

*Table of Contents for QA Records Packages*

The purpose of this form is to verify the presence of the appropriate quality assurance records for hardware shipments being installed at SLAC. This form is required to be completed by ANL LCLS project personnel prior to authorizing shipments to SLAC.

System or Component Name: LCLS Fixed Support Assembly

Part/Drawing Number: L143-143080-200000

Serial Numbers: 1

Date: March 27, 2008

Supplier Name: Hi-Tech Manufacturing Inc

PO Number: 7A-08189

Responsible LCLS Technical Lead: M. White

Responsible Engineer(s): E. Trakhtenberg

No.	Record Name	Document number	Origin	Comments	Present?
1.	ANL Component Acceptance Record	LCLS	ANL	ANL Acceptance record of ANL acceptance date and applicable drawing revisions.	Present
2.	Dynamic CAM test results		ANL		Present
3.	Certificates of Conformance for Vibratory Stress Relief	NA	American Grinding	L1430802-200030, L1430802-200021, L1430802-200011	Present
4.	Certificates of Inspection	NA	Hi-Tech	L1430401-100101, L1430401-100201, L1430401-100103, L1430401-100303,	Present
5.	Certificates of Inspection	NA	Hi-Tech	Undulator Girder	Present
6.	Copies of the ANL Inspection/Acceptance Report of Components for As-Built Drawings	L143-00093	Hi-Tech	Interface Plate (Double CAM)	Present
7.	Copies of the ANL Inspection/Acceptance Report of Components for As-Built Drawings	L143-00093	Hi-Tech	Interface Plate (Single CAM)	Present
8.	Copies of the ANL Inspection/Acceptance Report of Components for As-Built Drawings	L143-00093	Hi-Tech	Support Girder (L1430401-10040)	Present
9.	Weld Certification	NA	<del>Hi-Tech</del> Metalex	Support Girder	Present
10.	Inspection Planning & Report Form	NA	Metalex	Undulator Support Girder	Present
11.	Certificate of compliance - Stress Test	NA	Cincinnati Steel Treating Co.	Support Girder	Present
12.	Certificate of Conformance	NA	Metalex	Support Girder	Present
13.	Calibration Certificate - CMM metric & inches	TG13480 & TG13482	American Calibration Inc.	Unit is in working condition	Present in SM #1 QA
14.	Various MSDS for Paint & Oil and Concrete Epoxy Grease	NA	NA	MSDS for chemicals used.	Present
15.	Welding Operator Qualification Test Record	NA	Bodycote Taussig Inc.	Welders qualifications	Present
16.	Certificates of Conformance for Support Girder raw materials	NA	Metalex	Precision Steel Services Inc., Frederick Steel Co., CMC Steel	Present in SM #1 QA
17.	Certificate of Compliance /Statement of Quality	NA	The Sherwin-Williams Co.		Present
18.	Visual Weld Inspection Report	NA	Metalex	Girder Support	Present
19.	Visual Weld Inspection Report	NA	HiTech	Girder Support	Present
20.	Gearhead Inspection Report	NA	GAM	In Folder	Present

No.	Record Name	Document number	Origin	Comments	Present?
21.	Certification of Single Axis Table		Limtech		<input checked="" type="checkbox"/> Present?
22.	Certificate of Conformance for CAM Motors		Animatics	Motors - In Folder	<input type="checkbox"/> Present in SM #1 QA
23.	Shipping Crate Design Approval Record	NA	Hi-Tech		<input type="checkbox"/> Present
24.	Misc. Photographs	NA	Hi-Tech		<input type="checkbox"/> Present

**Optional notes or Comments:**

The Mill Certificates for the steel dimensions, chemical composition, and tensile properties are present for Girder serial number 1 only because the material for all of the girder assemblies was purchased at one time.

Signature of person that completed this table of contents: John F. Skunde Date: March 27, 2008

Concurrence signatures of this table of contents contents:

Responsible ANL LCLS Engineer: \_\_\_\_\_ Date: 03/27/08

Responsible ANL QA Coordinator: Mike Jones Date: 3/31/08

Responsible ANL LCLS Technical Lead: \_\_\_\_\_ Date: 27 March 08

ANL LCLS Project Manager: \_\_\_\_\_ Date: 3/31/08

Distribute this completed form to: ANL Records package. ANL LCLS QA. ANL LCLS Technical Lead

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

01-1

TIME OF TEST: 8/27/2007 11:43:40 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 2150.74  
ROTARY POT GAIN = 346.51  
POT OFFSET (DEG) = 61.97  
DEVIATION RMS (MICRONS) = 6.01  
DEVIATION MAX (MICRONS) = 17.50  
DEVIATION MIN (MICRONS) = -18.06

POS#1 BWD

CAM ECCEN R (MICRONS) = 2153.25  
ROTARY POT GAIN = 346.51  
POT OFFSET (DEG) = 61.97  
DEVIATION RMS (MICRONS) = 6.18  
DEVIATION MAX (MICRONS) = 18.50  
DEVIATION MIN (MICRONS) = -17.23

POS#2 FWD

CAM ECCEN R (MICRONS) = 2151.68  
ROTARY POT GAIN = 346.51  
POT OFFSET (DEG) = 61.97  
DEVIATION RMS (MICRONS) = 5.70  
DEVIATION MAX (MICRONS) = 14.50  
DEVIATION MIN (MICRONS) = -18.15

POS#2 BWD

CAM ECCEN R (MICRONS) = 2152.86  
ROTARY POT GAIN = 346.51  
POT OFFSET (DEG) = 61.97  
DEVIATION RMS (MICRONS) = 6.04  
DEVIATION MAX (MICRONS) = 19.15  
DEVIATION MIN (MICRONS) = -14.88

POS#3 FWD

CAM ECCEN R (MICRONS) = 2149.42  
ROTARY POT GAIN = 346.51  
POT OFFSET (DEG) = 61.97  
DEVIATION RMS (MICRONS) = 6.02  
DEVIATION MAX (MICRONS) = 16.43  
DEVIATION MIN (MICRONS) = -18.04

POS#3 BWD

CAM ECCEN R (MICRONS) = 2152.00  
ROTARY POT GAIN = 346.51  
POT OFFSET (DEG) = 61.97  
DEVIATION RMS (MICRONS) = 6.07  
DEVIATION MAX (MICRONS) = 18.20  
DEVIATION MIN (MICRONS) = -16.58

=== TEST PASS! ===

--- END OF TEST ---

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

01-2

TIME OF TEST: 8/27/2007 2:09:34 PM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1541.08  
ROTARY POT GAIN = 345.36  
POT OFFSET (DEG) = 59.34  
DEVIATION RMS (MICRONS) = 11.03  
DEVIATION MAX (MICRONS) = 28.62  
DEVIATION MIN (MICRONS) = -25.71

POS#1 BWD

CAM ECCEN R (MICRONS) = 1541.91  
ROTARY POT GAIN = 345.36  
POT OFFSET (DEG) = 59.35  
DEVIATION RMS (MICRONS) = 11.49  
DEVIATION MAX (MICRONS) = 26.52  
DEVIATION MIN (MICRONS) = -28.15

POS#2 FWD

CAM ECCEN R (MICRONS) = 1541.56  
ROTARY POT GAIN = 345.36  
POT OFFSET (DEG) = 59.35  
DEVIATION RMS (MICRONS) = 11.19  
DEVIATION MAX (MICRONS) = 29.06  
DEVIATION MIN (MICRONS) = -26.53

POS#2 BWD

CAM ECCEN R (MICRONS) = 1541.20  
ROTARY POT GAIN = 345.36  
POT OFFSET (DEG) = 59.35  
DEVIATION RMS (MICRONS) = 11.26  
DEVIATION MAX (MICRONS) = 25.68  
DEVIATION MIN (MICRONS) = -28.20

POS#3 FWD

CAM ECCEN R (MICRONS) = 1540.04  
ROTARY POT GAIN = 345.36  
POT OFFSET (DEG) = 59.35  
DEVIATION RMS (MICRONS) = 11.92  
DEVIATION MAX (MICRONS) = 31.46  
DEVIATION MIN (MICRONS) = -27.24

POS#3 BWD

CAM ECCEN R (MICRONS) = 1540.76  
ROTARY POT GAIN = 345.36  
POT OFFSET (DEG) = 59.35  
DEVIATION RMS (MICRONS) = 11.93  
DEVIATION MAX (MICRONS) = 27.62  
DEVIATION MIN (MICRONS) = -30.00

=== TEST PASS! ===

--- END OF TEST ---

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

01-3

TIME OF TEST: 8/27/2007 1:50:34 PM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1554.88  
ROTARY POT GAIN = 345.45  
POT OFFSET (DEG) = 60.85  
DEVIATION RMS (MICRONS) = 13.90  
DEVIATION MAX (MICRONS) = 44.88  
DEVIATION MIN (MICRONS) = -28.13

POS#1 BWD

CAM ECCEN R (MICRONS) = 1554.84  
ROTARY POT GAIN = 345.45  
POT OFFSET (DEG) = 60.85  
DEVIATION RMS (MICRONS) = 13.74  
DEVIATION MAX (MICRONS) = 49.95  
DEVIATION MIN (MICRONS) = -28.83

POS#2 FWD

CAM ECCEN R (MICRONS) = 1553.59  
ROTARY POT GAIN = 345.45  
POT OFFSET (DEG) = 60.85  
DEVIATION RMS (MICRONS) = 14.00  
DEVIATION MAX (MICRONS) = 44.15  
DEVIATION MIN (MICRONS) = -28.50

POS#2 BWD

CAM ECCEN R (MICRONS) = 1553.69  
ROTARY POT GAIN = 345.45  
POT OFFSET (DEG) = 60.85  
DEVIATION RMS (MICRONS) = 13.68  
DEVIATION MAX (MICRONS) = 48.90  
DEVIATION MIN (MICRONS) = -28.28

POS#3 FWD

CAM ECCEN R (MICRONS) = 1553.78  
ROTARY POT GAIN = 345.45  
POT OFFSET (DEG) = 60.85  
DEVIATION RMS (MICRONS) = 13.71  
DEVIATION MAX (MICRONS) = 43.50  
DEVIATION MIN (MICRONS) = -28.09

POS#3 BWD

CAM ECCEN R (MICRONS) = 1554.70  
ROTARY POT GAIN = 345.45  
POT OFFSET (DEG) = 60.85  
DEVIATION RMS (MICRONS) = 13.25  
DEVIATION MAX (MICRONS) = 48.24  
DEVIATION MIN (MICRONS) = -29.61

=== TEST PASS! ===

--- END OF TEST ---

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

01-4

TIME OF TEST: 8/27/2007 12:15:22 PM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1542.70  
ROTARY POT GAIN = 345.21  
POT OFFSET (DEG) = 59.96  
DEVIATION RMS (MICRONS) = 10.26  
DEVIATION MAX (MICRONS) = 23.36  
DEVIATION MIN (MICRONS) = -23.72

POS#1 BWD

CAM ECCEN R (MICRONS) = 1547.53  
ROTARY POT GAIN = 345.21  
POT OFFSET (DEG) = 59.96  
DEVIATION RMS (MICRONS) = 10.65  
DEVIATION MAX (MICRONS) = 21.17  
DEVIATION MIN (MICRONS) = -23.09

POS#2 FWD

CAM ECCEN R (MICRONS) = 1542.24  
ROTARY POT GAIN = 345.21  
POT OFFSET (DEG) = 59.96  
DEVIATION RMS (MICRONS) = 9.93  
DEVIATION MAX (MICRONS) = 23.00  
DEVIATION MIN (MICRONS) = -22.50

POS#2 BWD

CAM ECCEN R (MICRONS) = 1545.56  
ROTARY POT GAIN = 345.21  
POT OFFSET (DEG) = 59.96  
DEVIATION RMS (MICRONS) = 10.09  
DEVIATION MAX (MICRONS) = 21.50  
DEVIATION MIN (MICRONS) = -20.28

POS#3 FWD

CAM ECCEN R (MICRONS) = 1542.04  
ROTARY POT GAIN = 345.21  
POT OFFSET (DEG) = 59.96  
DEVIATION RMS (MICRONS) = 10.21  
DEVIATION MAX (MICRONS) = 24.09  
DEVIATION MIN (MICRONS) = -23.73

POS#3 BWD

CAM ECCEN R (MICRONS) = 1546.31  
ROTARY POT GAIN = 345.21  
POT OFFSET (DEG) = 59.96  
DEVIATION RMS (MICRONS) = 10.55  
DEVIATION MAX (MICRONS) = 21.66  
DEVIATION MIN (MICRONS) = -21.07

=== TEST PASS! ===

-- END OF TEST --

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

01-5

TIME OF TEST: 8/27/2007 1:26:47 PM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1542.06  
ROTARY POT GAIN = 346.25  
POT OFFSET (DEG) = 60.48  
DEVIATION RMS (MICRONS) = 7.00  
DEVIATION MAX (MICRONS) = 17.69  
DEVIATION MIN (MICRONS) = -19.02

POS#1 BWD

CAM ECCEN R (MICRONS) = 1545.54  
ROTARY POT GAIN = 346.25  
POT OFFSET (DEG) = 60.48  
DEVIATION RMS (MICRONS) = 7.02  
DEVIATION MAX (MICRONS) = 15.67  
DEVIATION MIN (MICRONS) = -23.99

POS#2 FWD

CAM ECCEN R (MICRONS) = 1543.32  
ROTARY POT GAIN = 346.25  
POT OFFSET (DEG) = 60.47  
DEVIATION RMS (MICRONS) = 7.26  
DEVIATION MAX (MICRONS) = 17.07  
DEVIATION MIN (MICRONS) = -17.74

POS#2 BWD

CAM ECCEN R (MICRONS) = 1545.19  
ROTARY POT GAIN = 346.25  
POT OFFSET (DEG) = 60.47  
DEVIATION RMS (MICRONS) = 6.89  
DEVIATION MAX (MICRONS) = 15.60  
DEVIATION MIN (MICRONS) = -20.77

POS#3 FWD

CAM ECCEN R (MICRONS) = 1543.58  
ROTARY POT GAIN = 346.25  
POT OFFSET (DEG) = 60.48  
DEVIATION RMS (MICRONS) = 7.37  
DEVIATION MAX (MICRONS) = 16.40  
DEVIATION MIN (MICRONS) = -20.08

POS#3 BWD

CAM ECCEN R (MICRONS) = 1547.31  
ROTARY POT GAIN = 346.25  
POT OFFSET (DEG) = 60.47  
DEVIATION RMS (MICRONS) = 7.01  
DEVIATION MAX (MICRONS) = 16.91  
DEVIATION MIN (MICRONS) = -21.21

=== TEST PASS! ===

--- END OF TEST ---



# AMERICAN GRINDING & MACHINE CO.

2000 N. MANGO AVE. CHICAGO, IL 60639  
773-889-4343 toll free: 877-988-4343  
FAX 773-889-3781

## CERTIFICATE OF COMPLIANCE

Customer: Hi-Tech Mfg PHONE: ( 847 ) 678-1616  
4637 N. 25<sup>th</sup> Ave. FAX: ( 847 ) 678-1716  
Schiller Park, IL  
60176

RE: PURCHASE ORDER 16850

PRINT NUMBER(S) (if applicable)

4 pes / 4 pes.

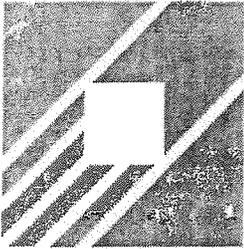
L1430802-200021 - 4 pes.

L1430802-200011 - 4 pes.

This is to certify that the services and /or material furnished by American Grinding & Machine Company on this order meets the requirements of listed purchase order and any prints furnished to us for that purchase order.

Signature of American Grinding Representative

7/18/07  
Date



**HI-TECH  
Manufacturing, Inc.**  
CNC Milling & Turning  
Prototypes & Special Machinery  
4637 N. 25th Ave.  
Schiller Park, IL 60176

Hi-Tech Manufacturing, Inc.  
4637 N. 25th Ave.  
Schiller Park, IL 60176  
USA

Ph: (847) 678-1616  
Fax: (847) 678-1617

**Purchase Order**

Number: 16850 Date: 13-Jul-07

**To**

American Grinding & Machine Co  
2000 N. Mango Ave.  
Chicago, IL 60639-2899  
USA

**Ship To**

Hi-Tech Manufacturing, Inc.  
4637 N. 25th Ave.  
Schiller Park, IL 60176  
USA

Ph: (773) 889-4343

Fax: (773) 889-3781

Ph: (847) 678-1616

Fax: (847) 678-1617

Terms		Ship Via	FOB	Issued By
		Deliver	Destination	JOE
Quantity	Description		Unit Price	Amount
	1. Please enter this order in accordance with prices, delivery and specifications shown below. 2. Please notify us immediately if you are unable to ship as specified. 3. Overshipment of product will not be accepted without prior approval from Hi-Tech. 4. UPS Ground shipments must be shipped COLLECT. Use account # 6E1-000. 5. No declared value charges will be accepted without prior approval by Hi-Tech.			
4 ea Line: 001	L1430802-200021 INTERFACE PLATE (SINGLE CAM) Vibratory Stress Relieve  Certificate required	Rev: 03 Due: 18-Jul-07 Job: 55420B021	\$0.00 ea	\$0.00
4 ea Line: 002	L1430802-200011 INTERFACE PLATE (DOUBLE CAM) Vibratory Stress Relieve  Certificate required	Rev: 03 Due: 18-Jul-07 Job: 55420B011	\$0.00 ea	\$0.00
			Total:	\$0.00



**AMERICAN GRINDING & MACHINE CO.**

2000 N. MANGO AVE. CHICAGO, IL 60639  
773-889-4343 toll free: 877-988-4343  
FAX 773-889-3781

CERTIFICATE OF COMPLIANCE

Customer: Hi-Tech Mfg PHONE: ( 847 ) 678-1616  
4637 N. 25<sup>th</sup> Ave. FAX: ( 847 ) 678-1716  
Schiller Park, IL  
60176

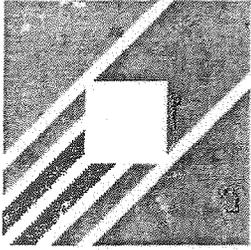
RE: PURCHASE ORDER 16845

PRINT NUMBER(S) (if applicable) L143 0802-200030  
Spec.

This is to certify that the services and /or material furnished by American Grinding & Machine Company on this order meets the requirements of listed purchase order and any prints furnished to us for that purchase order.

  
Signature of American Grinding Representative

7/19/07  
Date



**HI-TECH  
Manufacturing, Inc.**  
CNC Milling & Turning  
Prototypes & Special Machinery  
4637 N. 25th Ave.  
Schiller Park, IL 60176

Hi-Tech Manufacturing, Inc.  
4637 N. 25th Ave.  
Schiller Park, IL 60176  
USA

Ph: (847) 678-1616  
Fax: (847) 678-1617

**Purchase Order**

Number: 16845 Date: 13-Jul-07

**To**

American Grinding & Machine Co  
2000 N. Mango Ave.  
Chicago, IL 60639-2899  
USA

**Ship To**

Ace Sandblast Co.  
4601 W. Roscoe St.  
Chicago, IL 60641-4484  
USA

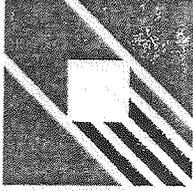
Ph: (773) 889-4343

Fax: (773) 889-3781

Ph: (773) 777-6654

Fax: (773) 777-7562

Terms		Ship Via	FOB	Issued By
		Deliver		JOE
Quantity	Description		Unit Price	Amount
	1. Please enter this order in accordance with prices, delivery and specifications shown below. 2. Please notify us immediately if you are unable to ship as specified. 3. Overshipment of product will not be accepted without prior approval from Hi-Tech. 4. UPS Ground shipments must be shipped COLLECT. Use account # 6E1-000. 5. No declared value charges will be accepted without prior approval by Hi-Tech.			
8 ea  Line: 001	L1430802-200030 PEDESTAL WELDMENT Vibratory Stress Relieve  Certificate required	Rev: 01 Due: 18-Jul-07 Job: 55420B030	\$0.00 ea	\$0.00
	DROP SHIP TO ACE SANDBLAST		Total:	\$0.00



**HI-TECH**

Manufacturing, Inc.

ISO 9001:2000  
certified

*Certificate of Inspection*

*This certificate is presented to*

**Argonne National Laboratory**

Per PO # 7A-08189, part # #  
*L1430401-100101 (PF-381-000-13) quantity of 114pcs*  
*L1430401-100201 (PF-381-000-23) quantity of 38pcs*  
Have been inspected and met all drawing requirements.

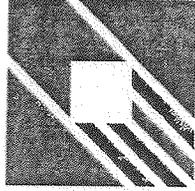
Q.C. Supervisor

*Mudcoz*

09-07-07

Date

*Certificate of Inspection*



**EIT-TECH**

Manufacturing, Inc.

ISO 9001:2000  
certified

*This certificate is presented to*

**Argonne National Laboratory**

Per PO # 7A-08189, part ##  
L1430401-100103 (PF-381-000-15) quantity of 136pcs  
L1430401-100303 (PF-381-002-15) quantity of 34pcs  
Have been inspected and met all drawing requirements.

O.C. Supervisor

*Muelage*

09-07-07

Date

## INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR AS-BUILT DRAWINGS

VENDOR: METALEX, INC.

PART NAME: UNDULATOR GIRDER ASSY

DRAWING #: L1430401-100400 (05)

SERIAL #: 01

P.O. #: 7A-08189

DATE: 08-08-07

### ACCEPTANCE CRITERIA

1. Visually inspect for damage. Accept/Reject

#### CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Perpendicularity of Datum B to C	$\leq .025$	$\leq .025$	$\leq .025$	Accept/Reject
Perpendicularity of Datum A to C	$\leq .025$	$\leq .025$	$\leq .025$	Accept/Reject
True position of 2 D2 hole to 2 D3 holes	$\leq .03$	$\leq .03$	$\leq .025$	Accept/Reject
Parallelism of support pad surface to Datum C	$\leq .07$	$\leq .07$	#1 $\leq .07$	Accept/Reject
			#2 $\leq .07$	
			#3 $\leq .07$	
			#4 $\leq .07$	
Distance from Datum C to support pad surface	109.50	+.2/- .2	#1 109.5	Accept/Reject
			#2 109.6	
			#3 109.5	
			#4 109.55	

INSPECTOR:

*Simon*

QA Supervisor:

*Muelaza*

TEST EQUIPMENT USED: feeler gage, dial indicator, micrometer, precision square.

COMMENTS:

## INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR AS-BUILT DRAWINGS

VENDOR: HI-TECH MANUFACTURING, INC.      PART NAME: INTERFACE PLATE (DOUBLE CAM)  
 DRAWING #: L1430802-200011 (03)      SERIAL #: 01  
 P.O. #: 7A-08189      DATE: 08-02-07

### ACCEPTANCE CRITERIA

1. Visually inspect for damage. Accept/Reject

### CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Flatness of Datum A	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.02</math>	Accept/Reject
Perpendicularity of Datum B to A	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.02</math>	Accept/Reject
Parallelism of inner edge on Cam Block A to B	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.02</math>	Accept/Reject
Parallelism of inner edge on Cam Block B to B	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.01</math>	Accept/Reject
Parallelism of outer edge on Cam Block B to B	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.01</math>	Accept/Reject
Width of mounting surface on Cam Block B	142.01	+0.02/-0	142.02	Accept/Reject
Width of mounting surface on Cam Block A	254.00	+0.02/-0	254.01	Accept/Reject
Separation of outer edges of Cam Blocks	685.42	+0.08/-0.08	685.47	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mwaleza

TEST EQUIPMENT USED: CMM, gage blocks, dial indicator.

COMMENTS:

## INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR AS-BUILT DRAWINGS

VENDOR: **HI-TECH MANUFACTURING, INC.** PART NAME: **INTERFACE PLATE (SINGLE CAM)**  
 DRAWING #: **L1430802-200021 (03)** SERIAL #: 01  
 P.O. #: **7A-08189** DATE: 08-06-07

### ACCEPTANCE CRITERIA

1. Visually inspect for damage. Accept/Reject

### CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Flatness of Datum A	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.02</math>	Accept/Reject
Perpendicularity of Datum B to A	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.02</math>	Accept/Reject
Parallelism of upper edge on lower Cam Block C to B	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.02</math>	Accept/Reject
Parallelism of lower edge on upper Cam Block C to B	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.01</math>	Accept/Reject
Parallelism of upper edge on upper Cam Block C to B	<math>\leq 0.02</math>	<math>\leq 0.02</math>	<math>\leq 0.01</math>	Accept/Reject
Width of mounting surface on lower Cam Block	142.01	+0.02/-0	142.02	Accept/Reject
Width of mounting surface on upper Cam Block	142.01	+0.02/-0	142.02	Accept/Reject
Separation of inner edges of Cam Blocks	457.43	+0.08/-0.08	457.46	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Muelaga

TEST EQUIPMENT USED: CMM, gage blocks, dial indicator.

COMMENTS:

 <b>Metalex</b> Customized Machinery and Parts <small>CERTIFIED ISO 9001 QUALITY MANAGEMENT</small>		<b>INSPECTION PLANNING &amp; REPORT FORM</b> Metalex Mfg. 5750 Cornell Rd ! Cincinnati, OH 45242 ! (513) 489-0507		Job No. <b>2007-7558</b>	Qty <b>1</b>	
Inspection Origin <input type="checkbox"/> Receiving <input type="checkbox"/> In-Process <input type="checkbox"/> Final <input type="checkbox"/> Rework/Repair <input checked="" type="checkbox"/> First Article		Vendor (Sub-Tier Source) Identification Vendor Name N/A Date Rec'd N/A P.O. No. N/A		Customer Identification Part No. L1430401-100400 REV 5V P.O. Number 16185 Part Name Undulator Support Girder		
At Oper. <b>170</b>	Serial Numbers: <b>01 (FIRST ARTICLE)</b>		Customer Name Hi-Tech Manufacturing			
SPECIFICATION		B/P ZONE	INSPECTION METHOD / GAGE NO.	ACTUAL DIMENSION / GAGE VERIFICATION (Range of Readings or Accept Status)	QTY ACC	QTY REJ

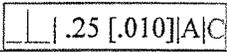
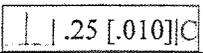
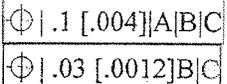
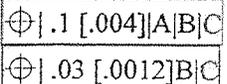
**\*\* ALL DIMENSIONS TO BE RECORDED IN MILLIMETERS \*\***  
**\*\* ALL TEMPERATURES TO BE RECORDED IN CELSIUS \*\***

**ALL DIMENSIONS APPLY AT A TEMPERATURE OF 20 DEGREES CELSIUS. PART MUST BE IN THERMAL EQUILIBRIUM DURING MEASUREMENTS AND AT THE SAME TEMPERATURE AT THE BEGINNING AND CONCLUSION OF THE MEASUREMENTS WITHIN +/-2 DEG. CELSIUS.**

PART TEMPERATURE BEFORE INSPECTION (Record in Celsius)	SOW 4.5.4	CONTACT THERMOMETER MX1794	20.51° C	
PART TEMPERATURE DURING INSPECTION (Record in Celsius)	SOW 4.5.4	CONTACT THERMOMETER MX1794	20.51° C	
PART TEMPERATURE AFTER INSPECTION (Record in Celsius)	SOW 4.5.4	CONTACT THERMOMETER MX1794	20.53° C	

**CRITICAL DIMENSIONS PER SECTION 4.5.2.2 OF DOC. # L143-00093**

**SHEET 2 - TOP VIEW**

A) Flatness of Datum B of .030 [.001]	N/A	CMM MX1269	.013 mm	
B) Perpendicularity of Datum B to Datum C 	E8	CMM MX1269	.013 mm	
C) Flatness of datum A of .030 [.001]	N/A	CMM MX1269	.025 mm	
D) Perpendicularity of Datum A to Datum C 	D8	CMM MX1269	.023 mm	
E) 9X Ø 6.315 - 6.329 marked "D1", "D2" & "D3"	E7 E6 E3	CMM MX1269	6.327 - 6.329	
F) True position of "D3" holes 2X 	E3	CMM MX1269	<u>.050 .058</u> .008	
F) True position of "D2" holes 2X 	E6	CMM MX1269	<u>.017 .030</u> .010	

STAMP 	INSPECTED BY <b>THOMAS G COOK</b>	DATE <b>7/10/07</b>	PAGE 1 OF 2	QTY ACC <b>1</b>	QTY REJ <b>0</b>
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**INSPECTION PLANNING & REPORT FORM**  
Metalex Mfg.  
5750 Cornell Rd ! Cincinnati, OH 45242 ! (513) 489-0507

Job No.  
**2007-7558**

Qty  
**1**

Inspection Origin		Vendor (Sub-Tier Source) Identification		Customer Identification		
<input type="checkbox"/> Receiving <input type="checkbox"/> In-Process <input type="checkbox"/> Final <input type="checkbox"/> Rework/Repair <input checked="" type="checkbox"/> First Article		Vendor Name N/A		Part No. L1430401-100400	REV 5V	P.O. Number 16185
		Date Rec'd N/A	P.O. No. N/A	Part Name Undulator Support Girder		
At Oper. 170	Serial Numbers: 01		Customer Name Hi-Tech Manufacturing			
SPECIFICATION	B/P ZONE	INSPECTION METHOD / GAGE NO.	ACTUAL DIMENSION / GAGE VERIFICATION (Range of Readings or Accept Status)		QTY ACC	QTY REJ

F) Locations of "DI" holes 444.50 [17.500]	E7	CMM MX1269	444.521		MTX QC 8
1968.50 [77.500]	E4	CMM MX1269	1968.505		MTX QC 8
3492.50 [137.500]	E2	CMM MX1269	3492.487		MTX QC 8
2X 523.6 [20.61]	E1	CMM MX1269	523.594	523.594 523.615	MTX QC 8
3185.26 [125.404]	D2	CMM MX1269	3185.242		MTX QC 8
845.29 [33.179]	D6	CMM MX1269	845.271		MTX QC 8
2X 95.10 [3.744]	D8	CMM MX1269	95.097	95.111	MTX QC 8

SHEET 2 - SIDE VIEW

A) <input type="checkbox"/> C <input type="checkbox"/> .030 [.0012]	C8	CMM MX1269	.030		MTX QC 8
---	----	------------	------	--	-------------

SHEET 2 - BOTTOM VIEW

A) 2X 749.78 ± .15	C7	CMM MX1269	749.780	749.759	MTX QC 8
B) 2X 2340.00 ± .15	C5	CMM MX1269	2340.039	2340.026	MTX QC 8
C) 4X <input type="checkbox"/> .05 [.002] B	B2	CMM MX1269	.001	.017 .000 .003	MTX QC 8
D) 4X <input type="checkbox"/> .030 [.0012] A	B7	CMM MX1269	.000	.002 .002 .003	MTX QC 8

SHEET 3 - SECTION B-B

E) <input type="checkbox"/> .07 [.003] C	C2	CMM MX1269	.013	.015 .028 .020	MTX QC 8
F) 4X 109.47 ± .08	C2	CMM MX1269	109.485	109.568	MTX QC 8

ALL OTHER FEATURES ARE ACCEPTED PER METALEX OPERATOR ACCEPTANCE PROGRAM (OAP) MXW117001 & OPERATOR SIGNOFF OF ROUTER OPERATIONS FOR COMPLIANCE TO ALL DRAWING FEATURES GENERATED WITHIN THAT DEFINED OPERATION.	ROUTER SIGNOFF MX5009	CONFORMS ↓	MTX QC 8
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STAMP 	INSPECTED BY THOMAS G COOK	DATE 7/10/07	PAGE 2 OF 2	QTY ACC 1	QTY REJ 0
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The Cincinnati Steel Treating Co  
5701 Mariemont Ave.  
Cincinnati, Ohio 45227 (513) 271-3173

Certification ID  
36423

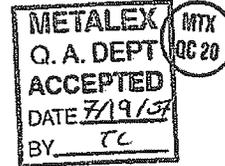
Order ID  
95712

**CERTIFICATION OF COMPLIANCE**

**CUSTOMER**

Metalex Mfg., Inc.  
5750 Cornell Road

Cincinnati OH  
Blkt Ord # 45242



Purchase Order 71422-JS      Customer Cust

Qty	Part No / Description	Material
2	L1430401-100400-05 SUPPORT GIRDER	A36

S/N 7A-08198-01 & 7A-08198-02

STRESS RELIEVE PER AWS D1.1 REV. 2004.  
NOTE: SUPPORT TO PREVENT DISTORTION.  
HEAT TREAT CHARTS REQUIRED.  
CERTIFICATIONS REQUIRED.

**RESULTS**

**THE ABOVE PARTS HAVE BEEN HEAT TREATED TO THE FOLLOWING:**

HEAT TREATMENT      STRESS RELIEVED      PER AWS D1.1 REV 2004

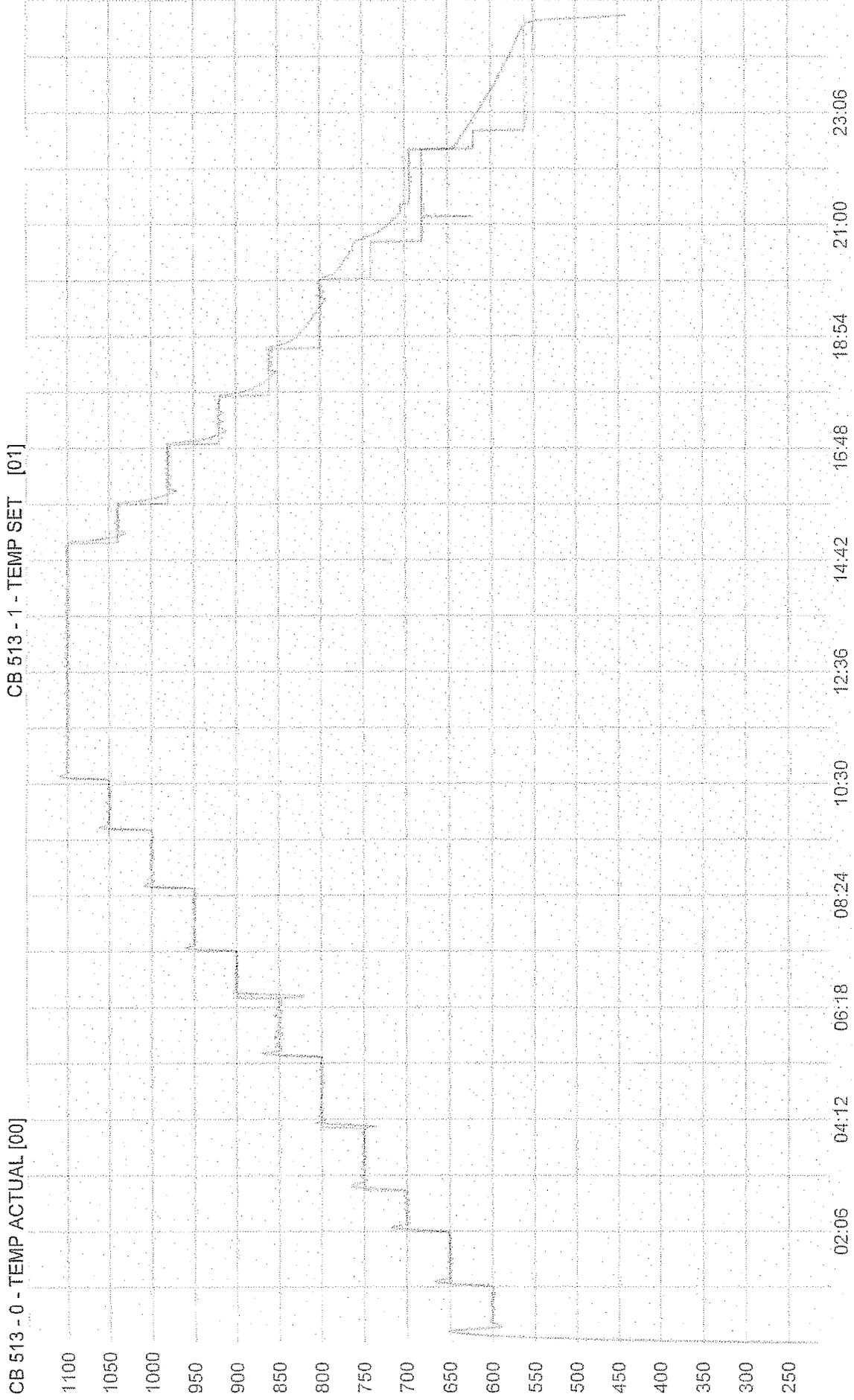
WE HEREBY CERTIFY THAT THE ABOVE PARTS WERE PROCESSED IN ACCORDANCE WITH THE SPECIFICATIONS AND INSTRUCTIONS SPECIFIED ON THE ABOVE PURCHASE ORDER AND THAT THE RESULTS AND REPORT THEREOF ARE AS STATED. ALL TESTING AND INSPECTION PROCEDURES EMPLOYED WERE IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS AND THE RESULTS THEREOF ARE ON FILE.

*James M. Hunt*  
NAME JAMES M. HUNT  
TITLE QA MANAGER  
DATE 7/17/2007

# Datalog Report

Customer: METALEX STRESS RELIEVE  
Part#: L1430401-100400-05  
PO#: 71422-JS  
CST Order#: 95712

Start: 6/11/2007  
End: 6/12/2007 12:55:00 AM  
Sample every 1 minute(s)  
Printed 7/17/2007 8:05:13 AM



The Cincinnati Steel Treating Co  
5701 Mariemont Ave.  
Cincinnati, Ohio 45227 (513) 271-3173

Certification ID  
36424

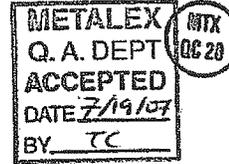
Order ID  
96188

**CERTIFICATION OF COMPLIANCE**

**CUSTOMER**

Metalex Mfg., Inc.  
5750 Cornell Road

Cincinnati OH  
Bikt Ord # 45242



Purchase Order 71474-JS      Customer Cust

Qty Part No / Description  
2 L1430401-100400-05  
SUPPORT GIRDER

Material  
A36

S/N 7A-08198-03 & 7A-08189-04

STRESS RELIEVE PR AWS D1.1 REV. 2004 SECTION 5.8 AND TABLE 5.2. FURNACE  
CHARTS & CERTIFY.

**RESULTS**

**THE ABOVE PARTS HAVE BEEN HEAT TREATED TO THE FOLLOWING:**

HEAT TREATMENT      STRESS RELIEVED      PER AWS D1.1 REV 2004  
SECTION 5.8 AND TABLE 5.2

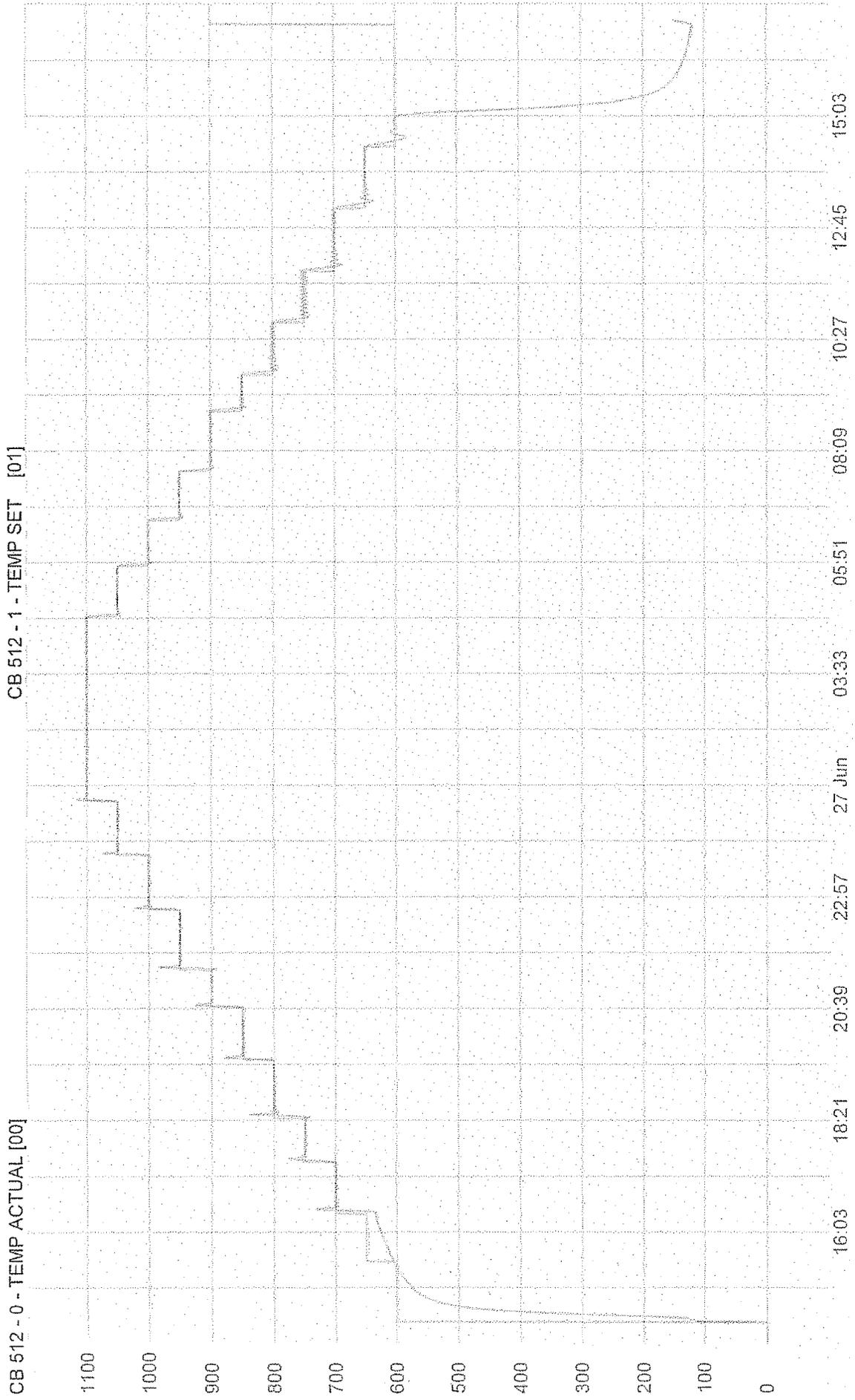
WE HEREBY CERTIFY THAT THE ABOVE PARTS WERE PROCESSED IN ACCORDANCE WITH  
THE SPECIFICATIONS AND INSTRUCTIONS SPECIFIED ON THE ABOVE PURCHASE ORDER  
AND THAT THE RESULTS AND REPORT THEREOF ARE AS STATED. ALL TESTING AND  
INSPECTION PROCEDURES EMPLOYED WERE IN ACCORDANCE WITH THE APPLICABLE  
SPECIFICATIONS AND THE RESULTS THEREOF ARE ON FILE.

*James M. Hunt*  
NAME JAMES M. HUNT  
TITLE QA MANAGER  
DATE 7/17/2007

# Datalog Report

Start: 6/26/2007 1:45:00 PM  
End: 6/27/2007 5:00:00 PM  
Sample every 1 minute(s)  
Printed 7/17/2007 8:10:48 AM

Customer: METALEX STRESS RELIEVE  
Part#: L1430401+-100400-05  
PO#: 71474-JS  
CST Order #: 96188



Metalex Manufacturing Inc.  
 5750 Cornell Road · Cincinnati, OH 45242  
 Phone (513) 489-0507 · Fax (513) 489-1020  
 EMAIL: metalex@metalexmf.com



**CERTIFICATE OF CONFORMANCE**

Date: 08/13/2007  
 Customer: Hi-Tech Manufacturing, Inc.  
4637 N. 25<sup>th</sup> Ave.  
Schiller Park, IL 60176  
 Attention: Simon Sorsher

Metalex Job# 2007-7558  
 Purchase Order # 16185  
 MX Packing List # 40858

Metalex certifies that all material, processes, procedures, and dimensions are as called for on the purchase order, drawings, and/or amendments supplied by you.  
 All information concerning this part or parts, units and/or assemblies are on file at Metalex Manufacturing, Inc.

<u>ITEM</u>	<u>QTY</u>	<u>PART NUMBER</u>	<u>REV</u>	<u>PART NAME</u>	<u>ID # *</u>
001	4	L1430401-100400	6	Support Girder	See Below

\*IDENTIFICATION NUMBER INCLUDES SERIAL #, HEAT #, AND/OR LOT #.

COMMENTS: Serial number 7A-08198-01 represents our "First Article" part of this part number.

Applicable serial numbers of this shipment are 7A-08198-01 thru 7A-08198-04.

Some internal documents in this quality package may contain documents certifying to revision level "5" or "5V". Metalex certifies these documents and processes conform to the rev 6 revision level and the parts conform to revision level "6".

Metalex is in compliance with Statement of Worksopce Document No. L143-00093, Revision New, dated 12/12/06.

Manufactured from Metalex purchased material. Reference heat numbers: T7257, T7232, T7130, T7141, U9728, 0129862, X25899, J62810, JF6843, J70358, and 478765.

  
 Metalex Representative Signature

Thomas Clark  
 Print Name

8/13/07  
 Date

Metalex  
Manufacturing  
Inc.



# Metalex

Certified ISO 9001 Quality Management  
Veteran Owned Business 30 Plus Years

#1-- INSIDE Pkg - Cust Copy

Ship To: HI-TECH MANUFACTURING, INC  
4637 N. 25TH AVE  
SCHILLER PARK IL 60176

Packing List# 40858 Rel# 1 PAGE 1  
Metalex Job# 2007-7558

Date: 7/26/07  
Ship Via: CCX  
PTA#  
(prepaid shipments only)

Attn:  
Customer PO: 16185

BOL/Air Bill# 745587430  
Prepaid: Collect: XXXXXXXX  
Weight: 9100 Ctns: 5 Zone:  
Dimensions: 34 x 157 x 26

P.O. Item No.	Qty Ordered	Qty Shipped	Qty Back Ordered	Description
001	38	4	34	ANL PART L1430401-100400 REV. 6 SLAC PART#: PF-381-002-80 S/N(S): 7A-08198-01 THRU 7A-08198-04  -CERTIFICATE OF CONFORMANCE, INSPECTION DATA, AND CERTIFICATIONS ENCLOSED.  S/N: 7A-08198-01 REPRESENTS THE FIRST ARTICLE OF THIS PART.

Received By:

Printed Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

# AMERICAN CALIBRATION INC.

4410 ROUTE 176 SUITE 14  
CRYSTAL LAKE, IL. 60014

Phone: 815-356-5839 Fax: 815-356-5851

Web: www.americancalibration.com

E-mail: amercal@americancalibration.com

## Calibration Certificate



1402.01

ISO/IEC 17025

Certificate #: TG13480  
Date: 3/15/2007

AMERICAN CALIBRATION  
4410 ROUTE 176 SUITE 14  
CRYSTAL LAKE, IL 60014

HI-TECH MANUFACTURING  
4637 NORTH 25TH AVENUE  
SCHILLER PARK, IL 60176

I.D.: 0448501  
Description: CMM METRIC  
Manufacturer: MITUTOYO  
Gage Type: CMM  
Temp./RH: 71.8F / 34  
Cal. Interval: 12 MONTHS  
Cal Date: 3/15/2007  
Size 1: 400X450X400  
Size 2: .001

Best Uncertainty  
Serial Number: 0448501  
P.O Number: N/A  
Model Number: CRYSTA 544  
Unit of Measure: MM  
Performed By: BILL  
Cal. Due Date: 3/15/2008  
Calibration Result: PASS  
Department: INSPECTION  
Loc. Cal. Perf.: ON-SITE

UNIT IS IN WORKING CONDITION.

1	REPEATABILITY XMM	0.000	0.000	0.010	0.002	0.002
2	REPEATABILITY YMM	0.000	0.000	0.010	0.001	0.001
3	REPEATABILITY ZMM	0.000	0.000	0.010	0.000	0.000
4	SQUARENESS XYMM	0.000	0.000	0.010	0.004	0.004
5	SQUARENESS YZMM	0.000	0.000	0.010	0.000	0.000
6	SQUARENESS XZMM	0.000	0.000	0.010	0.001	0.001
7	POS ERROR RANMM	0.000	0.000	0.020	0.013	0.013
8	POS ERROR RANMM	0.000	0.000	0.020	0.007	0.007
9	POS ERROR RANMM	0.000	0.000	0.020	0.011	0.011
10	VOLUMETRIC RANMM	0.000	0.000	0.025	0.018	0.018

CHECK MASTER  
BALL BAR

ACI-K46  
ACI-K70B

821/270467-04

2/1/2007

3/30/2006

2/1/2008

3/30/2007

# AMERICAN CALIBRATION INC.

4410 ROUTE 176 SUITE 14

CRYSTAL LAKE, IL. 60014

Phone: 815-356-5839 Fax: 815-356-5851

Web: [www.americancalibration.com](http://www.americancalibration.com)

E-mail: [amercal@americancalibration.com](mailto:amercal@americancalibration.com)

**Calibration Certificate**



1402.01

ISO/IEC 17025

Certificate #: TG13480

Date: 3/15/2007

SOP 123

CONTACT PROBE COORDINATE MEASUREMENT · A

9/25/2004

This instrument has been calibrated using standards traceable to the National Institute of Standards and Technology, derived from natural physical constants, ratio measurements, national measurements and standards. Observed value: All data is raw, there is no correction for temp. from ideal 68 degrees. And uncertainty was not added or subtracted from the observed value. The end user needs to determine the actual value of the observed value with departure of temp. and uncertainty. Any number of factors may cause the calibration items to drift out of calibration, before the recommended interval. \*\*This Certificate shall not be reproduced except in full without written permission of American Calibration Inc.

Reviewed and Approved By: \_\_\_\_\_

BG



# AMERICAN CALIBRATION INC.

4410 ROUTE 176 SUITE 14  
 CRYSTAL LAKE, IL. 60014  
 Phone: 815-356-5839 Fax: 815-356-5851  
 Web: www.americancalibration.com  
 E-mail: amercal@americancalibration.com  
**Calibration Certificate**



1402.01  
 ISO/IEC 17025

Certificate #: TG13482  
 Date: 3/15/2007

AMERICAN CALIBRATION  
 4410 ROUTE 176 SUITE 14  
 CRYSTAL LAKE, IL 60014

HI-TECH MANUFACTURING  
 4637 NORTH 25TH AVENUE  
 SCHILLER PARK, IL 60176

I.D.: 8910909  
 Description: CMM INCHES  
 Manufacturer: MITUTOYO  
 Gage Type: CMM  
 Temp./RH: 72.3F / 35  
 Cal. Interval: 12 MONTHS  
 Cal Date: 3/15/2007  
 Size 1: 24X18X12  
 Size 2: .00001

Best Uncertainty  
 Serial Number: 8910909  
 P.O Number: N/A  
 Model Number: F704  
 Unit of Measure: INCHES  
 Performed By: BILL  
 Cal. Due Date: 3/15/2008  
 Calibration Result: PASS  
 Department: QUALITY  
 Loc. Cal. Perf.: ON-SITE

UNIT IS IN WORKING CONDITION.

1	REPEATABILITY X INCHES	0.00000	0.00000	0.00040	0.00010	0.00010
2	REPEATABILITY Y INCHES	0.00000	0.00000	0.00040	0.00010	0.00010
3	REPEATABILITY Z INCHES	0.00000	0.00000	0.00040	0.00010	0.00010
4	SQUARENESS XY INCHES	0.00000	0.00000	0.00020	0.00005	0.00005
5	SQUARENESS YZ INCHES	0.00000	0.00000	0.00020	0.00010	0.00010
6	SQUARENESS XZ INCHES	0.00000	0.00000	0.00020	0.00005	0.00005
7	POS ERROR RAN INCHES	0.00000	0.00000	0.00080	0.00031	0.00031
8	POS ERROR RAN INCHES	0.00000	0.00000	0.00080	0.00018	0.00018
9	POS ERROR RAN INCHES	0.00000	0.00000	0.00080	0.00009	0.00009
10	VOLUMETRIC RAN INCHES	0.00000	0.00000	0.00100	0.00030	0.00030

CHECK MASTER	ACI-K46	821/270467-04	2/1/2007	2/1/2008
BALL BAR	ACI-K70B		3/30/2006	3/30/2007

# AMERICAN CALIBRATION INC.

4410 ROUTE 176 SUITE 14

CRYSTAL LAKE, IL. 60014

Phone: 815-356-5639 Fax: 815-356-5851

Web: [www.americancalibration.com](http://www.americancalibration.com)

E-mail: [amercal@americancalibration.com](mailto:amercal@americancalibration.com)

**Calibration Certificate**



1402.01

ISO/IEC 17025

Certificate #: TG13482  
Date: 3/15/2007

SOP 123

CONTACT PROBE COORDINATE MEASUREMENT · A

9/25/2004

This instrument has been calibrated using standards traceable to the National Institute of Standards and Technology, derived from natural physical constants, ratio measurements, national measurements and standards. Observed value: All data is raw, there is no correction for temp. from ideal 68 degrees. And uncertainty was not added or subtracted from the observed value. The end user needs to determine the actual value of the observed value with departure of temp. and uncertainty. Any number of factors may cause the calibration items to drift out of calibration, before the recommended interval. \*\*This Certificate shall not be reproduced except in full without written permission of American Calibration Inc.

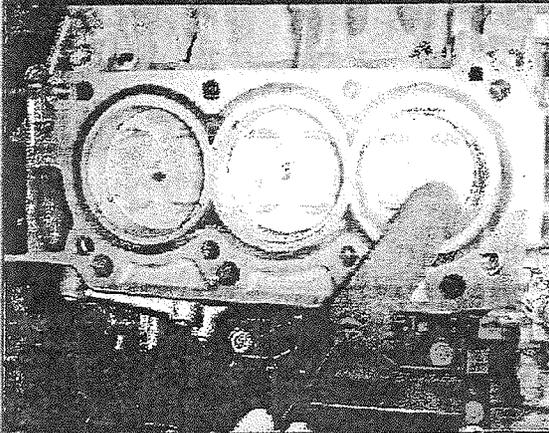
Reviewed and Approved By: \_\_\_\_\_



# Zerust®

## Z-Maxx

**Environmentally Friendly  
Corrosion Preventive  
Grease**



**Zerust® Z-Maxx** is an environmentally friendly, heavy-duty corrosion preventive grease.

**Zerust® Z-Maxx** is designed to replace and outperform many petroleum-based corrosion inhibiting products, including the widely known Cosmoline. Compared to Cosmoline, Zerust® Z-Maxx is much easier to apply and remove - saving considerable labor and maintenance costs.

**Heavy-duty, Easy to Use  
Corrosion Protection**

**Zerust® Z-Maxx** protects iron and steel against aggressive environments which can accelerate the formation of corrosion, such as salt air, high temperatures, etc. Zerust® Z-Maxx can provide effective corrosion protection for properly coated metal parts for up to two years under shelter.

Typical **Zerust® Z-Maxx** applications include corrosion protection for industrial machinery, wheel bearings, construction equipment, electric motors, etc. during long-term storage or use. Zerust® Z-Maxx can be brushed on at room temperature, or parts may be dipped in warmed Z-Maxx and excess material subsequently removed. Zerust® Z-Maxx leaves a clear film on the surface of the metal and has very little odor.

**Zerust® Z-Maxx** contains no heavy metals or other harmful or environmentally undesirable additives.

GSA Contract Award. GSA Contract #: GS-06F-0038M. GSA SIN #: 834-100. NTI is certified to ISO 9001:2000, ISO 14001:1996, U.S. Federal Test Method Standard 101C Method 4031, German Military TL-8135-0002 Edition 9. FDA cleared. Member of NACE, AFCEA, and IOPPP. NTI has on-site technical support in 40 countries. NTI is a publicly traded company—ticker symbol NTI.

**Zerust® Z-Maxx**



**Material Safety Data Sheet**

**Z-Maxxx Lube – Heavy Duty Grease**

**SECTION 1**

Technical Phone: 651-784-1250      MSDS# 4-4-3-12-1-180      Rev A  
Date Prepared 6 July 2004

**SECTION 2 - INGREDIENTS**

Complex Mixture – Petroleum Hydrocarbons Plus Additives. This material is not known to contain greater than 0.1% of any carcinogen required to be listed under the OSHA Hazard Communication Standard (29CFR 1910.1200).

This product is considered non-hazardous when handled properly and used for intended purpose.

\*This product does not contain any chemical subject to the reporting requirements of the Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III, Section 313 and 40 CFR Part 372.

**SECTION 3 – PHYSICAL DATA**

Appearance and Odor: Amber grease, mild mineral odor  
Boiling Point: N/A  
Specific Gravity: .945  
Vapor Pressure (mm Hg): N/A  
Vapor Density (air = 1): N/A  
Water Solubility: Nil

**SECTION 4 – FIRE AND EXPLOSION DATA**

<u>Flash Point</u>	<u>Method used</u>	<u>LEL%</u>	<u>UEL%</u>
>200°C (392°F)	Cleveland open cup	Unknown	Unknown

Extinguisher Media: CO<sup>2</sup> Dry chemical, Foam or Sand/Earth  
Fire Fighting: NIOSH/MSHA approved, self-contained, pressure demand respirator recommended; water may spread fire.  
Fire and Explosion Hazards: Containers not on fire may be cooled with water.

**SECTION 5 – REACTIVITY DATA**

Material is: Stable  
Hazardous polymerization: Will not occur.  
Conditions to avoid: Strong acids and direct open flames, Excessive heat. Avoid conditions that could generate an oil mist.  
Incompatibility: Oxides of Carbon, Sulphur, Nitrogen  
Hazardous decomposition product: Oxides of Carbon, Sulphur, Nitrogen

**SECTION 6 – HEALTH HAZARDS**

Acute: Unknown.  
Chronic: May cause eye or skin irritation.  
Signs and symptoms of exposure: Eye, skin irritation.  
Medical conditions generally aggravated by exposure: Unknown  
Carcinogenic status: OSHA: N/A    I.A.R.C. N/A    N.T.P. N/A

**Inhalation:** Emergency and first aid procedures: Move to fresh air.  
**Eyes:** Flush with water for 15 minutes, if film or irritation persists, seek medical attention.  
**Skin:** Wipe off excess and wash with soap and water.  
**Ingestion:** Do not induce vomiting. Consult physician.

**SECTION 7 – SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES**

Handling and storage: Store in a dry, cool environment.  
Other precautions: Keep away from open flames.  
Spill or release: Scoop up and place in metal container. Use inert absorbent to clean residue and place in metal container. U.S. Coast Guard 1-800-424-8802.  
Disposal methods: Dispose of in accordance with all applicable federal, state and local regulations.  
Chemtrek 1-800-424-9300  
Emergency Phone:

**SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION**

Respiratory protection: Not required at normal use temperatures.  
Ventilation Procedures: Local exhaust: recommended to maintain oil mist below TLV limit. Mechanical: to maintain below TLV limits. Special: N/A    Other: N/A  
Protective gloves: Oil resistant gloves.  
Eye protection: Safety glasses (goggles).  
Other protective equipment: N/A  
Work/hygenic practices: Practice good housekeeping.  
M/A = Not Applicable

(May be used to comply with OSHA's Hazard Communications Standard, 29CFR 1910.1200. Standard must be consulted for specific requirements.)

**NORTHERN TECHNOLOGIES**  
**INTERNATIONAL CORPORATION**  
6680 North Highway 49 \* Lino Lakes MN 55014  
Toll Free: 800-328-2433 \* Phone: 651-784-1250 \* Fax: 651-784-2902  
URL: [www.ntic.com](http://www.ntic.com) \* American Stock Exchange Symbol: NTI

Grainger MSDS Lookup

MSDS for  
64777

847-678-1716



Close this window

**Common Name:** 1 SYNTHETIC GREASE  
**Manufacturer:** EXXON MOBIL  
**MSDS Revision Date:** 2/9/2006

**Grainger Item Number(s):** 6Y777  
**Manufacturer Model Number(s):** MOBIL 1 GREASE

**MSDS Table of Contents**

Click the desired link below to jump directly to that section in the MSDS.

- SECTION 1 PRODUCT AND COMPANY IDENTIFICATION
- SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS
- SECTION 3 HAZARDS IDENTIFICATION
- SECTION 4 FIRST AID MEASURES
- SECTION 5 FIRE FIGHTING MEASURES
- SECTION 6 ACCIDENTAL RELEASE MEASURES
- SECTION 7 HANDLING AND STORAGE
- SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION
- SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES
- SECTION 10 STABILITY AND REACTIVITY
- SECTION 11 TOXICOLOGICAL INFORMATION
- SECTION 12 ECOLOGICAL INFORMATION
- SECTION 13 DISPOSAL CONSIDERATIONS
- SECTION 14 TRANSPORT INFORMATION
- SECTION 15 REGULATORY INFORMATION
- SECTION 16 OTHER INFORMATION

EXXONMOBIL

PRODUCT NAME: MOBIL 1 SYNTHETIC GREASE

REVISION DATE: 09 FEB 2006

MATERIAL SAFETY DATA SHEET

**SECTION 1 PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT:

PRODUCT NAME: MOBIL 1 SYNTHETIC GREASE

PRODUCT DESCRIPTION: BASE OIL AND ADDITIVES

## Grainger MSDS Lookup

PRODUCT CODE: 532010-00. 971882

INTENDED USE: GREASE

COMPANY IDENTIFICATION:

SUPPLIER:  
EXXON MOBIL CORPORATION  
3225 GALLOWS RD.  
FAIRFAX, VA. 22037  
USA

24 HOUR HEALTH EMERGENCY: 609-737-4411

TRANSPORTATION EMERGENCY PHONE: 800-424-9300

EXXONMOBIL TRANSPORTATION NO.: 281-834-3296

MSDS REQUESTS: 713-613-3661

PRODUCT TECHNICAL INFORMATION: 800-662-4525, 800-947-9147

MSDS INTERNET ADDRESS:  
HTTP://WWW.EXXON.COM.  
HTTP://WWW.MOBIL.COM**SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS**

REPORTABLE HAZARDOUS SUBSTANCE(S) OR COMPLEX SUBSTANCE(S):

NAME	CAS#	CONCENTRATION*
ZINC DITHIOPHOSPHATE	68649-42-3	<2.5%

\* ALL CONCENTRATIONS ARE PERCENT BY WEIGHT UNLESS MATERIAL IS A GAS. GAS CONCENTRATIONS ARE IN PERCENT BY VOLUME.

**SECTION 3 HAZARDS IDENTIFICATION**

THIS MATERIAL IS NOT CONSIDERED TO BE HAZARDOUS ACCORDING TO REGULATORY GUIDELINES (SEE (M)SDS SECTION 15).

POTENTIAL HEALTH EFFECTS:  
LOW ORDER OF TOXICITY. EXCESSIVE EXPOSURE MAY RESULT IN EYE, SKIN, OR RESPIRATORY IRRITATION. HIGH-PRESSURE INJECTION UNDER SKIN MAY CAUSE SERIOUS DAMAGE.NFPA HAZARD ID:  
HEALTH: 0  
FLAMMABILITY: 1  
REACTIVITY: 0HMIS HAZARD ID:  
HEALTH: 0

## Grainger MSDS Lookup

Page 3 of 11

FLAMMABILITY: 1  
REACTIVITY: 0

NOTE:  
THIS MATERIAL SHOULD NOT BE USED FOR ANY OTHER PURPOSE THAN THE INTENDED USE  
IN SECTION 1 WITHOUT EXPERT ADVICE. HEALTH STUDIES HAVE SHOWN THAT CHEMICAL  
EXPOSURE MAY CAUSE POTENTIAL HUMAN HEALTH RISKS WHICH MAY VARY FROM PERSON  
TO PERSON.

**SECTION 4 FIRST AID MEASURES**

INHALATION:  
AT AMBIENT/NORMAL HANDLING TEMPERATURES, MINIMAL OR NO IRRITATION DUE TO  
INHALATION OF VAPOR/MIST IS EXPECTED.

SKIN CONTACT:  
WASH CONTACT AREAS WITH SOAP AND WATER. IF PRODUCT IS INJECTED INTO OR UNDER  
THE SKIN, OR INTO ANY PART OF THE BODY, REGARDLESS OF THE APPEARANCE OF THE  
WOUND OR ITS SIZE, THE INDIVIDUAL SHOULD BE EVALUATED IMMEDIATELY BY A  
PHYSICIAN AS A SURGICAL EMERGENCY. EVEN THOUGH INITIAL SYMPTOMS FROM HIGH  
PRESSURE INJECTION MAY BE MINIMAL OR ABSENT, EARLY SURGICAL TREATMENT WITHIN  
THE FIRST FEW HOURS MAY SIGNIFICANTLY REDUCE THE ULTIMATE EXTENT OF INJURY.

EYE CONTACT:  
FLUSH THOROUGHLY WITH WATER. IF IRRITATION OCCURS, GET MEDICAL ASSISTANCE.

INGESTION:  
FIRST AID IS NORMALLY NOT REQUIRED. SEEK MEDICAL ATTENTION IF DISCOMFORT  
OCCURS.

**SECTION 5 FIRE FIGHTING MEASURES**

EXTINGUISHING MEDIA:  
APPROPRIATE EXTINGUISHING MEDIA:  
USE WATER FOG, FOAM, DRY CHEMICAL OR CARBON DIOXIDE (CO2) TO EXTINGUISH  
FLAMES.

INAPPROPRIATE EXTINGUISHING MEDIA: STRAIGHT STREAMS OF WATER

FIRE FIGHTING:

FIRE FIGHTING INSTRUCTIONS:  
EVACUATE AREA. PREVENT RUNOFF FROM FIRE CONTROL OR DILUTION FROM ENTERING  
STREAMS, SEWERS, OR DRINKING WATER SUPPLY. FIREFIGHTERS SHOULD USE STANDARD  
PROTECTIVE EQUIPMENT AND IN ENCLOSED SPACES, SELF-CONTAINED BREATHING  
APPARATUS (SCBA). USE WATER SPRAY TO COOL FIRE EXPOSED SURFACES AND TO  
PROTECT PERSONNEL.

HAZARDOUS COMBUSTION PRODUCTS:  
SMOKE, FUME, OXIDES OF CARBON, ALDEHYDES, SULFUR OXIDES. INCOMPLETE  
COMBUSTION PRODUCTS.

FLAMMABILITY PROPERTIES:

FLASH POINT (METHOD): >204C (399F) (EST. FOR OIL, ASTM D-92 (COC))

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FLAMMABLE LIMITS (APPROXIMATE VOLUME % IN AIR):  
LEL: N/D  
UEL: N/D

AUTOIGNITION TEMPERATURE: N/D

**SECTION 6 ACCIDENTAL RELEASE MEASURES**

## NOTIFICATION PROCEDURES:

IN THE EVENT OF A SPILL OR ACCIDENTAL RELEASE, NOTIFY RELEVANT AUTHORITIES IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS. U.S. REGULATIONS REQUIRE REPORTING RELEASES OF THIS MATERIAL TO THE ENVIRONMENT WHICH EXCEED THE REPORTABLE QUANTITY OR OIL SPILLS WHICH COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. THE NATIONAL RESPONSE CENTER CAN BE REACHED AT (800)424-8802.

## SPILL MANAGEMENT:

## LAND SPILL:

SCRAPE UP SPILLED MATERIAL WITH SHOVELS INTO A SUITABLE CONTAINER FOR RECYCLE OR DISPOSAL.

## WATER SPILL:

STOP LEAK IF YOU CAN DO IT WITHOUT RISK. CONFINE THE SPILL IMMEDIATELY WITH BOOMS. SKIM FROM SURFACE.

WATER SPILL AND LAND SPILL RECOMMENDATIONS ARE BASED ON THE MOST LIKELY SPILL SCENARIO FOR THIS MATERIAL; HOWEVER, GEOGRAPHIC CONDITIONS, WIND, TEMPERATURE, (AND IN THE CASE OF A WATER SPILL) WAVE AND CURRENT DIRECTION AND SPEED MAY GREATLY INFLUENCE THE APPROPRIATE ACTION TO BE TAKEN. FOR THIS REASON, LOCAL EXPERTS SHOULD BE CONSULTED. NOTE:  
LOCAL REGULATIONS MAY PRESCRIBE OR LIMIT ACTION TO BE TAKEN.

## ENVIRONMENTAL PRECAUTIONS:

PREVENT ENTRY INTO WATERWAYS, SEWERS, BASEMENTS OR CONFINED AREAS.

**SECTION 7 HANDLING AND STORAGE**

HANDLING: PREVENT SMALL SPILLS AND LEAKAGE TO AVOID SLIP HAZARD.

STATIC ACCUMULATOR: THIS MATERIAL IS NOT A STATIC ACCUMULATOR.

STORAGE: DO NOT STORE IN OPEN OR UNLABELLED CONTAINERS.

**SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION**

## EXPOSURE LIMIT VALUES:

NOTE:  
LIMITS/STANDARDS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS.

## Grainger MSDS Lookup

ENGINEERING CONTROLS:  
THE LEVEL OF PROTECTION AND TYPES OF CONTROLS NECESSARY WILL VARY DEPENDING  
UPON POTENTIAL EXPOSURE CONDITIONS.  
CONTROL MEASURES TO CONSIDER:  
NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE  
VENTILATION.

PERSONAL PROTECTION:  
PERSONAL PROTECTIVE EQUIPMENT SELECTIONS VARY BASED ON POTENTIAL EXPOSURE  
CONDITIONS SUCH AS APPLICATIONS, HANDLING PRACTICES, CONCENTRATION AND  
VENTILATION. INFORMATION ON THE SELECTION OF PROTECTIVE EQUIPMENT FOR USE  
WITH THIS MATERIAL, AS PROVIDED BELOW, IS BASED UPON INTENDED, NORMAL USAGE.

RESPIRATORY PROTECTION:  
IF ENGINEERING CONTROLS DO NOT MAINTAIN AIRBORNE CONTAMINANT CONCENTRATIONS  
AT A LEVEL WHICH IS ADEQUATE TO PROTECT WORKER HEALTH, AN APPROVED  
RESPIRATOR MAY BE APPROPRIATE. RESPIRATOR SELECTION, USE, AND MAINTENANCE  
MUST BE IN ACCORDANCE WITH REGULATORY REQUIREMENTS, IF APPLICABLE. TYPES OF  
RESPIRATORS TO BE CONSIDERED FOR THIS MATERIAL INCLUDE:  
NO PROTECTION IS ORDINARILY REQUIRED UNDER NORMAL CONDITIONS OF USE AND WITH  
ADEQUATE VENTILATION.

FOR HIGH AIRBORNE CONCENTRATIONS, USE AN APPROVED SUPPLIED-AIR RESPIRATOR,  
OPERATED IN POSITIVE PRESSURE MODE. SUPPLIED AIR RESPIRATORS WITH AN ESCAPE  
BOTTLE MAY BE APPROPRIATE WHEN OXYGEN LEVELS ARE INADEQUATE, GAS/VAPOR  
WARNING PROPERTIES ARE POOR, OR IF AIR PURIFYING FILTER CAPACITY/RATING MAY  
BE EXCEEDED.

HAND PROTECTION:  
ANY SPECIFIC GLOVE INFORMATION PROVIDED IS BASED ON PUBLISHED LITERATURE AND  
GLOVE MANUFACTURER DATA. WORK CONDITIONS CAN GREATLY EFFECT GLOVE  
DURABILITY; INSPECT AND REPLACE WORN OR DAMAGED GLOVES. THE TYPES OF GLOVES  
TO BE CONSIDERED FOR THIS MATERIAL INCLUDE:  
NO PROTECTION IS ORDINARILY REQUIRED UNDER NORMAL CONDITIONS OF USE.

EYE PROTECTION:  
IF CONTACT IS LIKELY, SAFETY GLASSES WITH SIDE SHIELDS ARE RECOMMENDED.

SKIN AND BODY PROTECTION:  
ANY SPECIFIC CLOTHING INFORMATION PROVIDED IS BASED ON PUBLISHED LITERATURE  
OR MANUFACTURER DATA. THE TYPES OF CLOTHING TO BE CONSIDERED FOR THIS  
MATERIAL INCLUDE:  
NO SKIN PROTECTION IS ORDINARILY REQUIRED UNDER NORMAL CONDITIONS OF USE. IN  
ACCORDANCE WITH GOOD INDUSTRIAL HYGIENE PRACTICES, PRECAUTIONS SHOULD BE  
TAKEN TO AVOID SKIN CONTACT.

SPECIFIC HYGIENE MEASURES:  
ALWAYS OBSERVE GOOD PERSONAL HYGIENE MEASURES, SUCH AS WASHING AFTER  
HANDLING THE MATERIAL AND BEFORE EATING, DRINKING, AND/OR SMOKING. ROUTINELY  
WASH WORK CLOTHING AND PROTECTIVE EQUIPMENT TO REMOVE CONTAMINANTS. DISCARD  
CONTAMINATED CLOTHING AND FOOTWEAR THAT CANNOT BE CLEANED. PRACTICE GOOD  
HOUSEKEEPING.

ENVIRONMENTAL CONTROLS: SEE SECTIONS 6, 7, 12, 13.

**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES**

## Grainger MSDS Lookup

Page 6 of 11

TYPICAL PHYSICAL AND CHEMICAL PROPERTIES ARE GIVEN BELOW. CONSULT THE SUPPLIER IN SECTION 1 FOR ADDITIONAL DATA.

GENERAL INFORMATION:  
PHYSICAL STATE: SOLID  
FORM: SEMI-FLUID  
COLOR: RED  
ODOR: CHARACTERISTIC  
ODOR THRESHOLD: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION:

RELATIVE DENSITY (AT 15 C): 0.9

FLASH POINT (METHOD): >204C (399F) (EST. FOR OIL, ASTM D-92 (COC))

FLAMMABLE LIMITS (APPROXIMATE VOLUME % IN AIR):  
LEL: N/D  
UEL: N/D

AUTOIGNITION TEMPERATURE: N/D

BOILING POINT/RANGE: >299C (570F)

VAPOR DENSITY (AIR=1): N/D

VAPOR PRESSURE: <0.013 KPA (0.1 MMHG) AT 20 C

EVAPORATION RATE (N-BUTYL ACETATE=1): N/D

PH: N/A

LOG POW (N-OCTANOL/WATER PARTITION COEFFICIENT): >3.5

SOLUBILITY IN WATER: NEGLIGIBLE

VISCOSITY:  
220 CST (220 MM2/SEC) AT 40 C  
25.5 CST (25.5 MM2/SEC) AT 100 C

OXIDIZING PROPERTIES: SEE SECTIONS 3, 15, 16.

OTHER INFORMATION:

FREEZING POINT: N/D

MELTING POINT: >260 DEG. C (500 DEG. F)

DMSO EXTRACT (MINERAL OIL ONLY), IP-346: <3 %WT

NOTE:  
MOST PHYSICAL PROPERTIES ABOVE ARE FOR THE OIL COMPONENT IN THE MATERIAL.

### SECTION 10 STABILITY AND REACTIVITY

STABILITY: MATERIAL IS STABLE UNDER NORMAL CONDITIONS.

## Grainger MSDS Lookup

Page 7 of 11

CONDITIONS TO AVOID: EXCESSIVE HEAT. HIGH ENERGY SOURCES OF IGNITION.

MATERIALS TO AVOID: STRONG OXIDIZERS

HAZARDOUS DECOMPOSITION PRODUCTS:  
MATERIAL DOES NOT DECOMPOSE AT AMBIENT TEMPERATURES.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

**SECTION 11 TOXICOLOGICAL INFORMATION**

## ACUTE TOXICITY:

ROUTE OF EXPOSURE

CONCLUSION/REMARKS

INHALATION:

TOXICITY (RAT): LC50 &gt;5000 MG/M3

MINIMALLY TOXIC. BASED ON ASSESSMENT OF THE COMPONENTS.

IRRITATION: NO END POINT DATA.

NOT DETERMINED.

INGESTION:

TOXICITY (RAT): LD50 &gt;2000 MG/KG

MINIMALLY TOXIC. BASED ON TEST DATA FOR STRUCTURALLY SIMILAR MATERIALS.

SKIN:

TOXICITY (RABBIT): LD50 &gt;2000 MG/KG

MINIMALLY TOXIC. BASED ON TEST DATA FOR STRUCTURALLY SIMILAR MATERIALS.

IRRITATION (RABBIT): DATA AVAILABLE.

NEGLECTIBLE IRRITATION TO SKIN AT AMBIENT TEMPERATURES. BASED ON ASSESSMENT OF THE COMPONENTS.

EYE:

IRRITATION (RABBIT): DATA AVAILABLE.

MAY CAUSE MILD, SHORT-LASTING DISCOMFORT TO EYES. BASED ON ASSESSMENT OF THE COMPONENTS.

## CHRONIC/OTHER EFFECTS:

## CONTAINS:

BASE OIL SEVERELY REFINED:

NOT CARCINOGENIC IN ANIMAL STUDIES. REPRESENTATIVE MATERIAL PASSES IP-346, MODIFIED AMES TEST, AND/OR OTHER SCREENING TESTS. DERMAL AND INHALATION STUDIES SHOWED MINIMAL EFFECTS; LUNG NON-SPECIFIC INFILTRATION OF IMMUNE CELLS, OIL DEPOSITION AND MINIMAL GRANULOMA FORMATION. NOT SENSITIZING IN TEST ANIMALS.

ADDITIONAL INFORMATION IS AVAILABLE BY REQUEST.

THE FOLLOWING INGREDIENTS ARE CITED ON THE LISTS BELOW: NONE.

REGULATORY LISTS SEARCHED:

1 = NTP CARC

## Grainger MSDS Lookup

Page 8 of 11

- 2 = NTP SUS
- 3 = IARC 1
- 4 = IARC 2A
- 5 = IARC 2B
- 6 = OSHA CARC

**SECTION 12 ECOLOGICAL INFORMATION**

THE INFORMATION GIVEN IS BASED ON DATA AVAILABLE FOR THE MATERIAL, THE COMPONENTS OF THE MATERIAL, AND SIMILAR MATERIALS.

**ECOTOXICITY:**

MATERIAL - NOT EXPECTED TO BE HARMFUL TO AQUATIC ORGANISMS.

**MOBILITY:**

BASE OIL COMPONENT - LOW SOLUBILITY AND FLOATS AND IS EXPECTED TO MIGRATE FROM WATER TO THE LAND. EXPECTED TO PARTITION TO SEDIMENT AND WASTEWATER SOLIDS.

**PERSISTENCE AND DEGRADABILITY:****BIODEGRADATION:**

BASE OIL COMPONENT - EXPECTED TO BE INHERENTLY BIODEGRADABLE

**BIOACCUMULATION POTENTIAL:**

BASE OIL COMPONENT - HAS THE POTENTIAL TO BIOACCUMULATE, HOWEVER METABOLISM OR PHYSICAL PROPERTIES MAY REDUCE THE BIOCONCENTRATION OR LIMIT BIOAVAILABILITY.

**SECTION 13 DISPOSAL CONSIDERATIONS**

DISPOSAL RECOMMENDATIONS BASED ON MATERIAL AS SUPPLIED. DISPOSAL MUST BE IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND MATERIAL CHARACTERISTICS AT TIME OF DISPOSAL.

**DISPOSAL RECOMMENDATIONS:**

PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED CONTROLLED BURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION AT VERY HIGH TEMPERATURES TO PREVENT FORMATION OF UNDESIRABLE COMBUSTION PRODUCTS.

**REGULATORY DISPOSAL INFORMATION:****RCRA INFORMATION:**

THE UNUSED PRODUCT, IN OUR OPINION, IS NOT SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 261D), NOR IS IT FORMULATED TO CONTAIN MATERIALS WHICH ARE LISTED AS HAZARDOUS WASTES. IT DOES NOT EXHIBIT THE HAZARDOUS CHARACTERISTICS OF IGNITABILITY, CORROSITIVITY OR REACTIVITY AND IS NOT FORMULATED WITH CONTAMINANTS AS DETERMINED BY THE TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP). HOWEVER, USED PRODUCT MAY BE REGULATED.

**EMPTY CONTAINER WARNING:****PRECAUTIONARY LABEL TEXT:**

EMPTY CONTAINERS MAY RETAIN RESIDUE AND CAN BE DANGEROUS. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION: THEY MAY

## Grainger MSDS Lookup

EXPLODE AND CAUSE INJURY OR DEATH. DO NOT ATTEMPT TO REFILL OR CLEAN CONTAINER SINCE RESIDUE IS DIFFICULT TO REMOVE. EMPTY DRUMS SHOULD BE COMPLETELY DRAINED, PROPERLY BUNGED AND PROMPTLY RETURNED TO A DRUM RECONDITIONER. ALL CONTAINERS SHOULD BE DISPOSED OF IN AN ENVIRONMENTALLY SAFE MANNER AND IN ACCORDANCE WITH GOVERNMENTAL REGULATIONS.

**SECTION 14 TRANSPORT INFORMATION**

LAND (DOT): NOT REGULATED FOR LAND TRANSPORT  
 LAND (TDG): NOT REGULATED FOR LAND TRANSPORT  
 SEA (IMDG): NOT REGULATED FOR SEA TRANSPORT ACCORDING TO IMDG-CODE  
 AIR (IATA): NOT REGULATED FOR AIR TRANSPORT

**SECTION 15 REGULATORY INFORMATION**

OSHA HAZARD COMMUNICATION STANDARD:  
 WHEN USED FOR ITS INTENDED PURPOSES, THIS MATERIAL IS NOT CLASSIFIED AS HAZARDOUS IN ACCORDANCE WITH OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: AICS. IECSC. DSL. KECI. TSCA

EPCRA: THIS MATERIAL CONTAINS NO EXTREMELY HAZARDOUS SUBSTANCES.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: NONE.

SARA (313) TOXIC RELEASE INVENTORY:

CHEMICAL NAME	CAS NUMBER	TYPICAL VALUE
ZINC DITHIOPHOSPHATE	68649-42-3	<2.5%

THE FOLLOWING INGREDIENTS ARE CITED ON THE LISTS BELOW:\*

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
DIPHENYLAMINE	122-39-4	5, 9, 18
PHOSPHORUS	7723-14-0	1, 4
ZINC DITHIOPHOSPHATE	68649-42-3	13, 15, 17

REGULATORY LISTS SEARCHED:

- 1 = ACGIH ALL
- 2 = ACGIH A1
- 3 = ACGIH A2
- 4 = OSHA 2
- 5 = TSCA 4
- 6 = TSCA 5A2
- 7 = TSCA 5E
- 8 = TSCA 6
- 9 = TSCA 12B
- 10 = CA P65 CARC

## Grainger MSDS Lookup

11 = CA P65 REPRO  
12 = CA RTK  
13 = IL RTK  
14 = LA RTK  
15 = MI 293  
16 = MN RTK  
17 = NJ RTK  
18 = PA RTK  
19 = RI RTK

## CODE KEY:

CARC=CARCINOGEN

REPRO=REPRODUCTIVE

\* EPA RECENTLY ADDED NEW CHEMICAL SUBSTANCES TO ITS TSCA SECTION 4 TEST RULES. PLEASE CONTACT THE SUPPLIER TO CONFIRM WHETHER THE INGREDIENTS IN THIS PRODUCT CURRENTLY APPEAR ON A TSCA 4 OR TSCA 12B LIST.

**SECTION 16 OTHER INFORMATION**

N/D = NOT DETERMINED  
N/A = NOT APPLICABLE

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:  
REVISION CHANGES:

SECTION 13: REGULATORY DISPOSAL INFORMATION WAS MODIFIED.  
SECTION 11: INHALATION LETHALITY CONCLUSION WAS MODIFIED.  
SECTION 09: BOILING POINT C(F) WAS MODIFIED.  
SECTION 09: VAPOR PRESSURE WAS MODIFIED.  
SECTION 03: HEALTH HAZARDS WAS MODIFIED.  
SECTION 11: INHALATION LETHALITY TEST DATA WAS MODIFIED.  
SECTION 11: INHALATION LETHALITY TEST COMMENT WAS MODIFIED.  
SECTION 06: ACCIDENTAL RELEASE - SPILL MANAGEMENT - LAND WAS MODIFIED.  
SECTION 06: ACCIDENTAL RELEASE - SPILL MANAGEMENT - WATER WAS MODIFIED.  
SECTION 09: RELATIVE DENSITY - HEADER WAS MODIFIED.  
SECTION 09: FLASH POINT C(F) WAS MODIFIED.  
SECTION 09: VISCOSITY WAS MODIFIED.  
SECTION 09: VISCOSITY WAS MODIFIED.  
SECTION 02: COMPONENT TABLE WAS MODIFIED.  
SECTION 15: LIST CITATIONS TABLE WAS MODIFIED.  
SECTION 15: LIST CITATION TABLE - HEADER WAS MODIFIED.  
SECTION 15: SARA (313) TOXIC RELEASE INVENTORY - TABLE WAS MODIFIED.  
SECTION 15: NATIONAL CHEMICAL INVENTORY LISTING WAS MODIFIED.  
SECTION 16: MSN, MAT ID WAS MODIFIED.  
SECTION 01: COMPANY CONTACT METHODS SORTED BY PRIORITY WAS MODIFIED.  
SECTION 12: BIOACCUMULATION - HEADER WAS ADDED.  
SECTION 08: EXPOSURE LIMIT VALUES - HEADER WAS ADDED.  
SECTION 12: ECOLOGICAL INFORMATION - BIOACCUMULATION WAS ADDED.  
SECTION 12: ECOLOGICAL INFORMATION - BIOACCUMULATION WAS ADDED.  
SECTION 15: TSCA CLASS 2 STATEMENT WAS ADDED.  
SECTION 16: GLOBAL DISCLAIMER WAS ADDED.  
SECTION 16: DISCLAIMER WAS DELETED.  
SECTION 16: STANDARD PHRASES FOR CALIFORNIA PROPOSITION 65 WAS DELETED.  
SECTION 13: RCRA INFORMATION HEADER WAS DELETED.  
SECTION 13: RCRA TCLP WAS DELETED.  
SECTION 13: RCRA TCLP WAS DELETED.

## Grainger MSDS Lookup

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE, TO THE BEST OF EXXONMOBIL'S KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE ISSUED. YOU CAN CONTACT EXXONMOBIL TO INSURE THAT THIS DOCUMENT IS THE MOST CURRENT AVAILABLE FROM EXXONMOBIL. THE INFORMATION AND RECOMMENDATIONS ARE OFFERED FOR THE USER'S CONSIDERATION AND EXAMINATION. IT IS THE USER'S RESPONSIBILITY TO SATISFY ITSELF THAT THE PRODUCT IS SUITABLE FOR THE INTENDED USE. IF BUYER REPACKAGES THIS PRODUCT, IT IS THE USER'S RESPONSIBILITY TO INSURE PROPER HEALTH, SAFETY AND OTHER NECESSARY INFORMATION IS INCLUDED WITH AND/OR ON THE CONTAINER. APPROPRIATE WARNINGS AND SAFE-HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS. ALTERATION OF THIS DOCUMENT IS STRICTLY PROHIBITED. EXCEPT TO THE EXTENT REQUIRED BY LAW, RE-PUBLICATION OR RETRANSMISSION OF THIS DOCUMENT, IN WHOLE OR IN PART, IS NOT PERMITTED. THE TERM, "EXXONMOBIL" IS USED FOR CONVENIENCE, AND MAY INCLUDE ANY ONE OR MORE OF EXXONMOBIL CHEMICAL COMPANY, EXXON MOBIL CORPORATION, OR ANY AFFILIATES IN WHICH THEY DIRECTLY OR INDIRECTLY HOLD ANY INTEREST.

INTERNAL USE ONLY:  
MHC: 0, 0, 0, 0, 0, 0  
PEEC: A

DGN: 2006186XUS (553345)

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## 1. Chemical product and company identification

**Product name** OLISTA LONGTIME 2  
**Code** 63002-AG  
**Product use** Lubricant  
**Manufacturer** Castrol Industrie GmbH  
 Erkelenzer Str. 20  
 D-41179 Moenchengladbach  
 Germany  
  
 Telefon: +49 (0)2161 909-319  
 Telefax: +49 (0)2161 909-392 Castrol Industrie GmbH  
 Erkelenzer Str. 20  
 D-41179 Moenchengladbach  
 Germany  
  
 Telefon: +49 (0)2161 909-319  
 Telefax: +49 (0)2161 909-392  
**Supplier** Castrol Industrial North America, Inc.  
 150 W. Warrenville Road  
 Naperville, IL 60563  
 Product Information.: 1-800-621-2661  
  
**EMERGENCY SPILL INFORMATION:** 1 (800) 424-9300 CHEMTREC (USA)

## 2. Composition/information on ingredients

Ingredient name	CAS #	% by weight	Exposure limits
Distillates (petroleum), hydrotreated, heavy paraffinic	64742-54-7	45 - 50	<b>ACGIH (United States).</b> STEL: 10 mg/m <sup>3</sup> 15 minute(s). Form: Mist TWA: 5 mg/m <sup>3</sup> 8 hour(s). Form: Mist <b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> 8 hour(s). Form: Mist
Distillates (petroleum), solvent-refined heavy paraffinic	64741-88-4	35 - 40	<b>ACGIH (United States).</b> TWA: 5 mg/m <sup>3</sup> 8 hour(s). Form: Mist  STEL: 10 mg/m <sup>3</sup> 15 minute(s). Form: Mist  <b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> 8 hour(s). Form: Mist
octadecanoic acid, 12-hydroxy-, monolithium salt	7620-77-1	5 - 10	None assigned.
Lithium Grease Thickening agent.	Proprietary	1 - 5	None assigned.

Product Name	OLISTA LONGTIME 2	MSDS#	63002-AG	Page:	1/6
Version	1	Date of issue	05/06/2004.	Format	US
				Language	ENGLISH ( ENGLISH )

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### 3. Hazards identification

Physical state	Solid. (Paste)
Color	Brown.
Emergency overview	WARNING!  CAUSES EYE IRRITATION. MAY CAUSE SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION.  Avoid contact with skin and clothing. Avoid breathing dust. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.
Routes of entry	Dermal contact. Eye contact. Inhalation. Ingestion.
Potential Health Effects	
Eyes	Causes eye irritation.
Skin	May cause skin irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.
Inhalation	May cause respiratory tract irritation.
Ingestion	Ingestion may cause gastrointestinal irritation and diarrhea.
Medical conditions aggravated by overexposure:	None identified.
See toxicological information (section 11)	

---

### 4. First aid measures

Eye Contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.
Skin Contact	Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

---

### 5. Fire-fighting measures

Flammability of the product	May be combustible at high temperature.
Flash point	198 °C (Open cup) Cleveland.
Products of combustion	These products are carbon oxides (CO, CO <sub>2</sub> ). Some metallic oxides.
Unusual fire/explosion hazards	This material is not explosive as defined by established regulatory criteria.  Not available.
Fire fighting media and instructions	In case of fire, use water spray (fog), foam or dry chemicals.

Product Name	OLISTA LONGTIME 2	MSDS#	63002-AG	Page: 2/6
Version 1	Date of issue 05/06/2004.	Format US	Language ENGLISH	( ENGLISH )

Protective clothing (fire) Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

## 6. Accidental release measures

**Personal Precautions** Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (Section 8). Follow all fire fighting procedures (Section 5).

**Environmental precautions and clean-up methods** If emergency personnel are unavailable vacuum or carefully scoop up spilled materials and place in an appropriate container for disposal. Avoid creating dusty conditions and prevent wind dispersal. Minimize contact of spilled material with soils to prevent runoff to surface waterways. See Section 13 for Waste Disposal Information.

**Personal protection in case of a large spill** Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

## 7. Handling and storage

**Handling** Avoid contact with skin and clothing. Avoid prolonged or repeated contact with skin. Avoid contact with eyes. Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling.

**Storage** Keep container tightly closed. Keep container in a cool, well-ventilated area. Empty containers may contain harmful, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose of containers unless adequate precautions are taken against these hazards.

## 8. Exposure controls/personal protection

### Occupational exposure limits

Ingredient name	Occupational exposure limits
Distillates (petroleum), hydrotreated, heavy paraffinic	<b>ACGIH (United States).</b> STEL: 10 mg/m <sup>3</sup> 15 minute(s). Form: Mist TWA: 5 mg/m <sup>3</sup> 8 hour(s). Form: Mist <b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> 8 hour(s). Form: Mist
Distillates (petroleum), solvent-refined heavy paraffinic	<b>ACGIH (United States).</b> TWA: 5 mg/m <sup>3</sup> 8 hour(s). Form: Mist  STEL: 10 mg/m <sup>3</sup> 15 minute(s). Form: Mist

octadecanoic acid, 12-hydroxy-, monolithium salt	<b>OSHA (United States).</b> TWA: 5 mg/m <sup>3</sup> 8 hour(s). Form: Mist
Lithium Grease Thickening agent.	None assigned.

**Control Measures** Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Hygiene measures** Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day.

### Personal protection

**Eyes** Avoid contact with eyes. Chemical splash goggles.

Product Name	OLISTA LONGTIME 2	MSDS#	63002-AG	Page: 3/6
Version	1	Date of issue	05/06/2004.	Format US
				Language ENGLISH ( ENGLISH )

Skin and Body	Avoid contact with skin and clothing. Wear suitable protective clothing.
Respiratory	Use only with adequate ventilation. Avoid breathing dust.
Hands	Wear suitable gloves.

Consult local authorities for acceptable exposure limits.

## 9. Physical and chemical properties

Physical state	Solid. (Paste)
Odor	Mild
Color	Brown.
Specific Gravity	<1
Solubility	Insoluble in cold water, hot water.
Dispersion properties	Is not dispersed in cold water, hot water.

## 10. Stability and reactivity

Stability and Reactivity	The product is stable.
Conditions to avoid	Not available.
Incompatibility with various substances	Reactive with oxidizing agents.
Hazardous Decomposition Products	Not available.
Hazardous polymerization	Will not occur.

## 11. Toxicological information

### Chronic toxicity

<b>Carcinogenic effects</b>	No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer (IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. National Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).
<b>Mutagenic effects</b>	No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a mutagen.
<b>Reproductive effects</b>	No component of this product at levels greater than 0.1% is classified by established regulatory criteria as a reproductive toxin.
<b>Teratogenic effects</b>	No component of this product at levels greater than 0.1% is classified by established regulatory criteria as teratogenic or embryotoxic.

Product Name	OLISTA LONGTIME 2	MSDS#	63002-AG	Page: 4/6
Version	1	Date of issue	05/06/2004.	Format
				US
				Language
				ENGLISH
				( ENGLISH )

## 12. Ecological information

Ecotoxicity No testing has been performed by the manufacturer.  
Mobility Paste Non-volatile. Insoluble in water.

## 13. Disposal considerations

Waste information Waste must be disposed of in accordance with federal, state and local environmental control regulations.  
Consult your local or regional authorities.

## 14. Transport information

International transport regulations

Regulatory Information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	Not regulated.	----	----	Not available.		Not available.
TDG Classification	Not regulated.	----	----	Not available.		Not available.
IMDG Classification	Not available.	Not available.	Not available.	Not available.		Not available.
IATA Classification	Not available.	Not available.	Not available.	Not available.		Not available.

## 15. Regulatory information

U.S. Federal regulations US INVENTORY (TSCA): In compliance.

This product is not regulated under Section 302 of SARA and 40 CFR Part 355.

### SARA 313

**Form R - Reporting requirements** This product does not contain any hazardous ingredients at or above regulated thresholds.

**Supplier notification** This product does not contain any hazardous ingredients at or above regulated thresholds.

CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):: phosphorodithioic acid, O,O - di- C1-14- alkyl esters zinc salts : 1 lbs. (0.4536 kg);

State regulations No products were found.

California prop. 65: No products were found.

Inventories AUSTRALIAN INVENTORY (AICS): Not listed.

CANADA INVENTORY (DSL): Not listed.

CHINA INVENTORY (IECS): Not listed.

EC INVENTORY (EINECS/ELINCS): In compliance.

Product Name	OLISTA LONGTIME 2	MSDS#	63002-AG	Page:	5/6
Version	1	Date of issue	05/06/2004.	Format	US
				Language	ENGLISH
					( ENGLISH )

JAPAN INVENTORY (ENCS): Not listed.

KOREA INVENTORY (ECL): Not listed.

PHILIPPINE INVENTORY (PICCS): Not listed.

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## 16. Other information

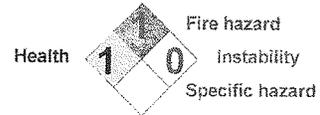
### Label Requirements

WARNING!

CAUSES EYE IRRITATION.  
MAY CAUSE SKIN IRRITATION.  
MAY CAUSE RESPIRATORY TRACT IRRITATION.

### HMIS® Rating :

Health	1	<b>National Fire Protection Association (U.S.A.)</b>
Flammability	1	
Physical Hazard	0	
Personal protection	B	



### History

**Date of issue** 05/06/2004.  
**Date of previous issue** No Previous Validation.  
**Prepared by** Product Stewardship

### Notice to reader

*The data and advice given apply when the product is sold for the stated application or applications. The product is not sold as suitable for any other application. Use of the product for applications other than as stated in this sheet may give rise to risks not mentioned in this sheet. You should not use the product other than for the stated application or applications without seeking advice from us.*

*If you have purchased the product for supply to a third party for use at work, it is your duty to take all necessary steps to secure that any person handling or using the product is provided with the information in this sheet.*

*If you are an employer, it is your duty to tell your employees and others who may be affected of any hazards described in this sheet and of any precautions which should be taken.*

*Further copies of this Safety Data Sheet may be obtained from Castrol International.*

*This Material Safety Data Sheet conforms to the requirements of ANSI Z400.1.*

3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair 01/27/2004



## Material Safety Data Sheet

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**PRODUCT NAME:** 3M(TM) Concrete Repair  
**MANUFACTURER:** 3M  
**DIVISION:** Industrial Adhesives and Tapes

**ADDRESS:** 3M Center  
St. Paul, MN 55144-1000

**EMERGENCY PHONE:** 1-800-364-3577 or (651) 737-6501 (24 hours)

**Issue Date:** 01/27/2004  
**Supersedes Date:** Initial Issue

**Document Group:** 19-0351-7

**ID Number(s):**  
62-2649-1233-8

This product is a kit or a multipart product which consists of multiple, independently packaged components. An MSDS for each of these components is included. Please do not separate the component MSDSs from this cover page. The document numbers of the MSDSs for components of this product are:

19-0349-1, 19-0350-9

No revision information is available.

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3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part B) 08/29/2006



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DATE 11/11/2005 BY 60322/UC/STP

**Material Safety Data Sheet**

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**SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**

**PRODUCT NAME:** 3M(TM) Concrete Repair (Part B)  
**MANUFACTURER:** 3M  
**DIVISION:** Industrial Adhesives and Tapes Division

**ADDRESS:** 3M Center  
St. Paul, MN 55144-1000

**EMERGENCY PHONE:** 1-800-364-3577 or (651) 737-6501 (24 hours)

**Issue Date:** 08/29/2006  
**Supersedes Date:** 01/11/2005

**Document Group:** 19-0349-1

**Product Use:**  
**Specific Use:** Two-part urethane adhesive/sealant.

**SECTION 2: INGREDIENTS**

Ingredient	C.A.S. No.	% by Wt
Polyether Polyol	9082-00-2	40 - 70
Propoxylated Trimethylolpropane	25723-16-4	10 - 30
Tetrakis(2-hydroxypropyl)ethylenediamine	102-60-3	10 - 30
Amorphous Silica	68611-44-9	1 - 5
m-Xylene-alpha,alpha-diamine	1477-55-0	0.1 - 1
Bis(1,2,2,6,6-pentamethyl-4-piperidinyl) Sebacate	41556-26-7	0.1 - 1
Polymeric Benzotriazole Derivative	104810-48-2	0.1 - 0.3
Polymeric Benzotriazole	104810-47-1	0.1 - 0.3
Substituted Piperidinyl Sebacate	82919-37-7	0.05 - 0.2

**SECTION 3: HAZARDS IDENTIFICATION**

**3.1 EMERGENCY OVERVIEW**

**Specific Physical Form:** Viscous  
**Odor, Color, Grade:** Slight ammonia like odor, gray.  
**General Physical Form:** Liquid  
**Immediate health, physical, and environmental hazards:** May cause allergic skin reaction.

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**3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part B) 08/29/2006**

**3.2 POTENTIAL HEALTH EFFECTS**

**Eye Contact:**

Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Vapors released during curing may cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Dust created by cutting, grinding, sanding, or machining may cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

**Skin Contact:**

Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, and itching.

Prolonged or repeated exposure may cause:

Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

**Inhalation:**

Vapors released during curing may cause irritation of the respiratory system. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Dust from cutting, grinding, sanding or machining may cause irritation of the respiratory system. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

**Ingestion:**

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, nausea, diarrhea and vomiting.

**SECTION 4: FIRST AID MEASURES**

**4.1 FIRST AID PROCEDURES**

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

**Eye Contact:** Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

**Skin Contact:** Remove contaminated clothing and shoes. Immediately flush skin with large amounts of water. Get medical attention. Wash contaminated clothing and clean shoes before reuse.

**Inhalation:** If signs/symptoms develop, remove person to fresh air. If signs/symptoms persist, get medical attention.

**If Swallowed:** Do not induce vomiting. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get immediate medical attention.

3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part B) 08/29/2006

## SECTION 5: FIRE FIGHTING MEASURES

### 5.1 FLAMMABLE PROPERTIES

Autoignition temperature  
Flash Point  
Flammable Limits - LEL  
Flammable Limits - UEL

*Not Applicable*

>=290 °F [Test Method: Tagliabue Closed Cup]

*Not Applicable*

*Not Applicable*

*Not Applicable*

### 5.2 EXTINGUISHING MEDIA

Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).

### 5.3 PROTECTION OF FIRE FIGHTERS

**Special Fire Fighting Procedures:** Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

**Unusual Fire and Explosion Hazards:** Not applicable. Non-flammable: ordinary combustible material.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**Accidental Release Measures:** Observe precautions from other sections. Call 3M-HELPS line (1-800-364-3577) for more information on handling and managing the spill. Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Contain spill. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water. Collect as much of the spilled material as possible. Clean up residue with an appropriate organic solvent. Read and follow safety precautions on the solvent label and MSDS. Collect the resulting residue containing solution. Place in a closed container approved for transportation by appropriate authorities. Dispose of collected material as soon as possible.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

## SECTION 7: HANDLING AND STORAGE

### 7.1 HANDLING

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Avoid eye contact with vapors, mists, or spray. Avoid breathing of dust created by cutting, sanding, grinding or machining. Avoid contact with oxidizing agents.

### 7.2 STORAGE

Store away from acids. Store away from oxidizing agents.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part B) 08/29/2006**

**8.1 ENGINEERING CONTROLS**

Provide appropriate local exhaust for cutting, grinding, sanding or machining.

**8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**8.2.1 Eye/Face Protection**

Avoid eye contact with vapors, mists, or spray.

**8.2.2 Skin Protection**

Avoid skin contact.

Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials. Gloves made from the following material(s) are recommended: Butyl Rubber.

**8.2.3 Respiratory Protection**

Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection. Avoid breathing of dust created by cutting, sanding, grinding or machining. Consult the current 3M Respirator Selection Guide for additional information or call 1-800-243-4630 for 3M technical assistance.

During application and curing:

Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half facepiece or fullface air-purifying respirator with organic vapor cartridges.

Cutting, Grinding or Sanding Cured Material:

Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: air-purifying respirator with N95 filter.

**8.2.4 Prevention of Swallowing**

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

**8.3 EXPOSURE GUIDELINES**

<u>Ingredient</u>	<u>Authority</u>	<u>Type</u>	<u>Limit</u>	<u>Additional Information</u>
Bis(1,2,2,6,6-pentamethyl-4-piperidiny) Sebacate	CMRG	TWA	1 mg/m3	
m-Xylene-alpha,alpha-diamine	ACGIH	CEIL	0.1 mg/m3	Skin Notation*
m-Xylene-alpha,alpha-diamine	OSHA	CEIL	0.1 mg/m3	Table Z-1A

\* Substance(s) refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

**SOURCE OF EXPOSURE LIMIT DATA:**

ACGIH: American Conference of Governmental Industrial Hygienists

CMRG: Chemical Manufacturer Recommended Guideline

OSHA: Occupational Safety and Health Administration

AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

Specific Physical Form:

Viscous

Odor, Color, Grade:

Slight ammonia like odor, gray.

General Physical Form:

Liquid

**3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part B) 08/29/2006**

Autoignition temperature	Not Applicable
Flash Point	>=290 °F [Test Method: Tagliabue Closed Cup]
Flammable Limits - LEL	Not Applicable
Flammable Limits - UEL	Not Applicable
Boiling point	>=400 °F
Vapor Density	>=1 [Ref Std: AIR=1]
Vapor Pressure	Not Applicable
Specific Gravity	1.04
pH	Not Applicable
Melting point	No Data Available
Solubility in Water	Negligible
Evaporation rate	<=1 [Ref Std: WATER=1]
Hazardous Air Pollutants	00 % weight [Test Method: Calculated]
Volatile Organic Compounds	<=10 g/l [Test Method: calculated per EPA method 24]
Volatile Organic Compounds	<=5 g/l [Test Method: calculated per EPA method 24] [Details: Mixed 1:1 with Part A]
Percent volatile	<=1 % volume [Test Method: Estimated]
Percent volatile	<=0.5 % volume [Test Method: Estimated] [Details: When mixed 1:1 with Part A]
VOC Less H2O & Exempt Solvents	<=10 g/l [Test Method: calculated per EPA method 24]
VOC Less H2O & Exempt Solvents	<=5 g/l [Test Method: calculated per EPA method 24] [Details: Mixed 1:1 with part A]
Viscosity	3,200 - 5,600 centipoise

**SECTION 10: STABILITY AND REACTIVITY**

Stability: Stable.

Materials and Conditions to Avoid: Strong acids; Strong oxidizing agents

Hazardous Polymerization: Hazardous polymerization will not occur.

**Hazardous Decomposition or By-Products**

<u>Substance</u>	<u>Condition</u>
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Chloride	During Combustion
Oxides of Nitrogen	During Combustion

**SECTION 11: TOXICOLOGICAL INFORMATION**

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part B) 08/29/2006

**SECTION 12: ECOLOGICAL INFORMATION**

**ECOTOXICOLOGICAL INFORMATION**

Not determined.

**CHEMICAL FATE INFORMATION**

Not determined.

**SECTION 13: DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Dispose of completely cured (or polymerized) wastes in a sanitary landfill. As a disposal alternative, incinerate uncured product in an industrial or commercial incinerator in the presence of a combustible material. Combustion products will include HCl. Facility must be capable of handling halogenated materials.

EPA Hazardous Waste Number (RCRA): Not regulated

Since regulations vary, consult applicable regulations or authorities before disposal.

**SECTION 14: TRANSPORT INFORMATION**

Not regulated per U.S. DOT, IATA or IMO.

*These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. 3M's transportation classifications are based on product formulation, packaging, 3M policies and 3M's understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information. This information applies only to transportation classification and not the packaging, labeling or marking requirements. The original 3M package is certified for U.S. ground shipment only. If you are shipping by air or ocean, the package may not meet applicable regulatory requirements.*

**SECTION 15: REGULATORY INFORMATION**

**US FEDERAL REGULATIONS**

Contact 3M for more information.

**311/312 Hazard Categories:**

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - No

3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part B) 08/29/2006

### STATE REGULATIONS

Contact 3M for more information.

### CHEMICAL INVENTORIES

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

### INTERNATIONAL REGULATIONS

Contact 3M for more information.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## SECTION 16: OTHER INFORMATION

#### NFPA Hazard Classification

Health: 2 Flammability: 1 Reactivity: 1 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

#### HMIS Hazard Classification

Health: 2 Flammability: 1 Reactivity: 1 Protection: X - See PPE section.

Hazardous Material Identification System (HMIS(r)) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS(r) ratings are to be used with a fully implemented HMIS(r) program. HMIS(r) is a registered mark of the National Paint and Coatings Association (NPCA).

#### Revision Changes:

Section 1: Division name was modified.

Copyright was modified.

Section 6: Release measures information was modified.

Section 8: Respiratory protection information was modified.

Section 8: Respiratory protection comment was added.

Section 8: Respiratory protection - recommended respirators information was deleted.

Section 8: Respiratory protection - recommended respirators was deleted.

Section 8: Respiratory protection - recommended respirators guide was deleted.

Section 8: Respiratory protection - recommended respirators punctuation was deleted.

3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part B) 08/29/2006

DISCLAIMER: The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the MSDS available directly from 3M.

1. 3M is not responsible for the use of this information for purposes not intended by 3M.

2. 3M is not responsible for the use of this information for purposes not intended by 3M.

3. 3M is not responsible for the use of this information for purposes not intended by 3M.

4. 3M is not responsible for the use of this information for purposes not intended by 3M.

5. 3M is not responsible for the use of this information for purposes not intended by 3M.

3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part A) 08/29/2006



Material Safety Data Sheet

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SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 3M(TM) Concrete Repair (Part A)
MANUFACTURER: 3M
DIVISION: Industrial Adhesives and Tapes Division
ADDRESS: 3M Center
St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

Issue Date: 08/29/2006
Supersedes Date: 01/11/2005

Document Group: 19-0350-9

Product Use:
Specific Use: Two-part urethane adhesive/scalant.

SECTION 2: INGREDIENTS

Table with 3 columns: Ingredient, C.A.S. No., % by Wt. Rows include 4,4'-diphenylmethane diisocyanate, diphenylmethane diisocyanate prepolymer, poly(diphenylmethane-4,4'-diisocyanate), and amorphous silica.

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Specific Physical Form: Viscous
Odor, Color, Grade: Low or no detectable odor, opaque.
General Physical Form: Liquid
Immediate health, physical, and environmental hazards: respiratory reaction. May cause allergic skin reaction. May cause allergic

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:

**3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part A) 08/29/2006**

**Moderate Eye Irritation:** Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Vapors released during curing may cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Dust created by cutting, grinding, sanding, or machining may cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

**Skin Contact:**

**Moderate Skin Irritation:** Signs/symptoms may include localized redness, swelling, itching, and dryness.

Prolonged or repeated exposure may cause:

**Allergic Skin Reaction (non-photo induced):** Signs/symptoms may include redness, swelling, blistering, and itching.

**Inhalation:**

Prolonged or repeated exposure may cause:

**Allergic Respiratory Reaction:** Signs/symptoms may include difficulty breathing, wheezing, cough, and tightness of chest.

Vapors released during curing may cause irritation of the respiratory system. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Dust from cutting, grinding, sanding or machining may cause irritation of the respiratory system. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

**Ingestion:**

**Gastrointestinal Irritation:** Signs/symptoms may include abdominal pain, nausea, diarrhea and vomiting.

**Target Organ Effects:**

Persons previously sensitized to isocyanates may develop a cross-sensitization reaction to other isocyanates.

**SECTION 4: FIRST AID MEASURES****4.1 FIRST AID PROCEDURES**

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

**Eye Contact:** Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

**Skin Contact:** Remove contaminated clothing and shoes. Immediately flush skin with large amounts of water. Get medical attention. Wash contaminated clothing and clean shoes before reuse.

**Inhalation:** Remove person to fresh air. If signs/symptoms develop, get medical attention.

3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part A) 08/29/2006

If Swallowed: Do not induce vomiting. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get immediate medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature Not Applicable
Flash Point >=290 °F [Test Method: Tagliabue Closed Cup]
Flammable Limits - LEL Not Applicable
Flammable Limits - UEL Not Applicable

5.2 EXTINGUISHING MEDIA

Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Water may be used to blanket the fire. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: Non-flammable; ordinary combustible material.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. Call 3M-HEI,PS line (1-800-364-3577) for more information on handling and managing the spill. Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Contain spill. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water. Pour isocyanate decontaminant solution (90% water, 8% concentrated ammonia, 2% detergent) on spill and allow to react for 10 minutes. Or pour water on spill and allow to react for more than 30 minutes. Cover with absorbent material. Place in a container approved for transportation by appropriate authorities, but do not seal the container for 48 hours to avoid pressure build-up. Collect as much of the spilled material as possible. Dispose of collected material as soon as possible.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Avoid eye contact with vapors, mists, or spray. Avoid breathing of dust created by cutting, sanding, grinding or machining. Do not breathe vapors.

7.2 STORAGE

Store away from acids.

**3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part A) 08/29/2006**

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 ENGINEERING CONTROLS**

Use with appropriate local exhaust ventilation. Provide appropriate local exhaust for cutting, grinding, sanding or machining. Do not use in a confined area or areas with little or no air movement.

**8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)**

**8.2.1 Eye/Face Protection**

Avoid eye contact with vapors, mists, or spray.

**8.2.2 Skin Protection**

Avoid skin contact.

Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials. Gloves made from the following material(s) are recommended: Butyl Rubber, Nitrile Rubber.

**8.2.3 Respiratory Protection**

Under normal use conditions, airborne exposures are not expected to be significant enough to require respiratory protection. Avoid breathing of dust created by cutting, sanding, grinding or machining. Do not breathe vapors. Consult the current 3M Respirator Selection Guide for additional information or call 1-800-243-4630 for 3M technical assistance.

During application and curing:

Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half facepiece or fullface air-purifying respirator with organic vapor cartridges.

Cutting, Grinding or Sanding Cured Material:

Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: air-purifying respirator with N95 filter.

**8.2.4 Prevention of Swallowing**

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

**8.3 EXPOSURE GUIDELINES**

<u>Ingredient</u>	<u>Authority</u>	<u>Type</u>	<u>Limit</u>	<u>Additional Information</u>
amorphous silica	CMRG	CEIL	5 mg/m3	
FREE ISOCYANATES	3M	TWA	0.005 ppm	
FREE ISOCYANATES	3M	STEL	0.02 ppm	
4,4'-diphenylmethane diisocyanate	ACGIH	TWA	0.005 ppm	
4,4'-diphenylmethane diisocyanate	OSHA	CEIL	0.02 ppm	Table Z-1

**SOURCE OF EXPOSURE LIMIT DATA:**

ACGIH: American Conference of Governmental Industrial Hygienists

CMRG: Chemical Manufacturer Recommended Guideline

OSHA: Occupational Safety and Health Administration

AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part A) 08/29/2006**

Specific Physical Form:	Viscous
Odor, Color, Grade:	Low or no detectable odor, opaque.
General Physical Form:	Liquid
Autoignition temperature	Not Applicable
Flash Point	>=290 °F [Test Method: Tagliabuc Closed Cup]
Flammable Limits - LEL	Not Applicable
Flammable Limits - UEL	Not Applicable
Boiling point	>=400 °F
Vapor Density	>=1 [Ref Std: AIR=1]
Vapor Pressure	<=0.000004 mmHg [@ 68 °F]
Specific Gravity	1.11
pH	Not Applicable
Melting point	No Data Available
Solubility in Water	Negligible
Evaporation rate	<=1. [Details: Gels with exposure to humidity.]
Volatile Organic Compounds	<=10 g/l [Test Method: calculated per EPA method 24]
Volatile Organic Compounds	<=5 g/l [Test Method: calculated per EPA method 24] [Details: Mixed 1:1 with Part B]
Percent volatile	<=1 % volume [Test Method: Estimated]
Percent volatile	<=0.5 % volume [Test Method: Estimated] [Details: Mixed 1:1 with Part B]
VOC Less H2O & Exempt Solvents	<=10 g/l [Test Method: calculated per EPA method 24]
VOC Less H2O & Exempt Solvents	<=5 g/l [Test Method: calculated per EPA method 24] [Details: Mixed 1:1 with Part B]
Viscosity	1,250 - 2,750 centipoise

**SECTION 10: STABILITY AND REACTIVITY**

Stability: Stable.

Materials and Conditions to Avoid: Water; Strong acids; Strong bases

Hazardous Polymerization: Hazardous polymerization will not occur.

**Hazardous Decomposition or By-Products**

<u>Substance</u>	<u>Condition</u>
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Oxides of Nitrogen	During Combustion
Toxic Vapor, Gas, Particulate	During Combustion

**SECTION 11: TOXICOLOGICAL INFORMATION**

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part A) 08/29/2006

**SECTION 12: ECOLOGICAL INFORMATION**

**ECOTOXICOLOGICAL INFORMATION**

Not determined.

**CHEMICAL FATE INFORMATION**

Not determined.

**SECTION 13: DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Dispose of completely cured (or polymerized) wastes in a sanitary landfill. As a disposal alternative, incinerate uncured product in an industrial or commercial incinerator in the presence of a combustible material.

**EPA Hazardous Waste Number (RCRA):** Not regulated

Since regulations vary, consult applicable regulations or authorities before disposal.

**SECTION 14: TRANSPORT INFORMATION**

Not regulated per U.S. DOT, IATA or IMO.

*These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. 3M's transportation classifications are based on product formulations, packaging, 3M policies and 3M's understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information. This information applies only to transportation classification and not the packaging, labelling, or marking requirements. The original 3M package is certified for U.S. ground shipment only. If you are shipping by air or ocean, the package may not meet applicable regulatory requirements.*

**SECTION 15: REGULATORY INFORMATION**

**US FEDERAL REGULATIONS**

Contact 3M for more information.

**311/312 Hazard Categories:**

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

**3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part A) 08/29/2006**

**Ingredient**  
4,4'-diphenylmethane diisocyanate  
(Diisocyanates (EPCRA 313))

**C.A.S. No**      **% by Wt**  
101-68-8      30 - 60

**STATE REGULATIONS**

Contact 3M for more information.

**CHEMICAL INVENTORIES**

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

**INTERNATIONAL REGULATIONS**

Contact 3M for more information.

**This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.**

**SECTION 16: OTHER INFORMATION**

**NFPA Hazard Classification**

Health: 2 Flammability: 1 Reactivity: 1 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

**HMIS Hazard Classification**

Health: 2 Flammability: 1 Reactivity: 1 Protection: X - See PPE section.

Hazardous Material Identification System (HMIS(r)) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS(r) ratings are to be used with a fully implemented HMIS(r) program. HMIS(r) is a registered mark of the National Paint and Coatings Association (NPCA).

**Revision Changes:**

Section 1: Division name was modified.

Copyright was modified.

Section 6: Release measures information was modified.

Section 8: Respiratory protection information was modified.

3M MATERIAL SAFETY DATA SHEET 3M(TM) Concrete Repair (Part A) 08/29/2006

Section 8: Respiratory protection comment was added.  
 Section 8: Respiratory protection - recommended respirators information was deleted.  
 Section 8: Respiratory protection - recommended respirators was deleted.  
 Section 8: Respiratory protection - recommended respirators guide was deleted.  
 Section 8: Respiratory protection - recommended respirators punctuation was deleted.

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**Bodycote Taussig Inc.**  
Metallurgical & Materials Engineers



**AWS WELDER AND WELDING OPERATOR QUALIFICATION TEST RECORD**

WELDER OR WELDING OPERATOR'S NAME: Tadeusz Sutowski I.D. #39  
 WELDING PROCESS: GMAW MANUAL SEMIAUTO XXX MACHINE  
 POSITION: 4G - Overhead PROGRESSION: N/A  
 WPS NO.: AWS Prequalified TYPE OF JOINT TESTED: Single V Groove  
 BASE METAL SPECIFICATION: ASTM A36, Qualifies All Groups  
 PIPE DIAMETER: N/A JOINT THICKNESS: 3/8"  
 QUALIFICATION RANGES: 3/4" Max. Groove/Unlimited Fillet, Flat, Horiz., Overhead

**FILLER METAL**

SPECIFICATION NO.: AWS A5.18 CLASSIFICATION: ER80S-D2 F NO.: N/A  
 DIAMETER: .035" FLUX/SHIELDING GAS: AR/O<sub>2</sub> - 92/8 FLOW RATE: 25 cfh  
 BACKING OR BACK GOUGING METHOD: None

**VISUAL INSPECTION RESULTS**

APPEARANCE: Satisfactory UNDERCUT: None POROSITY: None

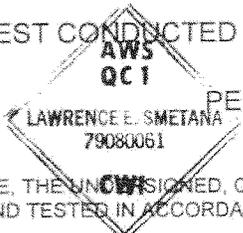
**GUIDED BEND TEST RESULTS**

TYPE	RESULTS	TYPE	RESULTS
FACE	PASS	ROOT	PASS

**FILLET TEST RESULTS**

SIZE: N/A FRACTURE TEST: N/A MACROETCH: N/A  
 LOCATION, NATURE, SIZE OF DISCONTINUITIES N/A  
 NOTED: \_\_\_\_\_

TEST CONDUCTED BY: BODYCOTE TAUSSIG, INC. LABORATORY NO.: 134477



PER: Lawrence E. Smetana, CWI TEST DATE: March 20, 1997

WE, THE UNDERSIGNED, CERTIFY THAT THIS RECORD IS CORRECT AND THAT THE WELDS WERE PREPARED AND TESTED IN ACCORDANCE WITH AWS D1.1-1996

MANUFACTURER OR CONTRACTOR: Hi-Tech Manufacturing  
 AUTHORIZED BY/DATE: \_\_\_\_\_

THIS CERTIFICATE OR REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF BODYCOTE TAUSSIG, INC.

Where quality is an ongoing commitment

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7257

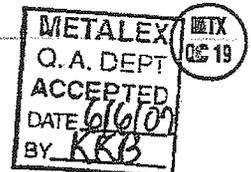
THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

Job# *Hi-tech*  
*7558*  
Part# *L1430401-100400*  
P.O.# *71069-BL*



# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 2 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7257

THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

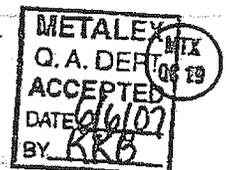
AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

Job# 7558  
Part# L1430401-100400

P.O# 71069-BL



SHIP TO:

ISG PLATE INC.

TEST CERTIFICATE

PAGE NO: 01 OF 01  
FILE NO: 8462-01-01  
MILL ORDER NO: 54690-001  
MELT NO: T7257  
DATE: 05/02/06

SOLD TO:

SEND TO:

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
13	.75"	96"	480"	RECTANGLE	9801#

CUSTOMER INFORMATION

CUSTOMER PO: J.C.R. 4696

SPECIFICATION(S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

ASME SA36 REV ED YR 04  
ASTM A36 05 & ASME SA36 05A  
MATERIAL PRODUCED UNDER A CERTIFIED QUALITY MGMT SYSTEM COMPLYING WITH ISO 9001 ABS-QE CERT. NO. 30130

CHEMICAL COMPOSITION

MELT	C	MN	P	S	CU	SI	NI	CR	MO
T7257	.13	.77	.018	.011	.12	.20	.05	.06	.02
T7257	V	AL	CB						
	.001	.054	.001						

TENSILE PROPERTIES

LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%
BOT.	TRANS.	406	626	8.00"	30.0
BOT.	TRANS.	435	650	8.00"	27.0

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.  
B/L #31420 CR 580676, #31492 BVRY 5741

Hi-Tech  
Jot # 07-7558  
P/N L1430401-100400  
MATERIAL P.O.# 71069 Item #1

METALEX
Q.A. DEPT
ACCEPTED
DATE 5/6/07
BY KKB



WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY  
COATESVILLE, PA 19320

*Elinore Zaplitny*  
SUPERVISOR - TEST REPORTING  
ELINORE ZAPLITNY

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"

- ITEM# 1
- JOB# 7558
- HT# T7232

THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

Hi-Tech  
Job# 7558  
Part# L1430401-100400  
P.O# 71069-BL

METALEX
Q. A. DEPT
ACCEPTED
DATE 6/6/07
BY KRB



ISG PLATE INC.

TEST CERTIFICATE

SHIP TO:

PAGE NO: 01 OF 01  
FILE NO: 8462-01-01  
MILL ORDER NO: 53779-002  
MELT NO: T7232  
DATE: 04/26/06

SOLD TO:

SEND TO:

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
4	.75"	96"	480"	RECTANGLE	9801#

CUSTOMER INFORMATION

CUSTOMER PO: J.C.R. 4677

SPECIFICATION (S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

ASME SA36 REV ED YR 04  
ASTM A36 05 & ASME SA36 05A  
MATERIAL PRODUCED UNDER A CERTIFIED QUALITY MGMT SYSTEM COMPLYING WITH ISO 9001 ABS-QE CERT. NO. 30130

CHEMICAL COMPOSITION

	C	MN	P	S	CU	SI	NI	CR	MO
MELT:T7232	.17	.85	.025	.016	.14	.18	.07	.05	.01
	V	AL	CB						
MELT:T7232	.001	.027	.001						

TENSILE PROPERTIES

LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%
BOT.	TRANS.	436	683	8.00"	27.0
BOT.	TRANS.	453	673	8.00"	27.0

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.

B/L #29155 CR 578630

Hi-Tech  
Job# 07-7558  
P/N L1430401-100400  
MX P.O.# 71069 Item #1

MTX  
QC 19

METALEX
Q.A. DEPT
ACCEPTED
DATE 4/26/06
BY KKB

WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY  
COATESVILLE, PA 19320

*Elinore Zaplitny*  
SUPERVISOR - TEST REPORTING  
ELINORE ZAPLITNY

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TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

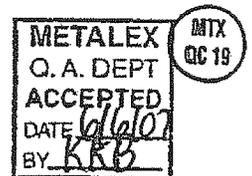
DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7130

THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES



*Hi-tech*  
Job # 7558  
Part # L143049-100400  
P.O # 71069-BL

SHIP TO: ISG PLATE INC.

TEST CERTIFICATE

PAGE NO: 01 OF 01  
FILE NO: 8462-01-01  
MILL ORDER NO: 53137-001  
MELT NO: T7130  
DATE: 04/11/06

SOLD TO:

SEND TO:

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
4	.75"	96"	480"	RECTANGLE	9801#

CUSTOMER INFORMATION

CUSTOMER PO: J.C.R. 4662

SPECIFICATION(S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

ASME SA36 REV ED YR 04  
ASTM A36 05 & ASME SA36 05A  
MATERIAL PRODUCED UNDER A CERTIFIED QUALITY MGMT SYSTEM COMPLYING WITH ISO 9001 ABS-QE CERT. NO. 30130

CHEMICAL COMPOSITION

	C	MN	P	S	CU	SI	NI	CR	MO
MELT:T7130	.14	.78	.014	.013	.13	.24	.08	.03	.01
	V	AL	CB						
MELT:T7130	.001	.052	.001						

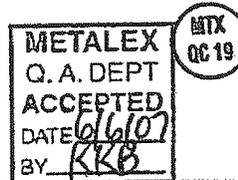
TENSILE PROPERTIES

LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%
BOT.	TRANS.	433	656	8.00"	28.0
BOT.	TRANS.	436	653	8.00"	27.0

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.  
B/L #28102 UMP 5517

Hi-Tech  
Jot # 07-7558  
P/N L1430401-100400  
MN P.O.# 71069 Item #1



WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY  
COATESVILLE, PA 19320

*Elinore Zaplitny*  
SUPERVISOR - TEST REPORTING  
ELINORE ZAPLITNY

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7141

THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

  
Laura Epps  
INSIDE SALES

Hi-tech  
Job# 7558  
PART# L1430401-100400  
P.O# 71069-BL

METALEX	MTX
Q. A. DEPT	05 19
ACCEPTED	
DATE 6/6/07	
BY KRB	

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# U9728

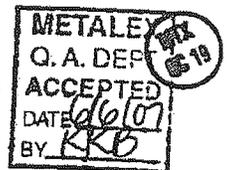
THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

Hi-Tech  
Job# 7598  
PART# L1430401-100400  
P.O# 71069-BL



ISG PLATE INC.

TEST CERTIFICATE

SHIP TO:

PAGE NO: 01 OF 01  
FILE NO: 8462-01-01  
MILL ORDER NO: 53137-001  
MELT NO: U9728  
DATE: 04/13/06

SOLD TO:

SEND TO:

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
1	.75"	96"	480"	RECTANGLE	9801#

CUSTOMER INFORMATION

CUSTOMER PO: J.C.R. 4662

SPECIFICATION(S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

ASME SA36 REV ED YR 04  
ASTM A36 05 & ASME SA36 05A  
MATERIAL PRODUCED UNDER A CERTIFIED QUALITY MGMT SYSTEM COMPLYING WITH ISO 9001 ABS-QE CERT. NO. 30130

CHEMICAL COMPOSITION

	C	MN	P	S	CU	SI	NI	CR	MO
MELT:U9728	.09	.80	.012	.004	.23	.20	.12	.10	.03
	V	AL	CB						
MELT:U9728	.002	.024	.001						

TENSILE PROPERTIES

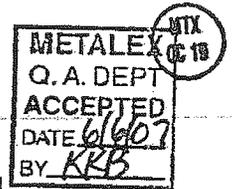
LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%
BOT.	TRANS.	427	582	8.00"	28.0
BOT.	TRANS.	455	643	8.00"	28.0

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.

B/L #29142 NW 190356

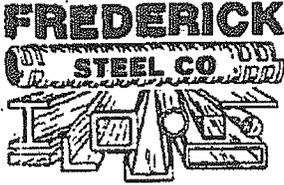
Hi-Tech  
Jot# 07-7558  
P/N L1430401-100400  
M/ P.O.# 71069 Item #1



WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY  
COATESVILLE, PA 19320

*Elinore Zaplitny*  
SUPERVISOR - TEST REPORTING  
ELINORE ZAPLITNY



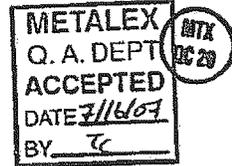
**"The Complete Steel Service Center"**  
Since 1933

200 W. North Bend Rd.  
Cincinnati, Ohio 45216-1725

(513) 821-6400  
FAX (513) 821-6915  
U.S.A. 1-800-543-4922

CERTIFICATE OF CONFORMANCE

CUSTOMER METALEX MFG INC  
PO# 71070BL7558  
DATE: 5/22/07



QUANTITY	DESCRIPTION	SPECIFICATION	HEAT #
13 PCS	STRUCTURAL TUBING 10 X 6 X 3/8 X 40'	A500-03A GrCB	0129862
3 PCS	1-1/4 ID SCH 40 X 21'	A-500-03	X25899
7 PC	HOT ROLL FLATS 3/4 X 8 X 20'	A-529-50	J62810
3 PCS	1/4 X 5 X 20'	A-36 rev5	JF6843
26 PCS	3/8 X 7 X 20'	A-36 rev5	J70358
26 PCS	8x3x3/8x 40'	A500B rev03a GrCB	478765

THIS MATERIAL TO THE BEST OF OUR KNOWLEDGE WAS PRODUCED  
IN ACCORDANCE WITH APPLICABLE ASTM STANDARDS.

*Due Stone*



Mill and Warehouse located on 75 acres and served by B & O siding

HOT & COLD ROLLED BARS • STRUCTURALS • MESH • PLATE • SHEETS  
REINFORCING BARS ROLLED IN OUR OWN MILL

Atlas Tube Canada ULC  
 200 Clark St.  
 Farrow, Ontario, Canada  
 N0R 1G0  
 Tel: 519-738-3541  
 Fax: 519-738-3537

Ref.B/L: 80190559  
 Date: 07.11.2007  
 Customer: 63



**MATERIAL TEST REPORT**

Sold to

Frederick Steel  
 200 W. North Bend Road  
 CINCINNATI OH 45216  
 USA

Shipped to

Frederick Steel  
 200 W. North Bend Road  
 CINCINNATI OH 45216  
 USA

Material: 8.0x3.0x3/5x24'0"0(2x6). Material No: 80030375 Made in: Canada  
 Sales order: 224717 Purchase Order: 105913

Heat No	Pcs	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
0129683		0.200	1.070	0.015	0.004	0.160	0.050	0.030	0.000	0.000	0.000	0.000	0.000
Bundle No	Yield	Tensile	Eln.2in	Certification									
M100507323	065130 Psi	075610 Psi	29.9 %	ASTM A500-03A GRADE B&C									

Material Note:  
 Sales Or.Note:

Material: 8.0x3.0x125x48'0"0(2x5). Material No: 800301254800 Made in: Canada  
 Sales order: 224717 Purchase Order: 105913

Heat No	Pcs	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
32620		0.160	0.790	0.014	0.008	0.030	0.028	0.030	0.000	0.010	0.020	0.020	0.002
Bundle No	Yield	Tensile	Eln.2in	Certification									
M100507346	059280 Psi	072670 Psi	24.0 %	ASTM A500-03A GRADE B&C									

Material Note:  
 Sales Or.Note:

Material: 12.0x12.0x250x48'0"0(2x2). Material No: 1201202504800 Made in: Canada  
 Sales order: 221075 Purchase Order: 105844

Heat No	Pcs	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
225417		0.140	0.810	0.015	0.021	0.080	0.047	0.050	0.000	0.004	0.030	0.020	0.005
Bundle No	Yield	Tensile	Eln.2in	Certification									
M200334612	065720 Psi	077590 Psi	29.4 %	ASTM A500-03A GRADE B&C									

Material Note:  
 Sales Or.Note:

Material: 10.0x6.0x375x40'0"0(2x2).-CSA Material No: 1000603754000-CSA Made in: Canada  
 Sales order: 225427 Purchase Order: 105913

Heat No	Pcs	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
0129862		0.220	1.020	0.011	0.008	0.160	0.080	0.000	0.000	0.000	0.000	0.000	0.000
Bundle No	Yield	Tensile	Eln.2in	Certification									
M200339261	060720 Psi	073990 Psi	30.3 %	CSA G40.21-04 50W CLASS C MEETS ASTM A500-03A GR C&R									

Material Note:  
 Sales Or.Note:

Authorized by Quality Assurance:

METALEX  
 Q. A. DEPT  
 ACCEPTED  
 DATE 7/16/07  
 BY TC

MTX  
 QC 20



Job # 7558  
 PA: L1430401-  
 100400  
 PO# 71070





Southland Tube, Inc.  
 3525 Richard Arrington Jr. Blvd. N.  
 Birmingham, AL 35234  
 Phone (205) 251-1884 Fax (205)421-4361  
TEST REPORT ASTM-E8

07 C06018

Customer: FREDERICK STEEL

Print Date: 3/1/2007

Heat No.: X25899

Description: CARBON STEEL TUBE

Size: 1-1/4 X SCH 40

Spec/Grade: A500-03/B/C

Carbon: .150

Manganese: .430

Sulphur: .012

Phosphorus: .007

Silicon: .009

Sample number	Date	Tensile	Yield	Elongation
SL9242	2/23/2007	70,000	59,900	25.50

We hereby certify that the above figures are correct as contained in the records of this company and that the tubing was manufactured, tested and inspected in compliance with applicable specifications.

Melted & Manufactured in the U.S.A.

Computer Generated Document  
 Quality Assurance

Melted & Manufactured in the U.S.A.

Jdk 7558  
 P/N: U1430401-100400  
 P# 71070

METALEX  
 Q. A. DEPT  
 ACCEPTED  
 DATE 7/16/07  
 BY TC



Pickup # 03L004  
 STI Ord# 124649

Heat # X25899

Cust PO# 106530







Steel Dynamics - Roanoke Bar Division  
 P.O. Box 13948 Roanoke, VA 24038  
 Office: 540-342-1831 Fax: 540-342-9437

Test and Inspection Report

NO. 39696-4

ROANOKE

**07E03024**

FREDERICK STEEL CO.

200 W NORTH BEND RD  
 CINCINNATI OH 45216-0000

Date 5/01/07

HEAT NUMBER	SIZE	1-YIELD Pt. KSI	ULTIMATE KSI	ELONG	BEND TEST	GRADE				
JF6843	FLATS 1/4 X 5	43.9	64.4	32.5	8 IN.	A36				
PURCHASE ORDER NUMBER	NUMBER PIECES	2-YIELD PT. KSI	ULTIMATE KSI	ELONG	BEND TEST	GRADE				
106663	60 PIECES 20'	45.7	67.9	31.9	8 IN.	A36				
HEAT NUMBER	SIZE	1-YIELD Pt. MPA	ULTIMATE MPA	ELONG	BEND TEST	GRADE				
JF6843	FLATS 6.4 X 127.0	302.7	444.0	32.5	203mm	A36				
PURCHASE ORDER NUMBER	NUMBER PIECES	2-YIELD PT. MPA	ULTIMATE MPA	ELONG	BEND TEST	GRADE				
106663	60 PIECES 20'	315.1	468.2	31.9	203mm	A36				
C	MN	S	P	SI	CR	NI	MO	CU	V	NB
.13	.66	.030	.007	.21	.08	.08	.02	.28	.001	.002

METALEX  
 Q. A. DEPT  
 ACCEPTED  
 DATE 7/16/07  
 BY TC

NTX  
 DEC 20

Job# 7558  
 PIN: L1430401-100400  
 PO# 71070-BL

MERCURY, RADIUM OR OTHER ALPHA SOURCE MATERIALS IN ANY FORM HAVE NOT BEEN USED IN THE PRODUCTION OF THIS MATERIAL. NO WELD REPAIR HAS BEEN PERFORMED.

Approved ABS QA Mill. Certificate No. 00NN10108-X.

This material was melted and manufactured in the USA by basic Electric Furnace processes to meet specification: ASTM A36-05 ASME SA36 Q0S741D A709-06A GR36 AASHTO M270 GR 36 IMPACTS WAIVED

The tensile values stated in either inch-pound units or SI units are to be regarded as separate as defined in the ASTM scope for this material. Unless a metric specification is ordered, this material has been tested and meets the requirements of the inch-pound ranges.

This is to certify the above to be a true and accurate report as contained in the records of this company.

Engineer of Tests: Charles R. Charlton

Atlas Tube - Canada ULC  
 200 Clark St.  
 Harrow, Ontario, Canada  
 NOR 1G0  
 Tel: 519-738-3541  
 Fax: 519-738-3537

Ref.B/L: 80242832  
 Date: 06.12.2007  
 Customer: 63



**MATERIAL TEST REPORT**

Sold to

Frederick Steel  
 200 W. North Bend Road  
 CINCINNATI OH 45216  
 USA

Shipped to

Frederick Steel  
 200 W. North Bend Road  
 CINCINNATI OH 45216  
 USA

*07F13006*

Material: 10.0x10.0x375x45°0(2x2).  
 Sales order: 306203

Material No: 100100375  
 Purchase Order: 106753

Made in: Canada

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
479379	0.200	0.800	0.013	0.003	0.160	0.052	0.026	0.005	0.002	0.008	0.036	0.000

Bundle No	Yield	Tensile	Eln.2in	Certification
M200448518	062620 Psi	075680 Psi	34.4 %	ASTM A500-03A GRADE C & B

Material Note:  
 Sales Or.Note:

Material: 10.0x10.0x375x45°0(1x1).  
 Sales order: 306203

Material No: 100100375  
 Purchase Order: 106753

Made in: Canada

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
679856	0.200	0.810	0.016	0.003	0.160	0.041	0.032	0.004	0.002	0.011	0.042	0.000

Bundle No	Yield	Tensile	Eln.2in	Certification
M200448513	057920 Psi	071280 Psi	35.8 %	ASTM A500-03A GRADE C & B

Material Note:  
 Sales Or.Note:

Material: 6.0x3.0x313x40°0(3x3).  
 Sales order: 307413

Material No: 600303134000  
 Purchase Order: 106771

Made in: Canada

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
120827	0.160	0.770	0.016	0.020	0.030	0.038	0.040	0.000	0.006	0.005	0.030	0.003

Bundle No	Yield	Tensile	Eln.2in	Certification
M100619084	063320 Psi	070490 Psi	34.3 %	ASTM A500-03A GRADE C & B

Material Note:  
 Sales Or.Note:

Material: 8.0x3.0x375x40°0(2x3).  
 Sales order: 304925

Material No: 800303754000  
 Purchase Order: 106737

Made in: Canada

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
478765	0.200	0.800	0.019	0.002	0.160	0.034	0.017	0.006	0.002	0.007	0.039	0.000

Bundle No	Yield	Tensile	Eln.2in	Certification
M100635600	068200 Psi	080330 Psi	30.5 %	ASTM A500-03A GRADE C & B

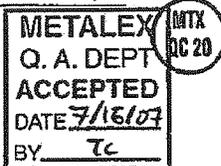
Material Note:  
 Sales Or.Note:

Authorized by Quality Assurance:

*JP*

Job# 755B  
 P/N# 1430101-100400  
 80# 71070-BL

Page : 3 Of 3





Phone: 800-253-0421  
 231-777-3951  
 Fax: 800-438-1145  
 231-773-4485

A Division of Reid Entities

2265 Black Creek Road • Muskegon, MI 49444-2684  
 www.reidsupply.com mail@reidsupply.com



\* 3 7 5 4 4 5 7 \*

P.O. #: 70778-JG-7558

Shipper No 03754457-0

METALEX  
 Q. A. DEPT  
 ACCEPTED  
 DATE 6/29/07  
 BY TL

HI-Tech 755B

Page 1 of 1

Bill To: METALEX MFG INC  
 5750 CORNELL RD  
 CINCINNATI, OH 45242-2083

Ship To: METALEX MFG INC  
 5750 CORNELL RD  
 CINCINNATI, OH 45242-2083

Attn:

Customer No	Your P.O. No	Sched Date	Ship Via	Ship Date	Shipper No
29204	70778-JG-7558	05/23/07	U.P.S.	06/26/07	03754457-0

Line	Order Qty	Item	Description	Qty Shipped	Back Order
1	380	PF-22	PRESS FIT JIG FEET 6MM X 16MM	380	0

HS Tariff Code: 846620  
 Country of Origin: United States

1 WEEK LEAD TIME.  
 THANK YOU FOR YOUR ORDER.

Total Number of items: 1  
 Opr: KMF Branch: 11 SLSM: REID  
 Picker: JBH

Estimated Weight 14 lb 4.00 oz 6.470 kg

*LINE 1*

*UPSGND PPD*

RECEIVED

JUN 28 2007

METALEX MFG.  
 BY *CD*

All sales of products by Reid Supply Company are made on the terms contained in Reid Supply Company's standard Terms of Sale, which are incorporated by reference. If buyer has not otherwise agreed to those terms, then buyer's Acceptance of Delivery of, or Payment For, the goods will constitute buyer's agreement to the standard Terms of Sale. Reid Supply Company's standard Terms of Sale are available at [www.reidsupply.com](http://www.reidsupply.com) or by calling 800-253-0421 and requesting a copy.

CERTIFICATION OF COMPLIANCE

Reid Supply Company and its divisions being ISO-9002 compliant does certify that according to our records the above material purchased was supplied in accordance with the description as illustrated in our catalog.

ALL ITEMS MANUFACTURED IN THE U.S.A UNLESS OTHERWISE NOTED.  
 THANK YOU VERY MUCH FOR YOUR ORDER

Packing List

*Cathy Reid*  
 Cathy Reid, Document Control Supervisor

Packing List

METALEX MANUFACTURING INC  
5750 CORNELL RD  
CINCINNATI OH 45242

**YOUR PURCHASE  
ORDER NUMBER**  
70779-JT

MCMASTER-CARR  
208 AURORA INDUSTRIAL PKWY  
AURORA OH 44202

**PAGE**  
1  
**MCM NUMBER**  
4789768-01

CALLER: JAMES GIFFIN

Today's Date:

IF THERE ARE ANY QUESTIONS ABOUT THIS  
SHIPMENT CONTACT OUR SALES DEPARTMENT  
(330)995-5500

Warehouse Location	McMaster Carr Part Number	FUJ Quantity	Item Description	Your Line	Your Order	This Shipment																													
<b>EXTRA PACKING LIST</b>	90145 A537	18 PK	18-2 STAINLESS STEEL DOWEL PIN 1/4" DIAMETER, 1/2" LENGTH PKG = 20 EA/PK  CERTIFICATE OF COMPLIANCE - This is to certify the above item(s) on your purchase order was supplied in accordance with the description and as illustrated in the catalog. Compliance Manager- Alberto Valaden  <i>Certificate of Compliance</i> This document certifies that according to our records, the material furnished on your purchase order was supplied in accordance with the description and illustration provided in our catalog.  <i>Steve Tuttle</i> Steve Tuttle, Quality Assurance Manager	1	18 PK	18																													
	<table border="1"> <tr> <td>Post-It® Fax Note</td> <td>7871</td> <td>Date</td> <td>7/18</td> <td># of pages</td> <td>1</td> </tr> <tr> <td>To</td> <td colspan="2">JAMES GIFFIN</td> <td colspan="3">From</td> </tr> <tr> <td>Co/Dept</td> <td colspan="2">METALEX MFG</td> <td colspan="3">Co. MCMASTER-CARR</td> </tr> <tr> <td>Phone #</td> <td colspan="2"></td> <td colspan="3">Phone #</td> </tr> <tr> <td>Fax #</td> <td colspan="2">513-489-0807</td> <td colspan="3">Fax #</td> </tr> </table>						Post-It® Fax Note	7871	Date	7/18	# of pages	1	To	JAMES GIFFIN		From			Co/Dept	METALEX MFG		Co. MCMASTER-CARR			Phone #			Phone #			Fax #	513-489-0807		Fax #	
Post-It® Fax Note	7871	Date	7/18	# of pages	1																														
To	JAMES GIFFIN		From																																
Co/Dept	METALEX MFG		Co. MCMASTER-CARR																																
Phone #			Phone #																																
Fax #	513-489-0807		Fax #																																

4789768-01

METALEX MANUFACTURING INC

PER TO:

UR  
CP

PACKER	NUMBER OF CARTONS	FILLER

LNS: 1 EST # PKG 1 WEIGHT 3

BLE

	MCM NO. 4789768-01 04
	<table border="1"> <tr> <td><b>PURCHASE ORDER</b> 70779-JT</td> </tr> </table>
<b>PURCHASE ORDER</b> 70779-JT	
	<p>FROM:</p> <p>MCMASTER-CARR 208 AURORA INDUSTRIAL PKWY AURORA OH 44202</p>
	SHIP TO:
	<p>METALEX MANUFACTURING INC BLUE ASH INDUSTRIAL PARK 5750 CORNELL RD CINCINNATI OH 45242-2010</p>
	CCP

METALEX  
Q. A. DEPT  
ACCEPTED  
DATE 7/18/07  
BY TC

MTX  
DC 20

LB

CERTIFICATE OF ANALYSIS

DATE : 01/22/007  
PAGE : 1

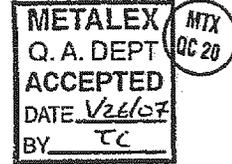


CERTIFICATE OF TYPICAL ANALYSIS

ORDER # : 0  
PART NUMBER: 245015904

CUSTOMER NAME: INDIANA OXYGEN  
5704 STATE ROUTE 128  
CLEVES

P.O. 67952



DIAMETER & LENGTH: 1/16  
TRADE NAME: DUAL SHIELD  
TYPE : 70 ULTRA PLUS  
HEAT NO: 79526  
CLASSIFICATION : E71T-1M/T-9M

This material conforms to :  
AWS A5.20-95, ASME SFA 5.20

CHEMICAL ANALYSIS :

PROPERTIES	SPEC. REQUIREMENTS
Carbon	0.18 Max
Manganese	1.75 Max
Silicon	0.90 Max
Phosphorus	0.03 Max
Sulphur	0.03 Max
Chromium	0.20 Max
Nickel	0.50 Max
Molybdenum	0.30 Max
Vanadium	0.08 Max
Copper	0.35 Max

RADIOGRAPHY :  
XRAY

Satisfactory

DIFFUSIBLE HYDROGEN :

AVERAGE : 2.2 (ml/100gr Avg).  
GAS USED : 75AR/25C02

TENSILE REQUIREMENTS:

AS WELDED  
MIN YIELD(psi) : 58000  
MIN YIELD(MPa) : 400  
MIN TENSILE(psi) : 70000  
MIN TENSILE(MPa) : 480  
MIN ELONG : 22  
MAX TENSILE(MPa) :

TENSILE RESULTS :

AS WELDED  
GAS USED : 75AR/25C02  
CALCULATE YIELD(psi) : 76250  
CALCULATE YIELD(Mpa) : 526  
CALCULATE TENSILE(psi) : 86250  
CALCULATE TENSILE(Mpa) : 595  
% ELONGATION : 27.0  
% REDUCTION OF AREA : 71.8

The ESAB Group, Inc.

1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services



CERTIFICATE OF ANALYSIS

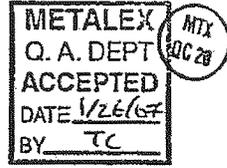
DATE : 01/22/007

PAGE : 2



ORDER # : 0  
PART NUMBER: 245015904

P.O. 67952



CHARPY V-NOTCH REQUIREMENTS:

AS-WELDED :  
CVN TEMPERATURE (F) : 0  
CVN TEMPERATURE (C) : -18  
CVN AW MIN (FT-LBS) : 20  
CVN AW MIN (JOULES) : 27

CHARPY V-NOTCH RESULTS:

<u>AS-WELDED :</u>					
TEMP (F)	FT-LBS	TEMP (C)	JOULES	GAS	
0	106	-18	144	75AR/25C02	
-20	100	-29	136	75AR/25C02	

FILLET : Satisfactory

This material is certified to be free of any mercury.  
The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the elements described in the qualification approval

The ESAB Group, Inc.  
1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services





CERTIFICATE OF ANALYSIS

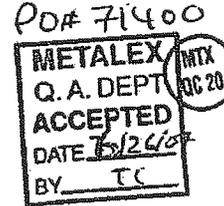
DATE : 06/20/007  
PAGE : 1

CERTIFICATE OF TYPICAL ANALYSIS

ORDER # : 282637  
PART NUMBER: 245015904

CUSTOMER NAME: Indiana Oxygen Co  
5704 STATE RD 128  
CLEVES  
OH 45002

CUSTOMERS ORDER NO: 102836  
DIAMETER & LENGTH: 1/16  
TRADE NAME: DUAL SHIELD  
TYPE : 70 ULTRA PLUS  
WEIGHT: 396  
LOT NO: 81192  
CLASSIFICATION : E71T-1M/T-9M



This material conforms to :  
AWS A5.20-95, ASME SPA 5.20

CHEMICAL ANALYSIS :

	PROPERTIES	SPEC. REQUIREMENTS
Carbon	0.04	0.18 Max
Manganese	1.18	1.75 Max
Silicon	0.64	0.90 Max
Phosphorus	0.018	0.03 Max
Sulphur	0.013	0.03 Max
Chromium	0.04	0.20 Max
Nickel	0.01	0.50 Max
Molybdenum	0.01	0.30 Max
Vanadium	0.02	0.08 Max
Copper	0.04	0.35 Max

RADIOGRAPHY :  
XRAY

Satisfactory

DIFFUSIBLE HYDROGEN :  
AVERAGE :  
GAS USED :

2.2 (ml/100gr Avg).  
75AR/25CO2

TENSILE REQUIREMENTS:  
AS WELDED

MIN YIELD(psi) : 58000  
MIN YIELD(MPa) : 400  
MIN TENSILE(psi) : 70000  
MIN TENSILE(MPa) : 480  
MIN ELONG : 22

MAX TENSILE(MPa) :

TENSILE RESULTS :

AS WELDED

GAS USED : 75AR/25CO2  
CALCULATE YIELD(psi) : 76250  
CALCULATE YIELD(Mpa) : 526  
CALCULATE TENSILE(psi) : 86250  
CALCULATE TENSILE(Mpa) : 595

The ESAB Group, Inc.  
1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services



CERTIFICATE OF ANALYSIS

DATE : 06/20/007  
PAGE : 2

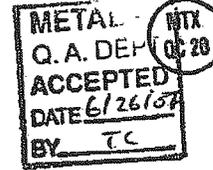


ORDER # : 282637  
PART NUMBER: 245015904

ELONGATION : 27.0  
REDUCTION OF AREA : 71.8

HARPY V-NOTCH REQUIREMENTS:

S-WELDED :  
VN TEMPERATURE (F) : 0  
VN TEMPERATURE (C) : -18  
VN AW MIN (FT-LBS) : 20  
VN AW MIN (JOULES) : 27



HARPY V-NOTCH RESULTS:

<u>S-WELDED :</u>		TEMP (C)	JOULES	GAS
EMP (F)	FT-LBS			
	106	-18	144	75AR/25CO2
20	100	-29	136	75AR/25CO2

TILLET : Satisfactory

This material is certified to be free of any mercury.  
The undersigned certifies that the product supplied will meet the requirements of the applicable AWS  
Miller Metal Specification when tested in accordance with that specification, and that no  
significant change has been made in the elements described in the qualification approval

The ESAB Group, Inc.  
1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services



### CERTIFICATE OF ANALYSIS



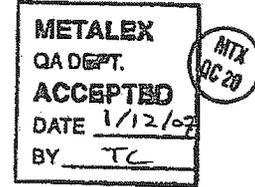
### CERTIFICATE OF TYPICAL ANALYSIS

ORDER # : 0  
PART NUMBER: 245015904

CUSTOMER NAME: INDIANA OXYGEN  
5704 STATE ROUTE 128

P.O. 67952

DIAMETER & LENGTH: 1/16  
TRADE NAME: DUAL SHIELD  
TYPE : 70 ULTRA PLUS  
HEAT NO: 80622  
CLASSIFICATION : E71T-1M/T-9M  
This material conforms to :  
AWS A5.20-95, ASME SFA 5.20



#### CHEMICAL ANALYSIS :

	PROPERTIES	SPEC. REQUIREMENTS
Carbon	0.04	0.18 Max
Manganese	1.18	1.75 Max
Silicon	0.64	0.90 Max
Phosphorus	0.018	0.03 Max
Sulphur	0.013	0.03 Max
Chromium	0.04	0.20 Max
Nickel	0.01	0.50 Max
Molybdenum	0.01	0.30 Max
Vanadium	0.02	0.08 Max
Copper	0.04	0.35 Max

#### RADIOGRAPHY :

XRAY Satisfactory

#### DIFFUSIBLE HYDROGEN :

AVERAGE : 2.2 (ml/100gr Avg).  
GAS USED : 75AR/25CO2

#### TENSILE REQUIREMENTS:

AS WELDED	
MIN YIELD(psi) :	58000
MIN YIELD(MPa) :	400
MIN TENSILE(psi) :	70000
MIN TENSILE(MPa) :	480
MIN ELONG :	22
MAX TENSILE(MPa) :	

#### TENSILE RESULTS :

	AS WELDED
GAS USED :	75AR/25CO2
CALCULATE YIELD(psi) :	76250
CALCULATE YIELD(Mpa) :	526
CALCULATE TENSILE(psi) :	86250
CALCULATE TENSILE(Mpa) :	595
% ELONGATION :	27.0
% REDUCTION OF AREA :	71.8

The ESAB Group, Inc.

1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-3911  
Phone: 1-800-123ESAB

By: K. Wildstein  
K. Wildstein, Supervisor, Q.A. Services



CERTIFICATE OF ANALYSIS

ESAB

ORDER # : 0  
PART NUMBER: 245015904

CHARPY V-NOTCH REQUIREMENTS:

AS-WELDED :

CVN TEMPERATURE (F) : 0  
CVN TEMPERATURE (C) : -18  
CVN AW MIN (FT-LBS) : 20  
CVN AW MIN (JOULES) : 27

CHARPY V-NOTCH RESULTS:

AS-WELDED :

TEMP (F)	FT-LBS	TEMP (C)	JOULES	GAS
0	106	-18	144	75AR/25C02
-20	100	-29	136	75AR/25C02

FILLET : Satisfactory

This material is certified to be free of any mercury.  
The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the elements described in the qualification approval

P.O. 67952

METALEX  
QA DEPT.  
ACCEPTED  
DATE 1/12/07  
BY TC

MTX  
QC 20

The ESAB Group, Inc.  
1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services





SHERWIN-WILLIAMS.

SHERWIN-WILLIAMS  
3143 E KEMPER RD  
SHARONVILLE OH 45241

Visit [www.sherwin-williams.com](http://www.sherwin-williams.com)  
Store 1246 ANDREW  
(513) 771-8572  
Fax - (513) 771-8590

PACKING  
SLIP  
No. 5888-8

ACCOUNT: 6538-0111-8 JOB 01 METALEX MFG

METALEX MFG  
5750 CORNELL RD  
CINCINNATI OH 45242 2010

PO: 7126/JG

DATE: 06/20/07  
TIME: 8:30 AM

(513) 489-0507

E23/13651 11

SALES NUMBER	SIZE	PRODUCT	DESCRIPTION	QUANTITY
630-4240	GALLON	B67H5	RCT EPX PR BUFF A	5
630-4265	GALLON	B67V5	RCT EPX PR HARD B	5
			TOTAL LINES	2
				10

METALEX  
Q. A. DEPT  
ACCEPTED  
DATE 6/29/07  
BY TC

MTX  
QC 20

Job 7558

RECEIVED

JUN 20 2007

METALEX MFG.  
BY CO

MERCHANDISE RECEIVED IN GOOD ORDER BY:

BILLY

DATE (CENTRALIZED INVOICE)

The Sherwin-Williams Co.  
3143 EAST KEMPER RD  
CINCINNATI, OHIO 45241

METALEX  
Q. A. DEPT  
ACCEPTED  
DATE 6/29/07  
BY TC

Job 755B

**CERTIFICATE OF COMPLIANCE  
STATEMENT OF QUALITY**

**METALEX**

PURCHASE ORDER 71261-JG  
DATE OF MFG  
SHELF LIFE  
PART

QUANTITY  
BATCH

IT IS HEREBY CERTIFIED THAT ALL MATERIAL USED IN THE  
MANUFACTURE OF PARTS IN THE QUALITY CALLED FOR ON  
THE SUBJECT PURCHASE ORDER, CONFORM TO THE MATERIALS  
AND/OR MANUFACTURING SPECIFICATIONS INDICATED IN  
DRAWINGS OF SPECIFICATIONS AS CALLED FOR ON SAID  
PURCHASE ORDER.

THE SHERWIN-WILLIAMS CO  
3143 EAST KEMPER RD  
CINCINNATI OHIO 45241

AUTHORIZED SIGNATURE  
CUSTOMER SERVICE ADM

Shelf life 36 months  
OX26965  
batch date OX27165  
OX27855 B67NS  
OX0275C B67HS  
OX2905Z



SHERWIN-WILLIAMS.

SHERWIN-WILLIAMS  
3143 E KEMPER RD  
SHARONVILLE OH 45241

Visit [www.sherwin-williams.com](http://www.sherwin-williams.com)  
Store 1246 KEVIN  
(513) 771-8572  
Fax - (513) 771-8590

PACKING  
SLIP  
No. 7233-5

ACCOUNT: 6538-0111-8 JOB 01 METALEX MFG

METALEX MFG  
5750 CORNELL RD  
CINCINNATI OH 45242 2010

PO: 71829-BL-7558  
ORDER: OE002500701246  
DATE: 07/16/07  
TIME: 8:08 AM

METALEX  
Q. A. DEPT  
ACCEPTED  
DATE 7/16/07  
BY TC

E16/13651 11

SALES NUMBER	SIZE	PRODUCT	DESCRIPTION	QUANTITY
6405-18999	GALLON	B62WZ111	TC HS EX WHT A	5
Color: SW4026 SLATE GRAY				
<u>BAC Blend-a-Color OZ 32 64 128</u>				
B1	Black	2	16 1 1	
G2	New Green	-	3 - -	
Y3	Deep Gold	-	2 - -	
Sher-Color Formula				
TOTAL LINES				1
				5

O E 1637L

RECEIVED  
JUL 16 2007  
METALEX MFG.  
BY CD

MERCHANDISE RECEIVED IN GOOD ORDER BY:

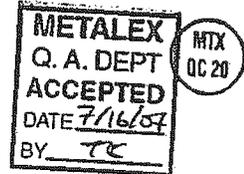
BILLY BLANTON

DATE (CENTRALIZED INVOICE)

Metalex PO# 7/829-BL-7558

# Certificate of Conformance

Customer: Metalex Mfg. Inc.  
Address: 5750 Cornell Rd.  
Cincinnati, Oh: 45242  
Attention: Quality Engineering Dept.



<u>Item</u>	<u>Qty.</u>	<u>Part Number</u>	<u>Rev. Part Name</u>	<u>Job #</u>
<u>1</u>	<u>5</u>	<u>B62WZ/11</u>	<u>BATCH# 051637L</u> <u>TILE CIAD H.S. SW4026</u> <u>Shelf life 36 months</u>	<u>7558</u>

Sherwin Williams  
Supplier Name

certifies that all materials, processes, etc. furnished to

Metalex, for the purchase order number stated above, comply with all conditions stated in the P.O. for the items shown.

Signed/Dated:  7.16-07  
Supplier Quality Rep.

FROM : SW 1246

05/04/2007 20:19

15137712567

FAX NO. : 5137716590

SW CINCI CC

Jun. 05 2007 07:36AM P1

PAGE 01

FROM : METALEX PURCHASING

PHONE NO. : 513-489 8484

Jan. 30 2006 10:07AM P1

Metalex PO# 70722-JG-7558

ATTN: JAMES GRIFFIN

# Certificate of Conformance

Hi-Tech Job# 7558

METALEX
Q. A. DEPT
ACCEPTED
DATE <u>05/07</u>
BY <u>KKB</u>

MTX QC 19

Customer: Metalex Mfg. Inc.  
 Address: 5730 Cornell Rd.  
 Cincinnati, Oh. 45242  
 Attention: Quality Engineering Dept.

KKB 615107  
 MTX QC 19

Shelf life ID# 2835 thru 2839

Item Qty.	Part Number	Rev.	Part Name	Job #	Shelf Life
1. 5	B6242111		TILE CLAD H.S. EW. MC-56		36 MONTH (IN OPEN)
2. 5	B604270		TILE CLAD H.S. HARDNER		36 MONTH (IN OPEN)
3. 1	R7K54		SI REDUCER		3 YEARS
			L Shelf life ID# 2834		
			KKB615107	MTX QC 19	

MX Shelf Life ID# 2841 thru 2844

KKB 615107  
MTX QC 19

SHERWIN WILLIAMS certifies that all materials, processes, etc. furnished to

Metalex, for the purchase order number stated above, comply with all conditions stated in the P.O. for the items shown.

Signed/Dated:

Vendor Quality Rep.

cc: Handcopy P.O. Books

MP4012 (3/95)

Metalex Manufacturing  
L1430401-100400 Girder Support  
Hi-Tech Purchase Order No. 16185

## Visual Weld Inspection Report

Metalex Job: 2007-7558      Serial Number: 7A-08198- ( 01 )

Welding and Visual Welding Inspection Requirements:

Per SOW L143-00093 Section 4.1.4.2: For all welded parts, the welding practice shall conform to the Structural Welding Code, ANSI/AWS D1.1-D1.1M:2004..

Per SOW L143-00093 Section 4.1.4.2.2: All structural welds shall be visually inspected as defined in section 6.9 of the Structural Welding Code. The contractor shall certify that the welds were inspected and were acceptable.

Part Print L1430401-100400 sheet 1 of 3.

Fabrication Stage#1

Features: W1 and W2

Acceptable (Y/N) YES      Initial: B.H.  Date: 6/5/07

Fabrication Stage#2

Features: W3, W4 and W5

Acceptable (Y/N) YES      Initial: B.H.  Date: 6/8/07

Fabrication Stage#3

Features: W6, W7, W8, W9, W10, W11 and W12

Acceptable (Y/N) YES      Initial: B.H.  Date: 6/9/07

Verification of completion of weld visual inspection:

Completed By:   Date: 6/9/07

Metalex Manufacturing  
L1430401-100400 Girder Support  
Hi-Tech Purchase Order No. 16185

## Visual Weld Inspection Report

Metalex Job: 2007-7558                      Serial Number: 7A-08198- ( 02 )

Welding and Visual Welding Inspection Requirements:

Per SOW L143-00093 Section 4.1.4.2: For all welded parts, the welding practice shall conform to the Structural Welding Code, ANSI/AWS D1.1-D1.1M:2004..

Per SOW L143-00093 Section 4.1.4.2.2: All structural welds shall be visually inspected as defined in section 6.9 of the Structural Welding Code. The contractor shall certify that the welds were inspected and were acceptable.

Part Print L1430401-100400 sheet 1 of 3.

Fabrication Stage#1

Features: W1 and W2

Acceptable (Y/N) YES                      Initial: B.H.  Date: 6/5/07

Fabrication Stage#2

Features: W3, W4 and W5

Acceptable (Y/N) YES                      Initial: B.H.  Date: 6/7/07

Fabrication Stage#3

Features: W6, W7, W8, W9, W10, W11 and W12

Acceptable (Y/N) YES                      Initial: B.H.  Date: 6/8/07

Verification of completion of weld visual inspection:

Completed By:   Date: 6/8/07

Metalex Manufacturing  
L1430401-100400 Girder Support  
Hi-Tech Purchase Order No. 16185

## Visual Weld Inspection Report

Metalex Job: 2007-7558                      Serial Number: 7A-08198- (03)

Welding and Visual Welding Inspection Requirements:

Per SOW L143-00093 Section 4.1.4.2: For all welded parts, the welding practice shall conform to the Structural Welding Code, ANSI/AWS D1.1-D1.1M:2004..

Per SOW L143-00093 Section 4.1.4.2.2: All structural welds shall be visually inspected as defined in section 6.9 of the Structural Welding Code. The contractor shall certify that the welds were inspected and were acceptable.

Part Print L1430401-100400 sheet 1 of 3.

Fabrication Stage#1

Features: W1 and W2

Acceptable (Y/N) YES                      Initial: B.H.                       Date: 6/20/07

Fabrication Stage#2

Features: W3, W4 and W5

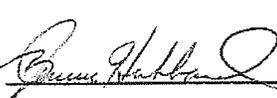
Acceptable (Y/N) YES                      Initial: B.H.                       Date: 6/21/07

Fabrication Stage#3

Features: W6, W7, W8, W9, W10, W11 and W12

Acceptable (Y/N) YES                      Initial: B.H.                       Date: 6/22/07

Verification of completion of weld visual inspection:

Completed By:                        Date: 6/22/07

Metalex Manufacturing  
L1430401-100400 Girder Support  
Hi-Tech Purchase Order No. 16185

## Visual Weld Inspection Report

Metalex Job: 2007-7558                      Serial Number: 7A-08198- ( 04 )

Welding and Visual Welding Inspection Requirements:

Per SOW L143-00093 Section 4.1.4.2: For all welded parts, the welding practice shall conform to the Structural Welding Code, ANSI/AWS D1.1-D1.1M:2004..

Per SOW L143-00093 Section 4.1.4.2.2: All structural welds shall be visually inspected as defined in section 6.9 of the Structural Welding Code. The contractor shall certify that the welds were inspected and were acceptable.

Part Print L1430401-100400 sheet 1 of 3.

Fabrication Stage#1

Features: W1 and W2

Acceptable  (Y/N) YES                      Initial: B.H.                      Date: 6/22/07 .



Fabrication Stage#2

Features: W3, W4 and W5

Acceptable  (Y/N) YES                      Initial: B.H.                      Date: 6/23/07 .



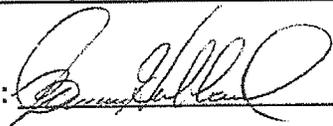
Fabrication Stage#3

Features: W6, W7, W8, W9, W10, W11 and W12

Acceptable  (Y/N) YES                      Initial: B.H.                      Date: 6/25/07 .



Verification of completion of weld visual inspection:

Completed By:                       Initial:                       Date: 6/25/07 .

and shall have at least 75% of the stiffener bearing cross-sectional area in contact with the inner surface of the flanges. The outer surface of the flanges when bearing against a steel base or seat shall fit within 0.010 in. [0.25 mm] for 75% of the projected area of web and stiffeners and not more than 1/32 in. [1 mm] for the remaining 25% of the projected area. Girders without stiffeners shall bear on the projected area of the web on the outer flange surface within 0.010 in. [0.25 mm] and the included angle between web and flange shall not exceed 90° in the bearing length (see Commentary).

### 5.23.11 Tolerance on Stiffeners

**5.23.11.1 Fit of Intermediate Stiffeners.** Where tight fit of intermediate stiffeners is specified, it shall be defined as allowing a gap of up to 1/16 in. [2 mm] between stiffener and flange.

**5.23.11.2 Straightness of Intermediate Stiffeners.** The out-of-straightness variation of intermediate stiffeners shall not exceed 1/2 in. [12 mm] for girders up to 6 ft [1.8 m] deep, and 3/4 in. [20 mm] for girders over 6 ft [1.8 m] deep, with due regard for members which frame into them.

**5.23.11.3 Straightness and Location of Bearing Stiffeners.** The out-of-straightness variation of bearing stiffeners shall not exceed 1/4 in. [6 mm] up to 6 ft [1.8 m] deep or 1/2 in. [12 mm] over 6 ft [1.8 m] deep. The actual centerline of the stiffener shall lie within the thickness of the stiffener as measured from the theoretical centerline location.

**5.23.11.4 Other Dimensional Tolerances.** Twist of box members and other dimensional tolerances of members not covered by 5.23 shall be individually determined and mutually agreed upon by the Contractor and the Owner with proper regard for erection requirements.

## 5.24 Weld Profiles

All welds, except as otherwise allowed below, shall be free from cracks, overlaps, and the unacceptable profile discontinuities exhibited in Figure 5.4.

**5.24.1 Fillet Welds.** The faces of fillet welds may be slightly convex, flat, or slightly concave as shown in Figure 5.4. Figure 5.4(C) shows typically unacceptable fillet weld profiles.

**5.24.2 Intermittent Fillet Welds.** Except for undercut, as allowed by the code, the profile requirements of Figure 5.4 shall not apply to the ends of intermittent fillet welds outside their effective length.

**5.24.3 Convexity.** Except at outside welds in corner joints, the convexity C of a weld or individual surface bead shall not exceed the values given in Figure 5.4.

**5.24.4 Groove or Butt Welds.** Groove welds shall be made with minimum face reinforcement unless otherwise specified. In the case of butt and corner joints, face reinforcement shall not exceed 1/8 in. [3 mm] in height. All welds shall have a gradual transition to the plane of the base-metal surfaces with transition areas free from undercut except as allowed by this code. Figure 5.4(D) shows typically acceptable groove weld profiles in butt joints. Figure 5.4(E) shows typically unacceptable weld profiles for groove weld butt joints.

**5.24.4.1 Flush Surfaces.** Butt welds required to be flush shall be finished so as to not reduce the thicknesses of the thinner base metal or weld metal by more than 1/32 in. [1 mm], or 5% of the material thickness, whichever is less. Remaining reinforcement shall not exceed 1/32 in. [1 mm] in height. However, all reinforcement shall be removed where the weld forms part of a faying or contact surface. All reinforcement shall blend smoothly into the plate surfaces with transition areas free from undercut.

**5.24.4.2 Finish Methods and Values.** Chipping and gouging may be used provided these are followed by grinding. Where surface finishing is required, roughness values (see ASME B46.1) shall not exceed 250 microinches [6.3 micrometers]. Surfaces finished to values of over 125 microinches [3.2 micrometers] through 250 microinches [6.3 micrometers] shall be finished parallel to the direction of primary stress. Surfaces finished to values of 125 microinches [3.2 micrometers] or less may be finished in any direction.

## 5.25 Technique for Plug and Slot Welds

**5.25.1 Plug Welds.** The technique used to make plug welds when using SMAW, GMAW, (except GMAW-S), and FCAW processes shall be as follows:

**5.25.1.1 Flat Position.** For welds to be made in the flat position, each pass shall be deposited around the root of the joint and then deposited along a spiral path to the center of the hole, fusing and depositing a layer of weld metal in the root and bottom of the joint. The arc shall then be moved to the periphery of the hole and the procedure repeated, fusing and depositing successive layers to fill the hole to the required depth. The slag covering the weld metal should be kept molten until the weld is finished. If the arc is broken or the slag is allowed to cool, the slag must be completely removed before restarting the weld.

be measured with suitable gages. Visual inspection of cracks in welds and base metal and other discontinuities should be aided by a strong light, magnifying glasses, or other devices as may be found helpful.

**6.5.6 Inspector Identification of Inspections Performed.** Inspectors shall identify with a distinguishing mark or other recording methods all parts or joints that they have inspected and accepted. Any recording method which is mutually agreeable may be used. Die stamping of cyclically loaded members without the approval of the Engineer shall be prohibited.

**6.5.7 Maintenance of Records.** The Inspector shall keep a record of qualifications of all welders, welding operators, and tack welders; all WPS qualifications or other tests that are made; and such other information as may be required.

## *Part B*

### *Contractor Responsibilities*

#### **6.6 Obligations of the Contractor**

**6.6.1 Contractor Responsibilities.** The Contractor shall be responsible for visual inspection and necessary correction of all deficiencies in materials and workmanship in conformance with the requirements of this code.

**6.6.2 Inspector Requests.** The Contractor shall comply with all requests of the Inspector(s) to correct deficiencies in materials and workmanship as provided in the contract documents.

**6.6.3 Engineering Judgment.** In the event that faulty welding, or its removal for rewelding, damages the base metal so that in the judgment of the Engineer its retention is not in conformance with the intent of the contract documents, the Contractor shall remove and replace the damaged base metal or shall compensate for the deficiency in a manner approved by the Engineer.

**6.6.4 Specified NDT Other than Visual.** When NDT other than visual inspection is specified in the information furnished to bidders, it shall be the Contractor's responsibility to ensure that all specified welds shall meet the quality requirements of Section 6, Part C, whichever is applicable.

**6.6.5 Nonspecified NDT Other than Visual.** If NDT other than visual inspection is not specified in the original contract agreement but is subsequently requested by the Owner, the Contractor shall perform any requested testing or shall allow any testing to be performed in conformance

with 6.14. The Owner shall be responsible for all associated costs including handling, surface preparation, NDT, and repair of discontinuities other than those described in 6.14, whichever is applicable, at rates mutually agreeable between Owner and Contractor. However, if such testing should disclose an attempt to defraud or gross nonconformance to this code, repair work shall be done at the Contractor's expense.

## *Part C*

### *Acceptance Criteria*

#### **6.7 Scope**

Acceptance criteria for visual and NDT inspection of tubular connections and statically and cyclically loaded nontubular connections are described in Part C. The extent of examination and the acceptance criteria shall be specified in the contract documents on information furnished to the bidder.

#### **6.8 Engineer's Approval for Alternate Acceptance Criteria**

The fundamental premise of the code is to provide general stipulations applicable to most situations. Acceptance criteria for production welds different from those described in the code may be used for a particular application, provided they are suitably documented by the proposer and approved by the Engineer. These alternate acceptance criteria may be based upon evaluation of suitability for service using past experience, experimental evidence or engineering analysis considering material type, service load effects, and environmental factors.

#### **6.9 Visual Inspection**

All welds shall be visually inspected and shall be acceptable if the criteria of Table 6.1 are satisfied.

#### **6.10 PT and MT**

Welds that are subject to MT and PT, in addition to visual inspection, shall be evaluated on the basis of the applicable requirements for visual inspection. The testing shall be performed in conformance with 6.14.4 or 6.14.5, whichever is applicable.

**Table 6.1**  
**Visual Inspection Acceptance Criteria (see 6.9)**

Discontinuity Category and Inspection Criteria	Statically Loaded Nontubular Connections	Cyclically Loaded Nontubular Connections	Tubular Connections (All Loads)										
<b>(1) Crack Prohibition</b> Any crack shall be unacceptable, regardless of size or location.	X	X	X										
<b>(2) Weld/Base-Metal Fusion</b> Thorough fusion shall exist between adjacent layers of weld metal and between weld metal and base metal.	X	X	X										
<b>(3) Crater Cross Section</b> All craters shall be filled to provide the specified weld size, except for the ends of intermittent fillet welds outside of their effective length.	X	X	X										
<b>(4) Weld Profiles</b> Weld profiles shall be in conformance with 5.24.	X	X	X										
<b>(5) Time of Inspection</b> Visual inspection of welds in all steels may begin immediately after the completed welds have cooled to ambient temperature. Acceptance criteria for ASTM A 514, A 517, and A 709 Grade 100 and 100 W steels shall be based on visual inspection performed not less than 48 hours after completion of the weld.	X	X	X										
<b>(6) Undersized Welds</b> The size of a fillet weld in any continuous weld may be less than the specified nominal size (L) without correction by the following amounts (U):  <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">L,</td> <td style="text-align: center;">U,</td> </tr> <tr> <td style="text-align: center;"><u>specified nominal weld size, in. [mm]</u></td> <td style="text-align: center;"><u>allowable decrease from L, in. [mm]</u></td> </tr> <tr> <td style="text-align: center;"><math>\leq 3/16</math> [5]</td> <td style="text-align: center;"><math>\leq 1/16</math> [2]</td> </tr> <tr> <td style="text-align: center;"><math>1/4</math> [6]</td> <td style="text-align: center;"><math>\leq 3/32</math> [2.5]</td> </tr> <tr> <td style="text-align: center;"><math>\geq 5/16</math> [8]</td> <td style="text-align: center;"><math>\leq 1/8</math> [3]</td> </tr> </table> In all cases, the undersize portion of the weld shall not exceed 10% of the weld length. On web-to-flange welds on girders, underrun shall be prohibited at the ends for a length equal to twice the width of the flange.	L,	U,	<u>specified nominal weld size, in. [mm]</u>	<u>allowable decrease from L, in. [mm]</u>	$\leq 3/16$ [5]	$\leq 1/16$ [2]	$1/4$ [6]	$\leq 3/32$ [2.5]	$\geq 5/16$ [8]	$\leq 1/8$ [3]	X	X	X
L,	U,												
<u>specified nominal weld size, in. [mm]</u>	<u>allowable decrease from L, in. [mm]</u>												
$\leq 3/16$ [5]	$\leq 1/16$ [2]												
$1/4$ [6]	$\leq 3/32$ [2.5]												
$\geq 5/16$ [8]	$\leq 1/8$ [3]												
<b>(7) Undercut</b> (A) For material less than 1 in. [25 mm] thick, undercut shall not exceed 1/32 in. [1 mm], with the following exception: undercut shall not exceed 1/16 in. [2 mm] for any accumulated length up to 2 in. [50 mm] in any 12 in. [300 mm]. For material equal to or greater than 1 in. thick, undercut shall not exceed 1/16 in. [2 mm] for any length of weld. (B) In primary members, undercut shall be no more than 0.01 in. [0.25 mm] deep when the weld is transverse to tensile stress under any design loading condition. Undercut shall be no more than 1/32 in. [1 mm] deep for all other cases.	X	X	X										
<b>(8) Porosity</b> (A) CJP groove welds in butt joints transverse to the direction of computed tensile stress shall have no visible piping porosity. For all other groove welds and for fillet welds, the sum of the visible piping porosity 1/32 in. [1 mm] or greater in diameter shall not exceed 3/8 in. [10 mm] in any linear inch of weld and shall not exceed 3/4 in. [20 mm] in any 12 in. [300 mm] length of weld. (B) The frequency of piping porosity in fillet welds shall not exceed one in each 4 in. [100 mm] of weld length and the maximum diameter shall not exceed 3/32 in. [2.5 mm]. Exception: for fillet welds connecting stiffeners to web, the sum of the diameters of piping porosity shall not exceed 3/8 in. [10 mm] in any linear inch of weld and shall not exceed 3/4 in. [20 mm] in any 12 in. [300 mm] length of weld. (C) CJP groove welds in butt joints transverse to the direction of computed tensile stress shall have no piping porosity. For all other groove welds, the frequency of piping porosity shall not exceed one in 4 in. [100 mm] of length and the maximum diameter shall not exceed 3/32 in. [2.5 mm].	X	X	X										

General Note: An "X" indicates applicability for the connection type; a shaded area indicates non-applicability.



Metalex Manufacturing  
L1430401-100400 Girder Support  
Hi-Tech Purchase Order No. 16185

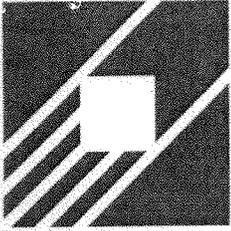
## Serialization Sheet

Part Print L1430401-100400 sheet 1 of 3. Qty-38 Units

Metalex Job: 2007-7558

### Serial Numbers:

7A-08198-01	7A-08198-14	7A-08198-27
7A-08198-02	7A-08198-15	7A-08198-28
7A-08198-03	7A-08198-16	7A-08198-29
7A-08198-04	7A-08198-17	7A-08198-30
7A-08198-05	7A-08198-18	7A-08198-31
7A-08198-06	7A-08198-19	7A-08198-32
7A-08198-07	7A-08198-20	7A-08198-33
7A-08198-08	7A-08198-21	7A-08198-34
7A-08198-09	7A-08198-22	7A-08198-35
7A-08198-10	7A-08198-23	7A-08198-36
7A-08198-11	7A-08198-24	7A-08198-37
7A-08198-12	7A-08198-25	7A-08198-38
7A-08198-13	7A-08198-26	



## Hi-Tech Manufacturing, Inc.

CNC Milling & Turning  
Prototypes & Special Machinery  
General Machining & Heliarc Welding Facilities  
ISO 9002 Registered  
4637 N. 25th Ave., Schiller Park, IL 60176  
Phone (847) 678-1616, Fax (847) 678-1617

### Visual Weld Inspection Report.

Per Statement of Work # L143-00093 Section 4.1.4.2, Motion System Assembly ## L1430401-100396 and L1430802-200000, contract # 7A-08189, for all welded parts, the welding practice shall conform to the Structural Welding Code, ANSI/AWS D1.1-D1.1 M:2004.

Part Print L1430802-200030 sheet 1 of 2.

Quantity: 76 pcs

Fabrication Stage #1

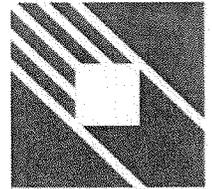
Features: # 1, 4, 2, 3

Acceptable (Y/N) Y Initials: S.S. Date: 11-16-07

Verification of completion of weld visual inspection:

Completed by: *Samuel Sosa* Date: 11-17-07

*Weld Certificate*



**HT-TECH**  
Manufacturing, Inc.  
ISO 9001:2000  
certified

*This certificate is presented to*

**Argonne National Laboratory**

Per PO # 7A-08189, part #L1430802-200030 quantity of 76pcs

Procedure: #PQR101

Customer Specification: #AWS D1.1

Weld wire Spec: #AWS A5.28, Type: ER80S-D2, Heat: 83479, Dia: .045

Welder: Tadeusz Sutowski

*Have been welded in accordance with the referenced welding specification.*

Q.C. Supervisor

*Michael A. Ferroski*

11-17-07  
Date



# GAM Inspection Form

Record No. QRO-005-02

Revised: 09/29/05

Order #: 206059-1

Customer: IMAC Motion Cont

Serial #'s G45608-G456173

Part Number: 700944

Type Code: RPL-H-064-050H-[N23-A03]

Qty: 106

### Verify mounting dimensions

- Motor Mfg: Animatics      Model: SM23XX
- Check Pilot Diameter = 1.5 -0.003  
\*\* Check for EVERY adapter \*\*
  - Check pilot height > 0.062
  - Check bolt circle = 2.625
  - Check hole size fits for: .205
  - Check hole depth for flange thickness: 0.19
  - Check shaft diameter = 0.25 -0.0005  
\*\* Check for EVERY gearbox \*\*
  - Check shaft engagement > 0.81
  - Verify ratio and "smoothness" of gearbox by spinning input
  - Verify mounting bolts are correct qty and type of for all applicable adapters.
  - Verify access hole plug is present and clamping ring bolt is accessible.
  - Place bolts, plugs, and loose gears in a bag and wire to each individual gearbox.
  - Verify key and keyways, if applicable
  - Verify output coupling bore size = 0.375
  - Verify shrink disc is present, if applicable
  - Verify order is complete.

### Assemble gearbox / verify appearance and label

- Clean gearbox and paint if necessary
- Mount input coupling to gearbox if applicable.
- Mount input adapter / lantern to gearbox if applicable.
- Verify label is correct to order
- Apply label to gearbox on a flat surface on gearbox.
- Apply clear plastic overlay label to top of original label.

### Customer Specific Notes (Inspection)

None

### Verify special options

- Verify all dimensions per GAM drawing  
Drawing No: ARG503
- Notes:**  
M5x16 Motor Bolt. Give copy of Inspection sheet to shipping for IMAC orders.

### Shipping Special Instruction

Packaged By: \_\_\_\_\_ Date: \_\_\_\_\_

Inspected By: Bill Date: 08-31-05

# IMAC Inspection Form

Revised: 11/11/09  
Issued: 07/09/05

Order # \_\_\_\_\_ Customer: IMAC Model: IMAC Serial # 0000000000  
Part Number: 210000 Type Code: 100 11/04 0000 JIP 0000 Page 2/3

### Verify mounting dimensions

- Motor Mfg: IMAC Standard Model: W23 3/8"
- Check bore diameter = 1.15  
 Check for IMBY adapter \*\*
  - Check bore depth > 0.06
  - Check bore circle = 2.625
  - Check hole size fits for: .205
  - Check hole depth for flange thickness: 0.25
  - Check shaft diameter = 0.375  
\*\* Check for EVERY gearbox \*\*
  - Check shaft engagement > 0.82
  - Verify run and "smoothness" of gearbox by spinning input
  - Verify mounting bolts are correct qty and type of for all applicable adapters.
  - Verify access hole plug is present and clamping ring bolt is accessible.
  - Place bolts, plugs, and loose gears in a bag and wire to each individual gearbox.
  - Verify key and keyways, if applicable
  - Verify output coupling bore size, if applicable
  - Verify shrink disc is present, if applicable
  - Verify order is complete.

### Shipping Special Instruction

### Assemble gearbox / verify appearance and label

- Clean gearbox and paint if necessary
- Mount input coupling to gearbox if applicable.
- Mount input adapter / lantern to gearbox if applicable.
- Verify label is correct to order
- Apply label to gearbox on a flat surface on gearbox.
- Apply clear plastic overlay label to top of original label.

### Customer Specific Notes (Inspection)

None

### Verify special options

Notes:

Give copy of Inspection sheet to shipping for IMAC orders.

Packaged By: \_\_\_\_\_ Date: \_\_\_\_\_

Inspected By: [Signature] Date: 1/31/07

# LINTECH

1845 Enterprise Way  
Monrovia, CA 91016-4272  
Phone: 626.358.0110 - Fax: 626.303.2035

## CERTIFICATION

Date: 08/15/2007  
Sales Order No.: 42873  
Pick List No.: 52559

Sold To:  
IMAC  
1301-A Bowes Road  
Elgin, IL 30123

Ship To:  
Hi-Tech Manufacturing  
4637 No. 25<sup>th</sup> Ave.  
Schiller Park, IL 60176

Order No.: 7396

Order No.: None

Seller hereby certifies as follows - that all materials, parts and processes furnished against the above referenced purchase order were produced in conformance with all applicable specifications as referenced therein, and are on file subject to examination.

<u>Quantity Shipped</u>	<u>Part Number/Description</u>	<u>Serial Number</u>
(10)	206821 Rev."F" Single Axis Table	AA00733003 AA00733004 AA00733005 AA00733006 AA00733007 AA00733008 AA00733009 AA00733010 AA00733011 AA00733012

} s/n-01

By:   
Q.C. Manager

# LINTECH

1845 Enterprise Way  
Monrovia, CA 91016-4272  
Phone: 626.358.0110 – Fax: 626.303.2035

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<u>Quantity Shipped</u>	<u>Part Number/Description</u>	<u>Serial Number</u>
(10)	206821 Rev."F" Single Axis Table	AA00733003 AA00733004 AA00733005 AA00733006 AA00733007 AA00733008 AA00733009 AA00733010 AA00733011 AA00733012

Job# 55421A424

By:   
Q.C. Manager

Metalex Manufacturing Inc.  
5750 Cornell Road · Cincinnati, OH 45242  
Phone (513) 489-0507 · Fax (513) 489-1020  
EMAIL: metalex@metalexmg.com



### METALEX WELD CERTIFICATION

MX JOB #: 07-7558 QTY 4 CUSTOMER: Hi-Tech Manufacturing, Inc.  
PART NAME: Support Girder  
PART NUMBER: L1430401-100400 REVISION: 5V  
S/N: (if applicable) 7A-08198-01 thru -04

METALEX PROCEDURE # WPS 146 (K. Ballard), WPS 194-1 (G. Black)  
CUST. SPECIFICATION # AWS D1.1  
WELD WIRE SPEC AWS A5.20  
TYPE E71T-1  
HEAT 79526, 81192, 80622  
DIAMETER .062

<u>SERIAL NUMBER</u>	<u>WELDER</u>
7A-08198-01	Ken Ballard
7A-08198-02	Greg Black
7A-08198-03	Ken Ballard
7A-08198-04	Greg Black

THE ABOVE PARTS LISTED WERE WELDED IN ACCORDANCE WITH THE REFERENCED WELDING SPECIFICATION.

  
\_\_\_\_\_  
Metalex Quality Control

7/30/07  
\_\_\_\_\_  
Date

**WELDING OPERATOR QUALIFICATION (WPQ)**

Welding Specification ASME IX & AWS D1.1

Welder's Name Ken Ballard Employee No. 334 WPQ No. 146  
 Welding Process(es) used FCAW Type Semi-Automatic  
 Identification of WPS followed by welder during welding of test coupon WPS 146  
 Base Material(s) welded ASME IX: P1 to P1 (A36) Thickness .375"  
AWS D1.1: Group 1 to Group 1 (A36)

Manual or Semi-Automatic Variables for Each Process

	<u>Actual Values</u>	<u>Range Qualified</u>
Penetration – Complete or Partial	<u>Complete</u>	<u>Complete</u>
Single or Double Weld	<u>Single</u>	<u>Single</u>
Backing (metal, weld metal, welded from both sides, flux, etc)	<u>Yes</u>	<u>Yes</u>
ASME IX P-No. to ASME IX P-No.	<u>1</u>	<u>1</u>
AWS D 17.1. Group No. to Group No.	<u>N/A</u>	<u>N/A</u>
AWS D 1.1. Group-No. to Group-No.	<u>1</u>	<u>1</u>
Plate X Pipe (enter diameter, if pipe)	<u>.375"</u>	<u>ASME IX: .0625" - .75"</u> <u>AWS D1.1: .125" - .75"</u>
Filler Metal Specification (SFA): <u>5.20</u> Classification	<u>E71T-1</u>	<u>-</u>
Filler Metal F-No.	<u>6</u>	<u>6</u>
Consumable Insert for GTAW or PAW	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (ASME IX)	<u>.375"</u>	<u>.750" max</u>
Weld deposit thickness for each welding process (AWS D 17.1)	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (AWS D 1.1)	<u>.375"</u>	<u>.750" max</u>
Welding Position (1G, 5G, etc)	<u>1G</u>	<u>1G</u>
Progression (uphill/downhill)	<u>N/A</u>	<u>N/A</u>
Backing Gas	<u>N/A</u>	<u>N/A</u>
GMAW Transfer Mode	<u>N/A</u>	<u>N/A</u>
Welding current type / polarity	<u>DC REverse</u>	<u>DC Reverse</u>

**GUIDED BEND TEST RESULTS**

Guided Bend Tests Type: (Side) Results  (Trans. R&F) Type  (Long.R&F) Results

<u>1 - Acceptable</u>	<u>4 - Acceptable</u>		
<u>2 - Acceptable</u>			
<u>3 - Acceptable</u>			

Visual test results Pass Radiographic test results N/A  
 Fillet Weld – Fracture Test N/A Length and percent of defects N/A in.  
 Macro test fusion N/A Fillet leg size N/A in. X N/A in. Concavity/convexity N/A in.  
 Welding test conducted by Metalex Manufacturing  
 Mechanical tests conducted by MQS Inspection Lab test no. 0594-5586

We certify that the statements in this record are correct and that the test welds were prepared and tested in accordance with the requirements of the above referenced welding specification. The above named individual is qualified in accordance with the above referenced welding specification within the above limits for the welding process used for this test.

Date: 5/19/94 By: Kathina Black / 7/31/00  
 Metallex Manufacturing, Inc.

*\* Reused By / Date: 7/26/01 [Signature]  
 Reused to transfer info to updated Form to include AWS D1.1 info.*

**WELDING OPERATOR QUALIFICATION (WPQ)**

Welding Specification AWS D1.1

Welder's Name Greg Black Employee No. 132 WPQ No. 194-1  
 Welding Process(es) used FCAW Type Semi-Automatic  
 Identification of WPS followed by welder during welding of test coupon 194-1  
 Base Material(s) welded Group II to Group II (A572 to A572) Thickness .500"

Manual or Semi-Automatic Variables for Each Process

<u>Manual or Semi-Automatic Variables for Each Process</u>	<u>Actual Values</u>	<u>Range Qualified</u>
Penetration – Complete or Partial	<u>Complete</u>	<u>Complete</u>
Single or Double Weld	<u>Single</u>	<u>Single</u>
Backing (metal, weld metal, welded from both sides, flux, etc)	<u>N/A</u>	<u>N/A</u>
ASME IX P-No. to ASME IX P-No.	<u>N/A</u>	<u>N/A</u>
AWS D 17.1. Group No. to Group No.	<u>N/A</u>	<u>N/A</u>
AWS D 1.1. Group-No. to Group-No.	<u>.500"</u>	<u>.125" - 1.00"</u>
Plate <u>X</u> Pipe (enter diameter, if pipe)	<u>.500"</u>	<u>.125" - 1.00"</u>
Filler Metal Specification (SFA): <u>5.20</u> Classification	<u>E71T-1</u>	<u>E71T-1</u>
Filler Metal F-No.	<u>6</u>	<u>6</u>
Consumable Insert for GTAW or PAW	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (ASME IX)	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (AWS D 17.1)	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (AWS D 1.1)	<u>1.00" max</u>	<u>1.00" max</u>
Welding Position (1G, 5G, etc)	<u>1G</u>	<u>1G</u>
Progression (uphill/downhill)	<u>N/A</u>	<u>N/A</u>
Backing Gas	<u>Argon</u>	<u>Argon</u>
GMAW Transfer Mode	<u>N/A</u>	<u>N/A</u>
Welding current type / polarity	<u>DC Reverse</u>	<u>DC Reverse</u>

**GUIDED BEND TEST RESULTS**

Guided Bend Tests Type: (Side) Results  (Trans. R&F) Type  (Long.R&F) Results

Side - Acceptable	Side - Acceptable		
Side - Acceptable			
Side - Acceptable			

Visual test results Pass Radiographic test results Pass  
 Fillet Weld – Fracture Test N/A Length and percent of defects N/A in.  
 Macro test fusion N/A Fillet leg size N/A in. X \_\_\_\_\_ in. Concavity/convexity \_\_\_\_\_ in.  
 Welding test conducted by Metalex Manufacturing  
 Mechanical tests conducted by Cooperheat MQS Lab test no. 303-04557-1

We certify that the statements in this record are correct and that the test welds were prepared and tested in accordance with the requirements of the above referenced welding specification. The above named individual is qualified in accordance with the above referenced welding specification within the above limits for the welding process used for this test.

Date: 2/26/04 By: Tom Jully / KKB  
 Metalex Manufacturing, Inc.

*\* Revised by: Paul S... 2/27/04 2/26/04 RF  
 to transfer to revised form to  
 add AWS D1.1. info.*

**From:** Simon Sorsher  
**Date:** 1/17/2008 9:04:40 AM  
**To:** Simon Sorsher  
**Subject:** Fw: Re: FW: Argonne Exploded View

-----Original Message-----

**From:** Emil Trakhtenberg  
**Date:** 1/17/2008 8:52:44 AM  
**To:** Simon Sorsher; Marion M. White  
**Subject:** Re: FW: Argonne Exploded View

Simon,  
Design of the crate for the SMS pedestal is approved.  
Thank you,  
Emil