August 17, 2005

# RCRA FACILITY INVESTIGATION (RFI) WORK PLAN ADDENDUM NO. 11

## GM POWERTRAIN BEDFORD FACILITY 105 GM DRIVE BEDFORD, INDIANA

EPA ID# IND006036099

AUGUST 2005 REF. NO. 13968 (150) This report is printed on recycled paper.

## TABLE OF CONTENTS

## <u>Page</u>

1.0	INTRODUCTION			
	1.1	GENERAL	1	
	1.2	RFI APPROACH	1	
	1.3	PURPOSE	1	
2.0	SCOPE OI	F WORK	2	
	2.1	DYE INJECTION WELL INSTALLATION	2	
	2.2	MONITORING WELL INSTALLATION	3	
	2.2.1	PROPERTY ACCESS	3	
	2.2.2	WELL INSTALLATION AND SAMPLING	3	
	2.2.3	WELL DEVELOPMENT AND GROUNDWATER SAMPLING	4	
	2.3	DYE INJECTION	4	
	2.4	DYE RECOVERY MONITORING	4	
	2.4.1	MONITORING LOCATIONS	4	
	2.4.2	MONITORING FREQUENCY	4	
	2.5	LABORATORY PROCEDURES	5	
3.0	REPORTI	NG AND SCHEDULE	6	

### LIST OF FIGURES (Following Text)

- FIGURE 1.1 SITE LOCATION
- FIGURE 1.2 AOI LOCATIONS
- FIGURE 2.1 PROPOSED INJECTION AND MONITORING LOCATIONS

### LIST OF TABLES (Following Text)

- TABLE 2.1MONITORING LOCAITONS, SAMPLE FREQUENCY, AND SAMPLE TYPE
- TABLE 2.2COMMON DYES AND WAVELENGTHS

## LIST OF APPENDICES

APPENDIX A PHLOXINE B MATERIAL SAFETY DATA SHEET

## LIST OF ACRONYMS

Agreement	RCRA Corrective Action Agreement
AOI	Area of Interest
CRA	Conestoga-Rovers and Associates
Facility	GM Powertrain Bedford Plant
GM	General Motors Corporation
MSDS	Material Safety Data Sheet
РСВ	polychlorinated biphenyls
ppt	parts per trillion
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-Way
RFI	RCRA Facility Investigation
SOW	Scope of Work
STL	Severn-Trent Laboratories
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

## 1.0 <u>INTRODUCTION</u>

This document presents an Addendum No. 11 to the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (RFI Work Plan) for the General Motors Corporation (GM) Powertrain Bedford Facility (Facility) located in Bedford, Indiana (U.S. EPA ID# IND006036099).

## 1.1 <u>GENERAL</u>

The Facility is located at 105 GM Drive, Bedford, Lawrence County, Indiana, 47421 (Figure 1.1). The Facility produces aluminum casting products, such as transmission cases, pistons, and engine blocks. Major aluminum production processes include die casting and permanent molding. The Bedford Facility has been operating as an aluminum foundry since 1942, with major facility modifications completed in 1950, 1953, 1966, 1971, 1974, 1977, 1979, and 1980.

The Facility, located on 152.5 acres, contains approximately 915,000 square feet of floor space and employs approximately 1,000 people (Figure 1.2).

## 1.2 <u>RFI APPROACH</u>

GM signed a Performance-Based RCRA Corrective Action Agreement (Agreement) with the United States Environmental Protection Agency (U.S. EPA) for the Bedford Facility on March 20, 2001, as amended on October 1, 2002. The signed Agreement states that GM will work with the U.S. EPA to identify and define the nature and extent of releases of hazardous waste and/or hazardous constituents at or from the Bedford Facility.

## 1.3 <u>PURPOSE</u>

The purpose of this RFI Work Plan Addendum No. 11 is to present additional Site investigation activities. The proposed scope of work (SOW) includes the installation of a shallow bedrock dye injection well to be located inside of the manufacturing operations at the Facility, the installation of additional groundwater monitoring wells to be installed along the western boundary of the Facility, and the completion of a shallow bedrock, groundwater dye-trace test at Area of Interest 9 (AOI 9).

### 2.0 <u>SCOPE OF WORK</u>

A dye trace test will be conducted at AOI 9 following completion of the injection and monitoring well installations, described later in this section. This dye trace test will be conducted through injection of Phloxine B dye at a newly installed injection point within the manufacturing portion of the Facility. Phloxine B fluoresces at an approximate range of 546 to 555 nanometers (the Material Safety Data Sheet (MSDS) for this dye is included in Appendix A). A new injection point is required at this AOI as an existing location does not currently exist. This injection point will be installed within the shallow bedrock aquifer at the proposed location MW-X085Y100 (presented on Figure 2.1). Also, three additional, shallow bedrock, groundwater monitoring wells are proposed to be installed along the west side of the Facility in order to evaluate groundwater quality and to monitor for the presence of dye during testing. The details of these installations are provided below.

## 2.1 <u>DYE INJECTION WELL INSTALLATION</u>

A new well will be installed at AOI 9, at the location presented on Figure 2.1, for the purpose of use as a dye injection point. This dye injection well will be installed similarly to previously installed bedrock monitoring wells across the Facility (e.g., the overburden material will be cased with a large diameter steel casing, grouted into place prior to further advancement into the bedrock). The bedrock at this location will be cored using the HQ wireline coring barrel to a maximum depth that correlates to competent rock. Competent rock will be determined based on two consecutive, five feet long core runs of 100% rock quality index. Upon reaching the total depth, the borehole will be thoroughly flushed and the entire length of bedrock will be tested for hydraulic properties using the straddle-packer method. The test intervals will be ten feet long and each interval will overlap the previous interval by approximately one foot.

If, upon reaching the total intended depth and completion of the straddle-packer testing, no water-bearing, permeable fractures are encountered, the borehole will be properly abandoned. A new location will then be proposed to the U. S. EPA and advancement of a new potential dye injection well will commence.

All installation, completion, sampling, Quality Assurance/Quality Control (QA/QC), and testing procedures will follow the procedures set forth in the RFI Work Plan (Conestoga-Rovers & Associates (CRA), October 2001). The dye injection well will be developed through flushing of the borehole upon completion of the drilling and the well

will be sampled no sooner than two weeks after development (if sufficient water is available and parameter stabilization is achieved during purging).

## 2.2 MONITORING WELL INSTALLATION

In order to better evaluate the groundwater quality along the western portion of the Facility, and to provide a more complete monitoring well network during the proposed dye trace test at AOI 9, four additional, shallow bedrock monitoring wells are proposed to be installed in order to supplement the existing monitoring well network at the Facility. Figure 2.1 presents the proposed locations.

## 2.2.1 <u>PROPERTY ACCESS</u>

Two of the four new monitoring wells are proposed to be installed within the former railroad right-of-way (ROW). Based on preliminary evaluation, it appears that the former railroad ROW is owned by one individual. The property is currently undeveloped. Immediately upon approval of this work plan addendum, access to this property will be requested from the current owner. One new monitoring well will be installed at Parcel 2, which is currently owned by GM, and the fourth will be installed on the Plant property.

## 2.2.2 <u>WELL INSTALLATION AND SAMPLING</u>

Once access is granted, shallow bedrock, groundwater monitoring wells will be installed at Parcel 2 and within the former railroad ROW. Each boring will be advanced and sampled in accordance with the protocols established in the RFI Work Plan (CRA, October 2001).

Each new monitoring well will be installed similarly to previously installed bedrock monitoring wells across the Facility (e.g., the overburden material will be cased with a large diameter steel casing, grouted into place prior to further advancement into the bedrock). The bedrock at this location will be cored using the HQ wireline coring barrel to a maximum depth that correlates to competent rock. Competent rock will be determined based on two consecutive, five feet long core runs of 100% rock quality index. Each monitoring well will be completed as an open-hole, similar to those previously installed across the Facility and in accordance with the protocols established in the RFI Work Plan (CRA, October 2001).

## 2.2.3 WELL DEVELOPMENT AND GROUNDWATER SAMPLING

Each open-hole completion will be thoroughly flushed upon completion of the coring. Field parameters will be recorded during this flushing/development, in accordance with the protocols as established in the RFI Work Plan (CRA, October 2001).

At a minimum of two weeks following well development, each of the new monitoring wells will be sampled for Target Compound Lists (TCL) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and the site-specific inorganics (Target Analyte List (TAL) minus the earth metals). All groundwater samples will be submitted to Severn-Trent Laboratories (STL) in North Canton, Ohio for analysis. All sampling, decontamination, and analytical procedures will be in accordance with the Quality Assurance Project Plan (QAPP, CRA 2001), as amended.

## 2.3 <u>DYE INJECTION</u>

Up to 2,000 milliliters of Phloxine B (approximately 900 grams) will be injected into the newly installed dye injection. The dye will be flushed after injection with up to 75 gallons of water.

## 2.4 <u>DYE RECOVERY MONITORING</u>

## 2.4.1 <u>MONITORING LOCATIONS</u>

Figure 2.1 presents the proposed dye recovery monitoring locations for the dye trace test that will be conducted at AOI 9. These locations were selected based on known monitoring well performance, spring locations, property access, Removal Action activity status, and to some extent the results of the previous dye tracer testing completed at the Facility.

## 2.4.2 <u>MONITORING FREQUENCY</u>

Table 2.1 presents the proposed dye recovery monitoring points, monitoring frequency, and type of sampling to be conducted during this dye trace test.

## 2.5 <u>LABORATORY PROCEDURES</u>

All samples (grab, charcoal, or ISCO) will be analyzed on a RF 5301 PC scanning spectrofluorophotometer. The instrument can detect dyes in the parts per trillion (ppt) ranges. It produces a fluorogram of intensity vs. wavelength (nanometers) for each sample analyzed. The intensity will be converted to concentration allowing for construction of a breakthrough curve of time vs. concentration. Water samples allow for construction of the breakthrough curve that can give an accurate time of arrival, apparent velocity and information concerning the mode of transport. If the breakthrough curve is a sharp peak of short duration it indicates rapid flow along a fracture. Broader peaks with a long duration indicate a more diffuse pathway of groundwater flow. A table of common dyes and the wavelength for fluorescence is given in Table 2.2. The dye that will be used for this test is described above.

A calibration curve will be constructed for aqueous dye solutions, for the elutant in equilibrium with charcoal samples, for the dye in elutant, and for the dye in water. The instrumentation parameters will be  $5 \times 3$  for water and  $3 \times 1.5$  for charcoal. In addition, blanks will be employed for both water and charcoal, as well as, a daily mid-range dye standards.

### 3.0 <u>REPORTING AND SCHEDULE</u>

Drilling for the installation of the dye injection well within the manufacturing portion of the Facility can only be completed when the manufacturing is idle. Therefore, this installation is proposed to be completed during the two-week shutdown period (July 5 through July 15, 2005). The determination of property ownership will be initiated immediately for the installation of the newly proposed monitoring wells along the west side of the Facility. Upon identification of off-site ownership and upon approval of this work plan, a formal access agreement will be negotiated. The dye trace test at AOI 9 will be initiated approximately two weeks after the final monitoring well is installed. the anticipated test duration is approximately four weeks. However, the duration may be extended up to six weeks depending upon field results.

Upon completion of all field activities and upon receipt of all final, validated analytical data, the information will be submitted to U.S. EPA.



13968-00(150)GN-WA002 AUG 17/2005



13968-00(150)GN-WA003 AUG 17/2005



SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI. APRIL 2001.



Bedford, Indiana

13968-00(150)GN-WA001 AUG 17/2005

#### TABLE 2.1

#### DYE RECOVERY MONITORING LOCATIONS AREA OF INTEREST (AOI) 9 GM POWERTRAIN BEDFORD FACILITY BEDFORD, INDIANA

Sample Location	Sample Type	Backup	Frequency	Comment
Monitoring Well Locations (Onen)				
Man Nose Via		Tania atia ar TATa 11		T- D- In-t-ll-d
MW X012X078	ISCO	Chargool	Con Note 1	To be installed
MW-X0121078	ISCO	Charcoal	See Note 1	Droposed Monitoring Well to be Installed
MIN X022X147C	Carls (hailar)	Chancoul	See Note 1	Proposed Montoring Vven to be instanced
MIN X042X186	Grab (baller)	Charcoal	See Note 2	Descend Manifester Marth to the Installed
NIV-A0451180	Grub (butter)	Churcoal	See Note 2	Proposed Monttoring Vien to be instanted
MW-X043Y273	Grab (baller)	Charcoal	See Note 3	
MIN-A04/1230	Grub (butter)	Churcoal	See Note 2	Proposed Monttoring Vien to be instanted
MVV-X060 Y 304	Grab (baller)	Charcoal	See Note 3	
MVV-X120Y203	Grab (bailer)	Charcoal	See Note 2	Proposed Monitoring Well to be Installed
MW-X128Y255	Grab (bailer)	Charcoal	See Note 2	
MW-X143Y2585	Grab (bailer)	Charcoal	See Note 2	
MW-X184Y285	Grab (bailer)	Charcoal	See Note 3	
MM X200X078C	Grab (bailer)	Charcoal	See Note 5	
MINI V222V0875	Grab (bailer)	Charcoal	See Note 2	
MM/ X222X005	Grab (bailer)	Charcoal	See Note 2	
MW X233 1055	Grab (bailer)	Charcoal	See Note 2	
MW X233X110B	Grab (bailer)	Charcoal	See Note 2	
MW-X233Y125B	Grab (bailer)	Charcoal	See Note 2	
MW-X234V157S	Grab (bailer)	Charcoal	See Note 2	
MW-X242Y060S	Grab (bailer)	Charcoal	See Note 3	
MW-X257Y073	Grab (bailer)	Charcoal	See Note 3	
Parcel 413 Well	Grab (bailer)	Charcoal	See Note 3	Converted Residential Well
Parcel 414 Well	Grab (bailer)	Charcoal	See Note 3	Converted Residential Well
Monitoring Well Locations (Waterloo System)				
MW-X045Y258D-2	Port Sample	None	See Note 2	
MW-X045Y258D-3	Port Sample	None	See Note 2	
MW-X085Y070-1	Port Sample	None	See Note 2	
MW-X169Y058-1	Port Sample	None	See Note 2	
MW-X143Y245D-3	Port Sample	None	See Note 2	
MW X260X201D 2	Port Sample	None	See Note 2	
MM/ X207/201D-3	Port Sample	None	See Note 3	
WWW-72971505D-2	i on sample	rone	See Note 5	
Sumps				
Parcel 400 Manhole	Grab (bailer)	None	See Note 3	
SU-X208Y096	Grab (bailer)	None	See Note 2	if sampleable
Individual Springs				
Seep_5013A	Grab Sample	Charcoal	See Note 3	Dependent upon actual flow
Seep_5013B	Grab Sample	Charcoal	See Note 3	Dependent upon actual flow
Site Source Control Collection Points (NAOM)				
Collector System C (vault with Collector Systems D and H)	Grab Sample	Charcoal	See Note 3	Combined sample with SSC Systems D and H
Collector System D (vault with Collector Systems C and H)	Grab Sample	Charcoal	See Note 3	Combined sample with SSC Systems C and H
Collector System E	Grab Sample	Charcoal	See Note 3	combined sample with obe systems e and H
Collector System H	Grab Sample	Charcoal	See Note 3	
2	···· · ·			
SURFACE WATER GRAB SAMPLES	Crab Control	Channal	Cas Nata 2	
Tributary 3-1	Grab Sample	Charcoal	See Note 3	
Morthorn Tributary 1	Grab Sample	Charcoal	See Note 3	
Northern Tributary 2	Grab Sample	Charcoal	See Note 3	
Western Tributary 1	Grab Sample	Charcoal	See Note 2	
Western Tributary 2	Grab Sample	Charcoal	See Note 3	
Unstream Broomsage Road	Grah Sample	Charcoal	See Note 3	
opsiteun bioonsage Road	Stab Sample	Charcoar	See note 5	

1 ISCO Sample Frequency will be every 30 minutes for the first 24 hours, then every 3 hours for 3 days, then every 6 hours for test duration

2 Grab and Port Sample Frequency will be daily for the first two weeks, then weekly for test duration

3 Grab and Port Sample Frequency will be weekly for test duration

### TABLE 2.2

### COMMON DYES AND WAVELENGTHS GM POWERTRAIN BEDFORD FACILITY BEDFORD, INDIANA

COMMON DYES AND WAVELENGTHS					
Dye	Wavelength (nanometers)				
Optical Brighteners	435±5 and 410±5				
Direct Yellow	452±5				
Fluorescein	510-518				
Eosine	535±5				
Phloxine B	557±5				
Rhodamine WT	577±5				

APPENDIX A

PHLOXINE B MATERIAL SAFETY DATA SHEET

Page 002

Chromatint Red X-1822 RTN Number: 00001573 (Draft Copy) Page 1 June 16, 2005

# MATERIAL SAFETY DATA SHEET

# 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<u>Product Identification</u> Product Name: Chromatint Red X-1822 Chemical Name: Phloxine B Chemical Family: Xanthene CAS Number: 18472-87-2

Company Identification Chromatech Inc. 7723 Market St. Canton, MI 48187 USA 734-451-1230 (For questions and emergencies)

# 2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT LISTING: Chemical Name CHROMATINT RED X-1822

Amount 100.0 %

CAS Number 18472-87-2

(See Section 8 for exposure guidelines)

(See Section 15 for regulatory information)

HAZARDS DISCLOSURE

This product contains no known hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

As defined under Sara 311 and 312, this product contains no known hazardous materials.

## HAZARDS IDENTIFICATION

6588 003

To-CRA Services

Chromatint Red X-1822 RTN Number: 00001573 (Draft Copy)

June 16, 2005

(section 3 continued)

HMIS Rating -

Health: 0 Flammability: 0 Reactivity: 0 Personal Protection Index: -

## POTENTIAL HEALTH EFFECTS

EYE:

Contact may cause eye irritation.

SKIN:

May cause skin irritation with discomfort or rash.

INHALATION:

Inhalation of dusts can cause irritation of nose and throat.

INGESTION

Ingestion may result in gastric disturbances.

TARGET ORGAN: Prolonged or repeated overexposure may cause lung damage.

## 4. FIRST AID MEASURES

EYE CONTACT FIRST AID: Flush eye with water for 15 minutes. If redness or irritation occurs, seek medical attention.

SKIN CONTACT FIRST AID: Wash skin with soap and water. If irritation occurs, seek medical attention. Wash contaminated clothing before reuse. Do not take clothing home to be laundered.

INHALATION FIRST AID: Get victim to fresh air. Give artificial respiration or oxygen if breathing has stopped. Get prompt medical attention.

INGESTION FIRST AID: If swallowed, immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Induce vomiting. Get immediate medical attention.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES COC Flash Point: N/A Autoignition Temperature: N/A

To-CRA Services Page 004

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Chromatint Red X-1822 RTN Number: 00001573 (Draft Copy)

Page 3 June 16, 2005

(section 5 continued)

FLAMMABLE LIMITS IN AIR LEL: % UEL: -

EXTINGUISHING MEDIA: Water, Carbon dioxide, foam, or dry powder.

FIRE & EXPLOSION HAZARDS: Dusts at sufficient concentrations can form explosive mixtures with air.

FIRE FIGHTING INSTRUCTIONS: As in any fire, wear self contained breathing apparatus pressure-demand MSHA/NIOSH (approved or equivalent) and full protective gear.

ACCIDENTAL RELEASE MEASURES

INITIAL CONTAINMENT:

spills should be swept up and placed in containers. Avoid runoff to sewers and bodies of water. Wear proper protective equipment. Absorb on suitable absorbant materials. Clean up by scrubbing with soap and water. Collect cleaning wastes, or remove contaminated soils. Place in proper containers.

LARGE SPILLS PROCEDURE: Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

SMALL SPILLS PROCEDURE: Spill should be swept up and placed in containers. Small quantities may be treated in aerobic wastewater treatment systems.

#### 7. HANDLING AND STORAGE

HANDLING (PERSONNEL) : Mimimize exposure in accordance with good hygiene practice. Avoid contact with eyes, skin, and clothing. Avoid breathing (dust, vapor, mist, gas).

HANDLING (PHYSICAL ASPECTS) ; Close container after each use.

STORAGE PRECAUTIONS: Keep container closed when not in use.

EXPOSURE CONTROLS / PERSONAL PROTECTION 8.

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Chromatint Red X-1822 RTN Number: 00001573 (Draft Copy)

June 16, 2005

(section 8 continued)

EYE / FACE PROTECTION REQUIREMENTS: Use chemical splash goggles and face shield.

SKIN PROTECTION REQUIREMENTS: Use butyl rubber or nitrile gloves.

RESPIRATORY PROTECTION REQUIREMENTS: If airborne concentrations exceed the OSHA TWA, a NIOSH approved dust mask is recommended. Under normal use conditions, with adequate ventilation, no special handling equipment is required.

MISCELLANEOUS: Use good personal hygiene practices; limit exposure to product whenever possible to minimize clean-up.

EXPOSURE GUIDELINES: No Information Available.

MISCELLANEOUS: OSHA Permissible exposure limit:

Total Dust: 10 mg/Cubic Meter.

Respirable dust: 5 mg/cubic meter.

9. PHYSICAL AND CHEMICAL PROPERTIES

COLOP	Powder
ODOR	Dark Red
BOILING BOINT	No odor
SOLUBILITY IN WAREP	N/A C
SPECIFIC GRAVITY	Soluble
BULK DENSITY	N/A (Water = 1)
MELTING/FREEZING POINT	0.29 - 0.33
PH	N/A C
	Not established

## 10. STABILITY AND REACTIVITY

STABILITY: Stable.

Then make

POLYMERIZATION: Product will not undergo polymerization.

INCOMPATIBILITY WITH OTHER MATERIALS: Avoid contact with strong oxidizing agents.

Chromatint Red X-1822 RTN Number: 00001573 (Draft Copy)

Page 5 June 16, 2005

(section 10 continued)

DECOMPOSITION: Thermal decomposition may produce oxides of carbon, nitrogen, and sulfur.

#### TOXICOLOGICAL INFORMATION 11.

MISCELLANEOUS: No information available.

#### ECOLOGICAL INFORMATION 12.

MISCELLANEOUS: No information available.

## 13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements. Due to the highly concentrated color, avoid washing material into sewer systems without proper treatment and authorization by the treatment facility management.

## 14. TRANSPORTATION INFORMATION

PRODUCT LABEL ..... Chromatint Red X-1822 D.O.T. SHIPPING NAME ..... Not Regulated TECHNICAL SHIPPING NAME ...: N/A D.O.T. HAZARD CLASS ..... Non-Hazardous UN NUMBER ..... N/A

#### 15. REGULATORY INFORMATION

MISCELLANEOUS INFORMATION: This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA).

## 16. OTHER INFORMATION

REASON FOR ISSUE ...: New PREPARED BY ..... John Russell APPROVAL DATE ....: DRAFT COPY SUPERCEDES DATE ....: May 12, 2004 RTN NUMBER .....: 00001573 (Draft Copy)

To-CRA Services Page 007

Chromatint Red X-1822 RTN Number: 00001573 (Draft Copy)

Page 6 June 16, 2005

(section 16 continued)

### ADDITIONAL INFORMATION:

The data in this Material Safety Data Sheet relates only to the specific material designated herein. It does not relate to use in combination with any other material or in any process.

# \*

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Chromatech Inc.. The data on this sheet are related only to the specific material designated herein. Chromatech Inc. assumes no legal responsibility for use or reliance upon these data.

### \*\*\*\*\*\*\*\*\*\*\*\* END OF MSDS

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