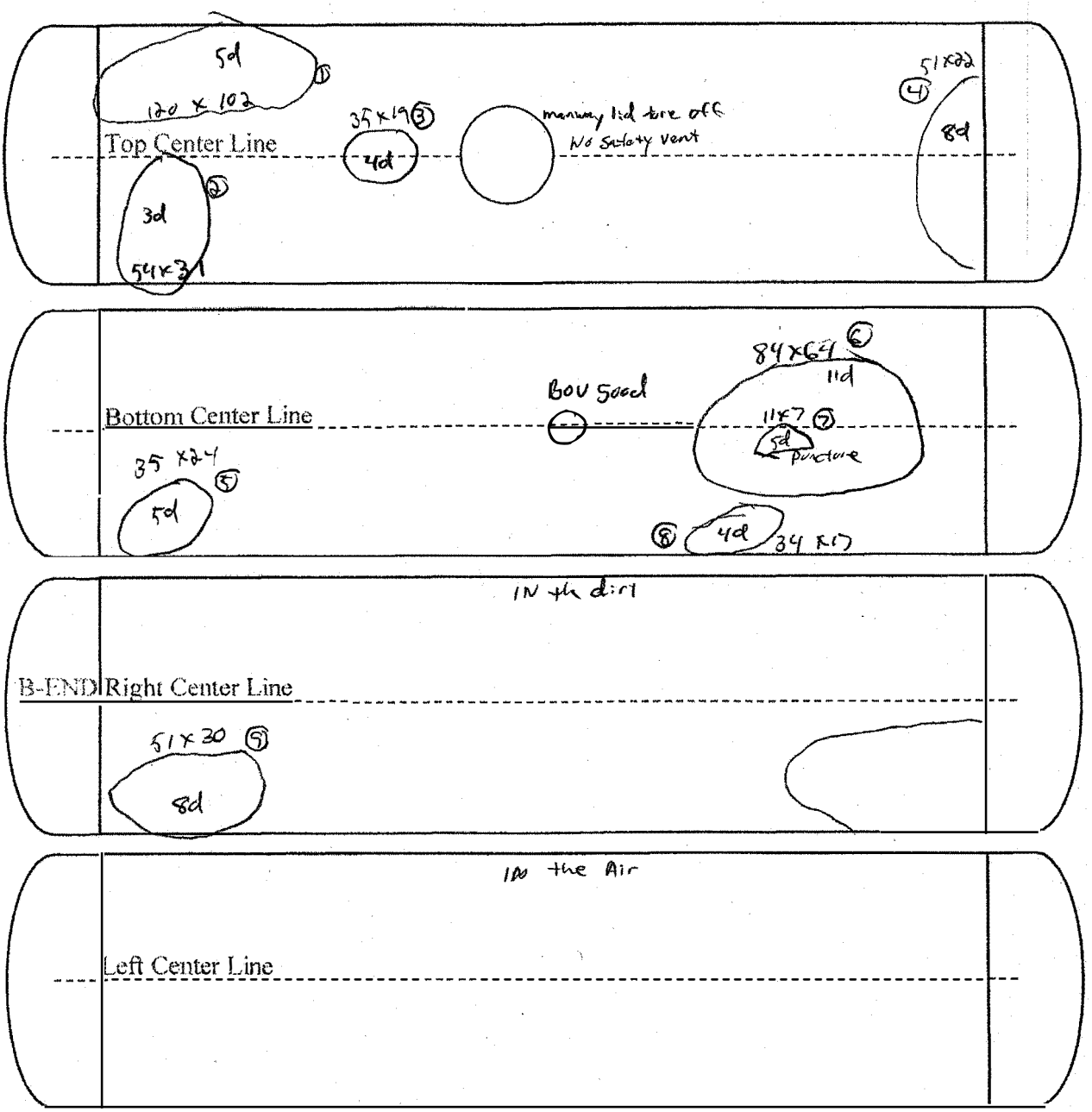
Federal Railroad Administration
Tank Car Damage Assessment Form

Reporting Marks	TILX 136042		Car Location City/State	Reed Point, MT	
Date inspected	7/6/23	Railroad MRL	DOT Specification	111A100W1	
Last Contained	NA2448		Was product released?	Yes	
(Jacket thickness)	Jacket 0.1192	Non-jacketed	Does car contain product	Yes	
Car builder	Trinity Indust	Stub Sill Design	TRN023	Built Date	04/18/2011
Capacity (GAL)	13,920		LD Limit (LB)	20,3200	

Indicate number on figures below within damaged areas. (Sketched in by inspector.)

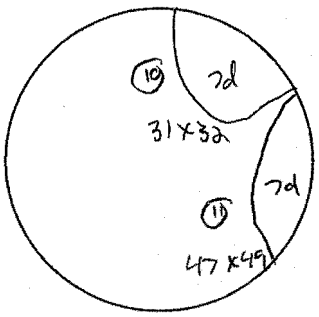
A-END

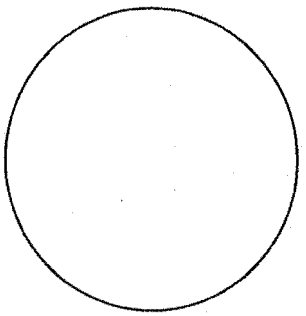


Revised 03-05-14

Federal Railroad Administration
Tank Car Damage Assessment Form

B-Head **A-Head**





	Station Stencil	Qual.	Due
Tank Qual.	ARIT	2021	2031
Thickness	ARIT	2021	2031
Serv. Equip.	ARIT	2021	2026
PRD	ARIT	2021	2031
Vent 165 PSI			
Lining	LNG RMVL		
Rule 88	ARIT	2021	2031
Stub Sill	ARIT	2021	2031

Comments:

TANK OR JACKET DAMAGE

1. Document estimated location of damage on Figures located on page 1 of this report and document dimensions coinciding with number below. (Photos should be numbered and attached to coincide with numbers below.)

1	**Affected?**	Jacket/Tank	**Location?**	Top A end	**Dimensions:**	**Length**	120	**Width**	102	**Depth**	5
-	**Defect type?**	Dent	**Shape?**	Oval	**Possible Cause?**	Derailment into river.					
2	**Affected?**	Jacket/Tank	**Location?**	Top A end	**Dimensions:**	**Length**	54	**Width**	31	**Depth**	3
-	**Defect type?**	Dent	**Shape?**	Oval	**Possible Cause?**	Derailment into river.					
3	**Affected?**	Jacket/Tank	**Location?**	Top A end	**Dimensions:**	**Length**	35	**Width**	19	**Depth**	4
-	**Defect type?**	Dent	**Shape?**	Oval	**Possible Cause?**	Derailment into river.					
4	**Affected?**	Jacket/Tank	**Location?**	Top B end	**Dimensions:**	**Length**	51	**Width**	22	**Depth**	8
-	**Defect type?**	Dent	**Shape?**	Semicircle	**Possible Cause?**	Derailment into river.					
5	**Affected?**	Jacket/Tank	**Location?**	Bottom A end	**Dimensions:**	**Length**	35	**Width**	24	**Depth**	5
-	**Defect type?**	Dent	**Shape?**	Oval	**Possible Cause?**	Derailment into river.					
6	**Affected?**	Jacket/Tank	**Location?**	Bottom B end	**Dimensions:**	**Length**	84	**Width**	64	**Depth**	11
-	**Defect type?**	Dent	**Shape?**	Oval	**Possible Cause?**	Derailment into river.					
7	**Affected?**	Jacket/Tank	**Location?**	Bottom B end	**Dimensions:**	**Length**	11	**Width**	7	**Depth**	5
-	**Defect type?**	Puncture	**Shape?**	Triangle	**Possible Cause?**	Derailment into river.					
8	**Affected?**	Jacket/Tank	**Location?**	Bottom B end	**Dimensions:**	**Length**	34	**Width**	17	**Depth**	4
-	**Defect type?**	Dent	**Shape?**	Oval	**Possible Cause?**	Derailment into river.					
9	**Affected?**	Jacket/Tank	**Location?**	Right B end	**Dimensions:**	**Length**	51	**Width**	30	**Depth**	8
-	**Defect type?**	Dent	**Shape?**	Oval	**Possible Cause?**	Derailment into river.					
10	**Affected?**	Jacket/Tank	**Location?**	B Head	**Dimensions:**	**Length**	31	**Width**	32	**Depth**	7
-	**Defect type?**	Dent	**Shape?**	Semicircle	**Possible Cause?**	Derailment into river.					
11	**Affected?**	Jacket/Tank	**Location?**	B Head	**Dimensions:**	**Length**	47	**Width**	49	**Depth**	7
-	**Defect type?**	Dent	**Shape?**	Semicircle	**Possible Cause?**	Derailment into river.					
12	**Affected?**		**Location?**		**Dimensions:**	**Length**		**Width**		**Depth**	
-	**Defect type?**		**Shape?**		**Possible Cause?**						
13	**Affected?**		**Location?**		**Dimensions:**	**Length**		**Width**		**Depth**	
-	**Defect type?**		**Shape?**		**Possible Cause?**						
14	**Affected?**		**Location?**		**Dimensions:**	**Length**		**Width**		**Depth**	
-	**Defect type?**		**Shape?**		**Possible Cause?**						

-	Defect type?		Shape?		Possible Cause?							
15	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
16	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
17	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
18	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
19	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
20	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
21	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
22	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
23	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
24	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
25	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
26	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
27	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
28	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							
29	Affected?		Location?		Dimensions:	Length		Width		Depth		
-	Defect type?		Shape?		Possible Cause?							

2. **Was this tank car exposed to fire?** **(Indicate one)** **Yes** ○ **No** ◉

3. **How long was the car exposed to fire?** _____ N/A ☑

4. **What percentage/locations of the tank were exposed to fire?** _____**% Indicate location in figures on page 1.**

5. **What material burned to create the fire that the car was exposed to?**

6. **To what degree did the car roll? Initially** _____ **degrees and stopped at** _____

7. **Distance traveled from track center? B-end?** _____**A-end?** _____**Center?**_____

8. **Brief description of details of surfaces tank was exposed to in transit to present location? E.g. mud, track, rocks, etc...**

Mud, rocks, river.

Federal Railroad Administration
Tank Car Damage Assessment Form

VALVE DAMAGE

Utilize Form TCAD-1.2 and supplement description as indicative of damage below:

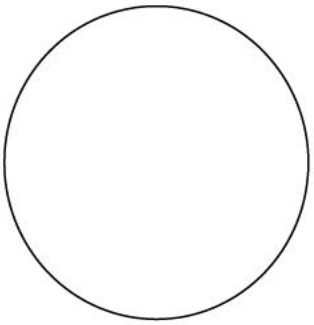
TOP

1. **Number of damaged valves?** N/A **Document station stencil if other than qual. Decal** _____

a	Type of damaged valve?		Manufacturer?		Cause?	
-	Gasket Type?		O-ring type?		Serial Number	
b	Type of damaged valve?		Manufacturer?		Cause?	
-	Gasket Type?		O-ring type?		Serial Number	
c	Type of damaged valve?		Manufacturer?		Cause?	
-	Gasket Type?		O-ring type?		Serial Number	
d	Type of damaged valve?		Manufacturer?		Cause?	
-	Gasket Type?		O-ring type?		Serial Number	
e	Type of damaged valve?		Manufacturer?		Cause?	
	Gasket Type?		O-ring type?		Serial Number	

Sketch in dome or dual housing arrangement information in relation to valve location in provided figure. Valve Lettering should coincide with lettering above, along with any attached pictures.

A-End



BOTTOM

2. **Description of damage? Valve, Coils etc…** N/A **Document station stencil if other than qual. Decal** _____

a	Type of damaged valve?		Manufacturer?		Cause?	
-	Gasket Type?		O-ring type?		Serial Number	
b	Type of damaged valve?		Manufacturer?		Cause?	
-	Gasket Type?		O-ring type?		Serial Number	
c	Type of damaged valve?		Manufacturer?		Cause?	
-	Gasket Type?		O-ring type?		Serial Number	
d	Type of damaged valve?		Manufacturer?		Cause?	
-	Gasket Type?		O-ring type?		Serial Number	
e	Type of damaged valve?		Manufacturer?		Cause?	
	Gasket Type?		O-ring type?		Serial Number	

Other information or description deemed pertinent by inspector:

Manway opened during derailment.

Inspector's Name (print Anthony W. Emery II **Inspector's Signature** [redacted]

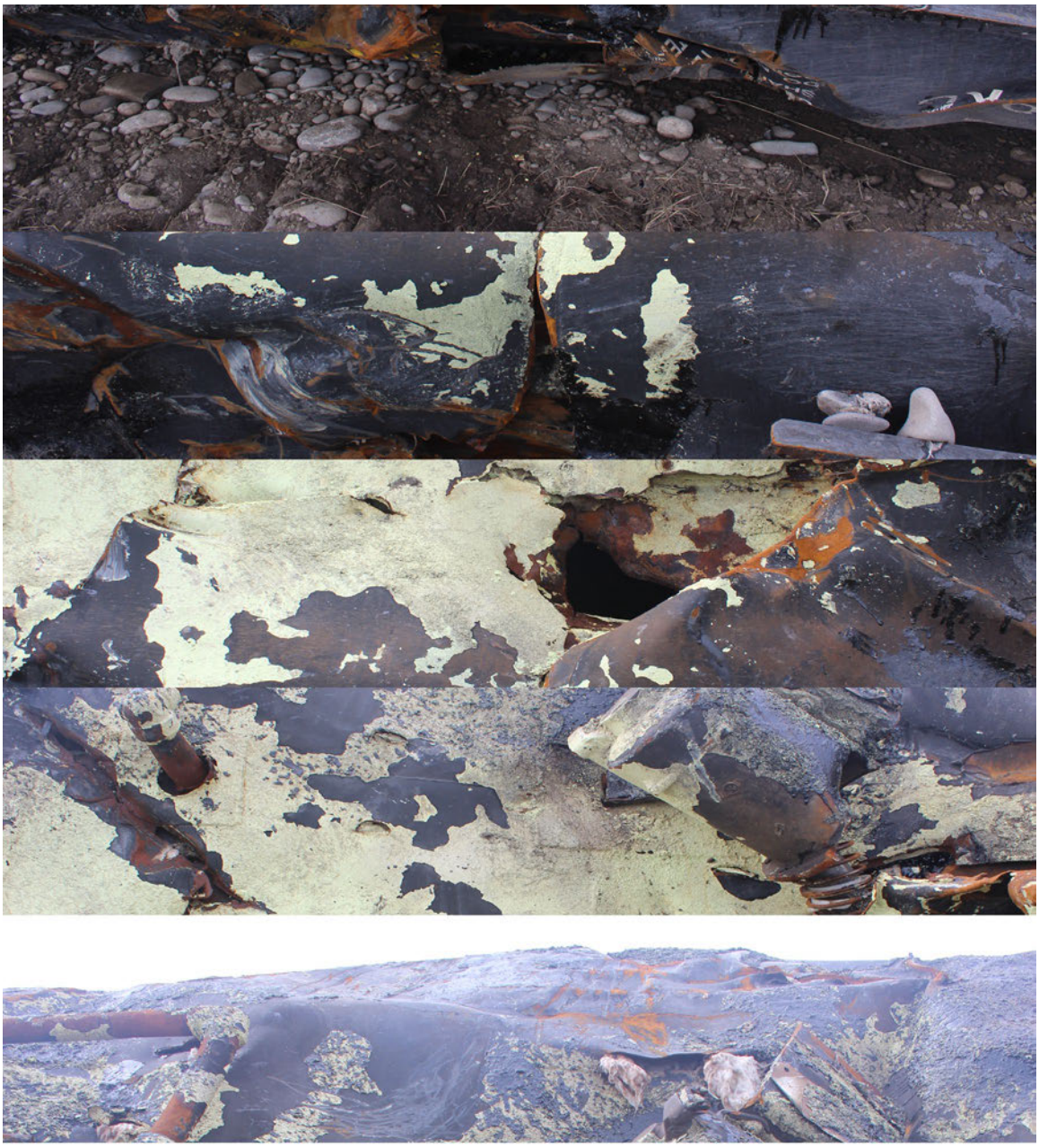
TILX 136042 B end. Tank car is upsidedown.

TILX 136042 A end.

TILX 136042 top of car, A end.

TILX 136042 top of car, B end.

TILX 136042 bottom of car, B end.



TILX 136042 bottom of car puncture.

Message Header			
Partner: AWI	Control #: 19731089	Type: 404	Date/Time: 2023-06-21 15:07:36.0
Correlation Id: 1687378056758.133654294AX	Base Correlation Id:	Interface: E	Message Source Cd: A3
Protocol Cd: MQ	App Data Format:	Transmit Cd: O	From Env Cd:
Message Size: 947			

Message Detail

ISA*00* *00*RMENDENH *02*AWI *02*BNSF *230621*1507*U*00503*019731089*1*P*~

GS*SR*AWI*BNSF*20230621*1507*19731089*X*005030

ST*404*19731089

BX*00*R*PPBNSF*L*B*S**

BNX*A

M3*B*20230621*1507*CT

N9*RP*AWI110783620230621*1507*CT**

N9*6O*AWI-UNIQUE-1973108920230621*1507*CT**

N9*BM*41167720230621*1507*CT**

N7*TILX*136042*197104*N*****RR**

F9LAUREL*MT**

D9EPCO*ID**

N1*SH*CHS INC*C5*143597859

N3*803 US HWY 212 S

N4*LAUREL*MT*59044-8731

PER*NT*RAIGAN MENDENHALL*TE*406[redacted]

N1*CN*INTERNATIONAL CHEMICAL CO.

N4*EPCO*ID

N1*C1*ITAFOS CONDA LLC

N3*3010 CONDA RD*SODA SPRINGS ID

N4*EPCO*ID*83276

N1*PF*INTERNATIONAL CHEMICAL CO

N3*1887 E 71ST ST

N4*TULSA*OK*741363922

R2*BNSF*S*SVRBO*R**

R2*UP*1*R**

LX*1

L5*1*SULPHU*4945770*T

L0*1*0* ***1*TKR**

LS*1

LH1*C4*1*NA24484945770*****III**

LH2*9*P

LH3*SULPHUR, MOLTEN*D

PER*HM*CHEMTREC CCN23163*TE*800-424-9300

LE*1

Message Detail

LH6*BRANDON GAUTHIER

SE*35*19731089

GE*1*19731089

IEA*1*019731089

Waybill Copy BNSF 06/25 05:01:03 WME
777 - BNSF RAILWAY COMPANY - 777

****
* H A Z M A T *
****

TILX 136042 T98 128 3 99 062114 06/21/23 886483 UP

04430 EPCO ID 30855 LAUREL MT

MISSOULA MT

S

BNSF SVRBO UP CHS 411677

803 US HWY 212 S

0000

INTERNATIONAL CHEMICAL CO.

CARE OF ITAFOSCONLLC

EPCO ID

WWIB WEIGHT AGREEMENT

YES
TO BE PREPAID

4945770

HAZARDOUS SHIPMENT TOTAL LADING WT 197104
1 TNK // 197104 LB
NA2448 // SULPHUR, MOLTEN
9 // PG III
EMERGENCY CONTACT: 800-424-9300
SHIPPER CONTACT: CHEMTREC CCN23163
HAZMAT STCC=4945770
NATURAL KEY WB-ID 5437-06-21-15.07.37.382023 WB-VRSN 002
EDI 404 WGHT CD: A
SULPHU
VOLUME 197104 LB
HAZ CERT BRANDON GAUTHIER
EDI 404 RECVD FROM AWI MSG SEQ# 19731089 ON 20230621 AT 1507 BILL CD S
Spec Cond Codes N9 TN overridden by WBMSPLAC 06/21/23 15:07
PROJ RT I BNSF SVRBO I UP
HTUA SPEED RESTRICTION MAY APPLY. SEE SSI.

WEIGHT AND CHARGE TO FOLLOW PREPAID

CO ITAFOSCONLLC 3010 CONDA RD EPCO ID
TP INTLCHEMICAL 1887 E 71ST ST TULSA OK 0755660001
ZS BOURQUDATSYS
ZS SHIPXPRESS
SERVICE SCHEDULING
2023-06-21 10.57.00 2023-06-21 14.07.38

```
    YRDPDRCR                    ***** Yard System *****              06/25/23
    S B JOINER                        - Car Inquiry -                03:01:06PT 4  >
TILX 136042 <T98/T50> on trn M-LAUMIS1-23A seq 43 departed LAURMT 06/24 0505 2
IN POOL P0000 LENGTH =  42 FT  6 in                                  STCC:    4945770

                                                          Evnt                    Station
L Online J RAJP/  Offline Dest                            CdSt Trk  Date Time     Train
E Destin T IndNum Care of/Cust  Contents                  ---- ---- ---- ----     ------------------
- ------ - ------ ------------  --------                  ---- ---- ---- ----     ------------------
L SILBOW   UP      SILBOWMT     HAZMAT                    TD    207 0624 0505     M-LAUMIS1-23ALAURMT
L SILBOW   UP      SILBOWMT     HAZMAT                    SWWE  207 0622 1849     Y-LAU2242-22GLAURMT
L SILBOW   UP      SILBOWMT     HAZMAT                    SWWE  203 0622 0410     Y-LAU3362-21GLAURMT
L SILBOW   UP      SILBOWMT     HAZMAT                    SWWE  210 0622 0210     Y-LAU2151-21ILAURMT
L SILBOW   UP      SILBOWMT     HAZMAT                    RIPR  300 0621 2020     Y-LAU2151-21ILAURMT
L SILBOW   UP      SILBOWMT     HAZMAT                    WBOA 1201 0621 1407     LAUREL MT
L LAURMT           T/BLAUCHS    HAZMAT                    RIRL 1201 0621 1057     LAUREL MT
E LAURMT   120119  CHS          HAZMAT                    APIP 1201 0621 0440     Y-LAU3151-21GLAURMT
E LAURMT   120119  CHS          HAZMAT                    OTIP 1201 0621 0439     LAUREL MT
E LAURMT   120114  CHS          HAZMAT                    PNFN 1201 0619 0431     LAUREL MT
E LAURMT   120114  CHS          HAZMAT                    APPL 1201 0619 0420     Y-LAU3151-19GLAURMT
E LAURMT   120114  CHS          HAZMAT                    OT    127 0618 2149     LAUREL MT
Car is ordered using-CISS
E LAURMT   120201  CHS          HAZMAT                    SWWE  127 0618 1558     Y-LAU1161-18GLAURMT
E LAURMT   120201  CHS          HAZMAT                    SWWE  304 0618 1124     Y-LAU3151-18GLAURMT
E LAURMT   120201  CHS          HAZMAT                    SWEE  117 0616 2048     Y-LAU2212-16GLAURMT
E LAURMT   120201  CHS          HAZMAT                    CPFX  104 0616 1431     LAUREL MT
E LAURMT   120201  CHS          HAZMAT                    PNFN  104 0616 1431     LAUREL MT
E LAURMT   120201  CHS          HAZMAT                    TA    104 0616 1422     M-MISLAU1-15ALAURMT
E LAURMT   120201  CHS          HAZMAT                    TD    110 0616 0510     M-MISLAU1-15AHELEMT
E LAURMT   120201  CHS          HAZMAT                    TA    110 0615 2040     M-MISLAU1-15AHELEMT
E LAURMT   120201  CHS          HAZMAT                    TD   5711 0615 1852     M-MISLAU1-15AGARRMT
E LAURMT   120201  CHS          HAZMAT                    TA   5711 0615 1217     L-MON2351-15IGARRMT
E LAURMT   MRL     LAURELMT     HAZMAT                    DD        0615 1218     L-MON2351-15IGARRMT
This transaction recorded for accounting purposes.
E LAURMT   120201  CHS          HAZMAT                    TA   7777 0615 1217     L-MON2351-15IGARRMT
E LAURMT   120201  CHS          HAZMAT                    TD   9210 0615 0912     L-MON2351-15ISILBOW
E LAURMT   120201  CHS          HAZMAT                    SWRR 9210 0615 0911     L-MON2351-15ISILBOW
E LAURMT   120201  CHS          HAZMAT                    MINT 9210 0615 0700     SILBOW MT
IPT ICR Committed to L-MON2351-15I at BUTTE
E LAURMT   120201  CHS          HAZMAT                    RR   9210 0614 1127     T-UP    1-14RSILBOW
E LAURMT   120201  CHS          HAZMAT                    WBMS      0612 1431     BUTTE MT
L SILBOW   UP      SILBOWMT     HAZMAT                    DD        0605 1502     L-MON2351-05ISILBOW
L SILBOW   UP      SILBOWMT     HAZMAT                    TA        0605 1501     L-MON2351-05ISILBOW
L SILBOW   UP      SILBOWMT     HAZMAT                    TAZC 7777 0605 1501     L-MON2351-05ISILBOW
L SILBOW   MRL     SILBOWMT     HAZMAT                    RRRT      0605 1345     L-MON2351-05IGARRMT
This transaction recorded for accounting purposes.
L SILBOW   UP      SILBOWMT     HAZMAT                    TD   5714 0605 1346     L-MON2351-05IGARRMT
L SILBOW   UP      SILBOWMT     HAZMAT                    TA   9999 0602 1533     M-LAUMIS1-31AGARRMT
L SILBOW   UP      SILBOWMT     HAZMAT                    TD    101 0602 1300     M-LAUMIS1-31AHELEMT
L SILBOW   UP      SILBOWMT     HAZMAT                    TA    101 0602 0255     M-LAUMIS1-31AHELEMT
L SILBOW   UP      SILBOWMT     HAZMAT                    TD    210 0601 1426     M-LAUMIS1-31ALAURMT
L LAURMT           T/BLAUCHS    HAZMAT                    RIPR  900 0527 0445     Y-LAU3352-26GLAURMT
L LAURMT           T/BLAUCHS    HAZMAT                    RIRL 1202 0527 0105     LAUREL MT
E LAURMT   120210  CHS          HAZMAT                    PNFN 1202 0524 2006     LAUREL MT
E LAURMT   120210  CHS          HAZMAT                    APPL 1202 0524 2002     Y-LAU2151-24ILAURMT
E LAURMT   120210  CHS          HAZMAT                    OT    303 0524 1245     LAUREL MT
Car is ordered using-CISS
                                ****** End of Data ******
```

06/21/2023 CHS INC B/L # 411677

Shipper	CHS INC 803 US HWY 212 S	LAUREL	MT 59044-8731
Consignee	INTERNATIONAL CHEMICAL CO.	EPCO	ID
Care Of	ITAFOS CONDA LLC 3010 CONDA RD SODA SPRINGS ID	EPCO	ID 83276
Third Party Pay	INTERNATIONAL CHEMICAL CO 1887 E 71ST ST	TULSA	OK 741363922

Origin:	LAUREL	MT	Prepared by: RAIGAN MENDENHALL
Destination:	EPCO	ID	Phone Number: 4066285214
Sec 7 (Y/N):	Yes		
Freight Charges:	"To Be Prepaid"		

Route Details:

Origin Switch Road: Junction: Delivery Switch Road: Junction:
Route: BNSF SVRBO UP
Rule 11 (Y/N): No
Contract(s) #: - -

SULPHU	4945770	Loaded	1	Tank Car	Agreement Weights Net Weights 197,104 Pounds

---

HAZARDOUS MATERIALS
1 Carload
NA2448 // SULPHUR, MOLTEN
9 // PG III

Emergency Telephone : 800-424-9300
Emergency Offeror & Contract# or Holder : CHEMTREC CCN23163
HAZMAT STCC = 4945770

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the department of transportation.

BRANDON GAUTHIER

SULFUR

INIT	NUMBER	WEIGHT	SEALS	DUNNAGE REFERENCE
TILX	136042	197104		0

STATUS: Accepted-824 Date: 06/21/2023 Time: 15:07 CST WAYBILL #: 886483

Outage Calculation for Sulfur Railcars

Car Number	TILX 136042
Load Limit	203200
Capacity	13920

Load Temperature	273
Select Weight Per Gal	14.9997022
Outage Gallons	**739**

9"

CHS

Attention Needed ☐

Sulfur Tank Car Inspection

Car Number TILX 136042 ✓ **Track/Spot** 1201 Spot 14 **Date** Tuesday, June 20, 2023

Placard NA2448 **Product** SULFUR **Tank car Capacity** 13920 ✓

Order # 2000 **Manway Style** **RR Load Limit** 203200 ✓

Pre-Loading Inspection

All information above is accurate with the Car and the Loading HMI/Accuload. The Car has sufficient capacity, by weight and volume, to contain the product being loaded	✓
Qualification stencils have been reviewed, and the Car is not overdue for any tests, qualifications, or inspections	✓
Car has good overall integrity with no damage or visible defects and shows no signs of leakage	✓
All placard holder, ladders, handrails, running boards, and platforms are not corroded or damaged	✓
All safety appliances are in proper condition and have no residue or corrosion	✓
The Car has no items attached that may indicate a security breach	✓
All Fittings, valves, gaskets and fasteners are in proper condition • Materials are not corroded, torn, worn, stripped or damaged	✓
Any residue in the car is less than 3" and compatible with the product being loaded.	✓
All wheels, trucks, brakes, springs in good condition • Materials are not corroded, torn, worn, stripped or damaged	✓
Both couplers are double shelf couplers	✓
All caps, plugs or removable components are properly chained to the tank car	✓
The bottom outlet caps, valves, gaskets and plugs are in proper condition and have no signs of leakage from bottom unloading components	✓
The bottom outlet valve is confirmed to be fully closed	✓
The manway and cover assembly is functional, properly aligned, and centered on the manway nozzle	✓
The manway cover and area adjacent to the gasket sealing surface is free of commodity or other build up	✓
The manway nozzle sealing surface is free of gouges, nicks, corrosion, displaced metal, residual commodity and remnants of old gaskets	✓
The Manway hinge pins and eyebolts are in place and in proper condition • Hing pins operate freely and are not bent, cut, or damaged • Safety eyebolts are present at the proper location across from the nozzle hinges • Eyebolt slots and ears are not bent, warn, damaged, or deformed • Eyebolt, nuts and washers are not bent, damaged, corroded, and are free of excessive paint. or commodity • Eyebolt nuts are sized fully to bridge the eyebolt slots and washers are not cupped/deformed	✓
The Manway gasket is designed and approved by CHS for the car and commodity, is in place, fully intact, and has not taken a permanent compression set that interferes with the sealing	✓
The car is properly placarded	✓
Rupture Disk has been removed and carefully inspected for corrosion or damage and properly replaced.	✓
MOLTEN SULFUR is stenciled on both sides of the tank car	✓

	Print Inspectors Name	Date
Car is ok to Load	[redacted]	6/20/23

CHS

Sulfur Tank Car Inspection

Car Number TILX 136042 **Track/Spot** 1201 Spot 14 **Date** Tuesday, June 20, 2023

Placard NA2448 **Product** SULFUR **Tank car Capacity** 13920

Order # 2000 **Manway Style** **RR Load Limit** 203200

Final Inspection

	Initials
ALL valves, fittings, closures, plugs, caps and fasteners verified closed and tool tight with a 36" pipe wrench	[redacted]
Manway cover is properly secured per CHS manway procedures	[redacted]
Car shows no signs of vapor or liquid leaking	[redacted]
Car is clean and free of spillage	[redacted]

Car Seal Numbers	
Final Torque on Manway Bolts	250
Bottom Outlet Valve Handle	2780724
Protective Housing	2780200 Rupture disk 2780302
Manway Cover	2780984
Date Completed if other than Pre-inspection	

VSP# 2935

VSP-MCC#: P05-125-VSP# 2935
Material: CYCLETIGHT®-7AE
Thickness: 1/8
ID X OD: 19-1/2 X 21-5/8

800-[redacted] www.vsptechnologies.com

Sulfur

Safety Data Sheet

Version 004 — Last revision on 2015-02-27

SECTION 1 — IDENTIFICATION

Product Name:	Sulfur
Product ID:	CNX-004
Synonyms:	None
Molecular Formula:	S
Chemical Family:	Pure element
Product Use:	Petroleum refining product
Manufacturer:	CHS, Inc. P.O. Box 909 Laurel, Montana 59044, USA
Telephone:	406.628.5200 (*General*) 800.424.9300 (*Emergency – Within USA & Canada*)

SECTION 2 — HAZARD(S) IDENTIFICATION

Emergency Overview

WARNING

Flammable solid (H228).
May be harmful if swallowed (H303).
May be harmful in contact with skin (H313).
Causes skin irritation (H315).
May be harmful if inhaled (H333).

PREVENTION

Do not handle until all safety precautions have been read and understood (P202).
Keep away from heat, sparks, open flames, hot surfaces, etc. No smoking (P210).
Use explosion-proof equipment (P241).
Wash hands thoroughly after handling (P264).
Wear gloves and eye protection (P280).

Use personal protective equipment as required (P281).

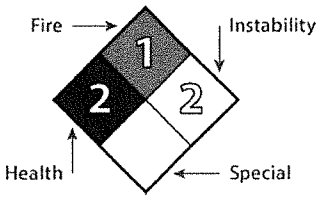
RESPONSE

IF ON SKIN: Wash with plenty of soap and water (P302 + P352).
IF INHALED: Call a poison center or doctor/physician if you feel unwell (P304 + P312).
Call a poison center or doctor/physician if you feel unwell (P312).
IF SKIN IRRITATION OCCURS: Get medical advice/attention (P332 + P313).
Take off contaminated clothing and wash before reuse (P362).
IN CASE OF FIRE: Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide for extinction (P370 + P378).

Hazard Classifications (OSHA / GHS)

Acute toxicity, dermal – Category 5
Acute toxicity, inhalation – Category 5
Acute toxicity, oral – Category 5
Skin corrosion/irritation – Category 2

NFPA



Potential Health Effects

Eye Health Effects: Causes eye irritation.

Skin Health Effects: May be harmful if absorbed through skin. Causes skin irritation.

Inhalation Health Effects: May be harmful if inhaled. Causes respiratory tract irritation. Combustion generates dangerous sulfur dioxide (SO_2). Additionally, molten sulfur reacts with hydrocarbons to form carbon disulfide and hydrogen sulfide (H_2S), which are highly toxic gases. Exposure to high concentrations of H_2S (> 1000 ppm) will cause immediate unconsciousness and death through respiratory paralysis. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels in the atmosphere.

Ingestion Health Effects: May be harmful if swallowed.

Carcinogenic Effects: Not a suspected carcinogen.

Potential Environmental Effects

Environmental Effects: Spills into watercourses may be harmful to organisms and bottom feeders.

SECTION 3 — COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredients				
Name	**CAS #**	**RTECS #**	**EINECS #**	**% (Weight)**
Sulfur	7704-34-9	WS4250000	231-722-6	< 99

SECTION 4 — FIRST-AID MEASURES

NOTE: See *Section 11* for symptoms and effects.

Eye Contact

Flush eyes immediately with clear water for at least 15 minutes. Remove contact lenses if present and easy to do. If irritation persists, seek medical attention.

Skin Contact

Wash area of contact thoroughly with soap and plenty of water. If irritation persists, seek medical attention.

Inhalation

If respiratory symptoms or other symptoms of exposure develop, move victim away from source of exposure and into fresh air. If breathing difficulties develop, oxygen should be administered by qualified personnel. If victim is not breathing, clear airway and immediately begin artificial respiration. Seek immediate medical attention.

Ingestion

Do not induce vomiting. Seek medical attention.

Notes to Physicians

This material may liberate hydrogen sulfide (H_2S). At high concentrations H_2S may produce pulmonary edema, respiratory depression, and/or respiratory paralysis. The first priority in treatment should be the establishment of adequate ventilation and the administration of 100% oxygen. Nitrite therapy (found in the cyanide antidote kit) has been suggested as a therapy for H_2S exposure. Amyl nitrite is given by inhalation (for 30 seconds every minute until an intravenous line is established) followed by intravenous sodium nitrite (300 mg over absolutely no less than 5 minutes). This may aid recovery by forming sulfmethemoglobin, thus removing sulfide from combination in tissue. The antidotal efficacy of nitrite therapy is controversial, but is currently recommended if it can be started within the first few minutes after exposure. Nitrite therapy should not be allowed to interfere with the establishment of adequate ventilation and oxygenation. (*Source: ATSDR Toxic Substances Portal – Hydrogen Sulfide*).

Medical Conditions Aggravated by Exposure

Not available.

SECTION 5 — FIRE-FIGHTING MEASURES

NFPA 704 Hazard Classes:

Health:	2 (Moderate)
Flammability:	1 (Slight)
Instability:	2 (Moderate)
Other Hazards:	Not applicable

Unusual Fire and Explosion Hazards

Flammable in the presence of a source of ignition, or through friction or retained heat. Dust may form explosive mixtures in air. This dust cloud may be exploded by flame or spark.

Extinguishing Media

Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

Protection of Firefighters

Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Wear self-contained breathing apparatus. In addition, wear other appropriate protective equipment as conditions warrant (see *Section 8*).

Firefighting Procedures

Plan fire protection and response strategy through consultation with local fire protection authorities or appropriate specialists. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Use fine spray or fog to control fire by preventing its spread and absorbing some of its heat. Use water spray to keep fire-exposed containers cool. Water or foam may cause frothing of molten sulfur. Extinguish fire using agent suitable for surrounding fire. Dry chemical extinguishers may not extinguish this type of fire. Fire watch should be posted for a minimum of four (4) hours after any fire.

Other Information

Combustion Products:	Sulfur dioxide, carbon disulfide, fumes, smoke, carbon monoxide, and aldehydes.
Flammable Properties:	See *Section 9* for Flash Point, Explosive Limits, etc.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal Precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist, or gas. Ensure adequate ventilation. Wear appropriate protective equipment as conditions warrant (see *Section 8*).

Environmental Precautions

Do not let material enter drains. Assure conformity with applicable government regulations.

Containment Procedures

Not available.

Clean-up Procedures

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7 — HANDLING AND STORAGE

Handling

Keep product away from heat, sparks, pilot lights, static electricity, and open flame. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust may be formed.

Storage

Keep container tightly closed in a dry and well-ventilated place. Keep dry.

SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, and/or engineering professionals.

Personal Protective Equipment

Respiratory Protection:	For nuisance exposures, use type P95 particle respirator. For higher level protection, use type OV/AG/P99 respirator cartridges. Use respirators and components tested and approved under appropriate government standards, such as NIOSH.
Eye/Face Protection:	The use of eye protection (such as safety glasses) that meets or exceeds ANSI Z.87.1 is recommended. Depending on conditions of use, a face shield may be necessary.
Skin Protection:	Wear gloves to protect against skin contact. Depending on conditions of use, additional protection may be necessary to prevent skin contact, such as face shield, apron, body suit, long sleeves, etc.
General Considerations:	When using, do not eat, drink or smoke. 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. Handle in accordance with good industrial hygiene and safety practice.

Engineering Controls

Provide ventilation sufficient to prevent exceeding recommended exposure limits or buildup of explosive concentrations of dust in air. Use explosion-proof equipment.

Exposure Limits / Guidelines

Component	ACGIH TLV	NIOSH REL	OSHA PEL
Nuisance dust, total	TWA: 10 mg/m^3	---	TWA: 15 mg/m^3

Note: State, local, or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical Form	Powder
Appearance	Light yellow
Odor	Slight-sweet to mercaptan
Odor Threshold	*Not available*
pH	*Not available*
Freezing Point	243 – 248 °F (117 – 120 °C)
Boiling Point	832.5 °F (445 °C)
Flash Point	334 °F (168 °C) by closed cup
Flammability	Flammable
Explosive Limits	0.17 % (LEL) – 6.83 % (UEL)
Evaporation Rate	*Not available*
Vapor Pressure	8 mmHg at 475 °F (246 °C); 1 mmHg at 363 °F (184 °C)
Vapor Density	*Not available*
Specific Gravity	*Not available*
Density	2.05 g/cm^3
Solubility	Insoluble
Partition Coefficient	*Not available*
Auto-ignition Temperature	450 °F (232 °C)
Decomposition Temperature	*Not available*
Viscosity	*Not available*
Molecular Formula	S
Molecular Weight	32.07 g/mol

SECTION 10 — STABILITY AND REACTIVITY

Stability:	Stable under normal temperature conditions and recommended use.
Conditions to Avoid:	Heat, flames and sparks; extremes of temperature and direct sunlight.
Incompatible Materials:	Strong oxidizing agents, amines, and bases.
Hazardous Polymerization:	Not known to occur.

SECTION 11 — TOXICOLOGICAL INFORMATION

General Toxicity

Signs and Symptoms:	Burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting, dermatitis.
Aspiration Hazard:	*Not available.*
Sensitization:	*Not available.*
Specific Target Organs:	*Not available.*
Carcinogenicity:	Not identified as a possible, probable, or confirmed carcinogen.
Germ Cell Mutagenicity:	*Not available.*
Reproductive Toxicity:	*Not available.*

Other Comments

None.

Toxicological Effects of Components

Toxicological Information		
Component	**Category**	**Data**
Sulfur (7704-34-9)	Toxicity	Dermal LD50: >2000 mg/kg (rabbit); Oral LD50: >5000 mg/kg (rat); Inhalation LC50: >9.23 mg/L/4 hours (rat).
	Exposure Routes	*Not available.*
	Symptoms	*Not available.*
	Target Organs	*Not available.*
	Short-Term Exposure	Irritates the eyes, the skin, and the respiratory tract. Inhalation of powder of this substance may cause inflammation of the nose and the respiratory tract.
	Long-Term Exposure	Repeated or prolonged contact with skin may cause dermatitis. May have effects on the respiratory tract, resulting in chronic bronchitis.

Note: Data for Toxicity were obtained from the U.S. National Library of Medicine TOXNET. Data for Exposure Routes, Symptoms, and Target Organs were obtained from the NIOSH Pocket Guide to Chemical Hazards. Data for Short- and Long-Term Exposure were obtained from the International Chemical Safety Cards from the International Occupational Safety and Health Information Centre.

SECTION 12 — ECOLOGICAL INFORMATION

Toxicity:	*Not available.*
Persistence & Degradability:	*Not available.*
Bioaccumulative Potential:	*Not available.*
Mobility:	*Not available.*
Other Adverse Effects:	*Not available.*

SECTION 13 — DISPOSAL CONSIDERATIONS

The generator of a waste is always responsible for making proper hazardous waste determinations. The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable federal, state, and local requirements and regulations.

This material, when discarded or disposed of as produced, is not specifically listed as a hazardous waste in federal regulations; however it may be characteristically hazardous if it is considered toxic, corrosive, ignitable, or reactive according to federal definitions (40 CFR 261). Additionally, this material may be designated as hazardous according to state and/or local regulations.

SECTION 14 — TRANSPORTATION INFORMATION

DOT – United States – Department of Transportation

Shipping Name: Sulfur, molten
ID Number: NA2448
Hazard Class: 9
Packing Group: III

SECTION 15 — REGULATORY INFORMATION

United States Regulations

CERCLA/SARA Section 311/312 (Title III Hazard Categories)

Acute Health:	No
Chronic Health:	No
Fire Hazard:	Yes

Pressure Hazard: No
Reactive Hazard: No

This material may contain one or more of the following chemicals identified by the EPA under Title 40 of the Code of Federal Regulations (CFR), including the EPCRA section 302 (40 CFR Part 355), EPCRA section 304 (40 CFR Part 355), EPCRA sections 311/312 (40 CFR Part 370), EPCRA section 313 (40 CFR Part 372), CERCLA sections 102/103 (40 CFR Part 302), Clean Air Act (CAA) 111(r) (40 CFR Part 68), and/or TSCA (40 CFR 700-766).

This material may contain one or more chemicals identified on individual state hazardous substances lists. Contact each jurisdiction for more information.

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or other reproductive harm.

SECTION 16 — OTHER INFORMATION

Preparation & Version Information

Version 004 – Last revision on 2015-02-27.

Prepared by Certified Environmental Management, Ltd. (www.cemih.com).

Guide to Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
CAA	Clean Air Act (United States)
CAS	Chemical Abstracts Service
CEIL	Ceiling Exposure Limit
CERCLA	The Comprehensive Environmental Response, Compensation, & Liability Act (United States)
CFR	Code of Federal Regulations (United States)
EINECS	European chemical Substances Information System
EPA	Environmental Protection Agency (United States)
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LEL	Lower Explosive Limit
NFPA	National Fire Protection Association
NTP	National Toxicology Program (United States)
OSHA	Occupational Safety and Health Administration (United States)
PEL	Permissible Exposure Limit (OSHA)
SARA	Superfund Amendments and Reauthorization Act (United States)
TLV	Threshold Limit Value (ACGIH)
TSCA	Toxic Substances Control Act (United States)
TWA	Time Weighted Average (8 hours)
UEL	Upper Explosive Limit
UN	United Nations

Disclaimer / Statement of Liability

The information presented in this Safety Data Sheet is based on data believed to be accurate as of the date this (Material) Safety Data Sheet was prepared. However, neither CHS, Inc., nor any of their subsidiaries, vendors, or contractors, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use.