our policy is to retain components and sample remnants for 180 days from the report date, after which time they will be discarded. If you would like to make alternate arrangements for disposition of the material, please let us know. This project shall be governed exclusively by the General Terms and Conditions of Sale and Performance of Testing Services by Element Materials Technology a Kentucky business corporation d.d. 12/02/2011. In no event shall Element be liable for any consequential, special or indirect loss or any damages above the cost of the work.



Element Materials Technology
51229 Century Court
Wixom, MI
48393-2074 USA

P 248 960 4900
F 248 960 4970
T 877 960 4900
info.wixom@element.com
element.com

Contact: Autumn Hinson
Greening Testing Laboratories Inc
19465 Mount Elliott Ave
DETROIT, MI 48234-2786

TEST CERTIFICATE — EAR-CONTROLLED DATA

P.O. No.: 19850
Report No.: GRE161-12-12-45960-1
Date Received: 11/20/2012
Report Date: 12/5/2012

Report Delivered Via: ahinson@greeninginc.com
Attachments: none

Work Requested: Brake component samples for:
Microstructure (Grain structure % free ferrite, graphite type and amount, Photomicrograph of Graphite Structure)
Additional Testing of WO# 45304

Sample ID	Description	-	-
1	Brake Rotor		

Flake Analysis Results

	Sample ID	Method	
	1		Etchant: As-polished
% Class 1:	0	E1245	Magnification: 50x and 100x
% Class 2:	1	E1245	
% Class 3:	14	E1245	
% Class 4:	36	E1245	
% Class 5:	28	E1245	
% Class 6:	13	E1245	
% Class 7:	4	E1245	
% Type A:	90	E1245	
% Type B:	9	E1245	
% Type D & E:	0	E1245	
% Type C:	<1	E1245	
Graphite Type	VII	A247	

Image Analysis Results

Sample ID	% Ferrite	% Pearlite	% Carbide	Etchant: 4% picral
Method	OM	OM	OM	Magnification: 100x
1	<1	>99	<0.1	

Method(s)

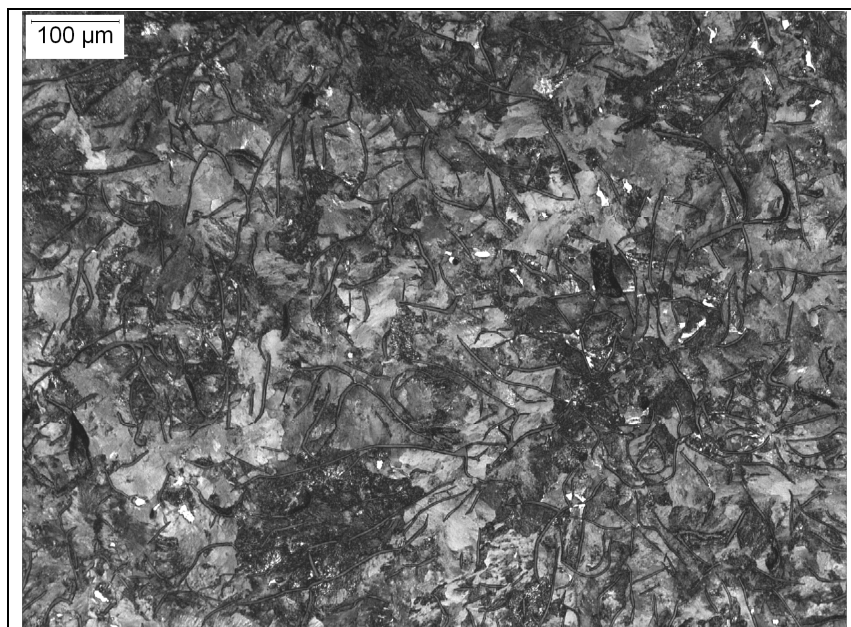
- A247 = ASTM A247-10 - Standard Test Method for Evaluating the Microstructure of Graphite in Iron Castings
- E1245 = ASTM E1245-03 (2008) - Standard Practice for Determining the Inclusion or Second-Phase Constituent Content of Metals by Automated Image Analysis
- OM = Optical Measurement

This document contains technical data whose export and re-export/ retransfer is subject to control by the U.S. Department of Commerce under the Export Administration Act and the Export Administration Regulations. The Department of Commerce's prior written approval may be required for the export or re-export/retransfer of such technical data to any foreign person, foreign entity or foreign organization whether in the United States or abroad.

Respectfully submitted

Tony R Matthews (248) 560-4008

The test report shall not be reproduced except in full, without the written approval of Element Materials Technology. The results relate only to the items tested; The recording of false, fictitious, or fraudulent statements or entries on the report may be punished as a felony under federal law. Our policy is to retain components and sample remnants for 180 days from the report date, after which time they will be discarded. If you would like to make alternate arrangements for disposition of the material, please let us know. This project shall be governed exclusively by the General Terms and Conditions of Sale and Performance of Testing Services by Element Materials Technology a Kentucky business corporation d.d. 12/02/2011. In no event shall Element be liable for any consequential, special or indirect loss or any damages above the cost of the work.



Sample ID: 1 just below machined surface
Condition: 4% picral
Original Magnification: 100x DFC 420

Respectfully submitted



Tony R Matthews (248) 560-4008

The test report shall not be reproduced except in full, without the written approval of Element Materials Technology. The results relate only to the items tested; The recording of false, fictitious, or fraudulent statements or entries on the report may be punished as a felony under federal law. Our policy is to retain components and sample remnants for 180 days from the report date, after which time they will be discarded. If you would like to make alternate arrangements for disposition of the material, please let us know. This project shall be governed exclusively by the General Terms and Conditions of Sale and Performance of Testing Services by Element Materials Technology a Kentucky business corporation d.d. 12/02/2011. In no event shall Element be liable for any consequential, special or indirect loss or any damages above the cost of the work.