# NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering Materials Laboratory Division Washington, D.C. 20594

September 6, 2022



# MATERIALS LABORATORY FACTUAL ADDENDUM

Report No. 22-045B

#### A. ACCIDENT INFORMATION

Place : Oklaunion, Texas
Date : January 8, 2022
Vehicle : DOT 117J tank cars
NTSB No. : HMD22LR001

Investigator: Paul Stancil, RPH-20

# **B. COMPONENTS EXAMINED**

Piece of tank shell, head, front sill pad, head brace, and stub sill from the A end of TILX 731751 and shell piece from TILX 731762.

# C. DETAILS OF THE EXAMINATION

Samples from the head of TILX 731751 and the shell of TILX 731762 were sent for chemical analysis including a technique (inductively coupled plasma mass spectroscopy) more sensitive for detecting boron at low concentrations than the technique (inductively coupled plasma optical emission spectroscopy) used previously as reported in NTSB Materials Laboratory Factual Report 22-045. Test results are shown listed in Appendix A. Results showed the composition for both samples conformed to specification requirements.

Matthew R. Fox, Ph.D. National Resource Specialist - Materials

# D. APPENDIX A: CHEMISTRY LAB REPORT

A Curtiss-Wright Business Unit www.imrtest.com

131 Woodsedge Drive Lansing, NY 14882 T: 1.607.533.7000 | F: 1.607.533.9210

Original Date August 29, 2022

Revision Date September 2, 2022

Matt Fox National Transportation Safety Board 490 L'Enfant Plaza Washington, DC 20594

# **TEST REPORT**

IMR Report Number 202210222 – Revision 1 (Added Specification)

# **PO Number**

Credit Card

#### **Date Received**

August 24, 2022

#### Material

Steel

# Sample ID

Shell Head

#### NTSB Reference#

HMD22LR001

#### Specification(s)

**Customer Supplied** 

#### **SUMMARY**

Two samples were received for chemical analysis.

For the elements tested, the sample **meets** the chemical requirements as supplied by National Transportation Safety Board.

The results are on the following page(s).



Madcap

ACCREDITED

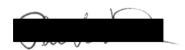
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Reviewed by



Mike St. Phillips ICP Supervisor

Reviewed by



Pete Lockard Chemistry Dept. Supervisor

All procedures were performed in accordance with the IMR Quality Manual, current revision, and related procedures; and the PWA MCL Manual F-23 and related procedures. The information contained in this test report represents only the material tested and may not be reproduced, except in full, without the written approval of IMR Test Labs ("IMR"). IMR maintains a quality system in compliance with the ISO/IEC 17025 and is accredited by A2LA, certificates #1140.01 and 1140.02. IMR will perform all testing in good faith using the proper procedures, trained personnel, and equipment to accomplish the testing required. Conformance will be based on results without measurement uncertainty applied, unless otherwise requested by the customer. IMR's liability to the customer or any third party is limited at all times to the amount charged for the services provided. All test samples will be retained for a minimum of 3 months and may be destroyed thereafter, unless otherwise specified by the customer. The recording of false, fictitious, or fraudulent statements or entries on this document may be punished as a felony under federal statutes. IMR Test Labs is a GEAE S-400 approved lab (Supplier Code 69805).

# **CHEMISTRY**

Element	HEAD	SHELL	Specification
C <sup>1</sup>	0.21	0.21	
Mn	1.42	1.54	
Р	0.010	0.012	
S¹	0.005	0.002	
Si	0.38	0.35	
V	0.052	<0.010	
Cu	0.02	0.15	
Ni	0.01	0.18	
Cr	0.17	0.15	
Мо	0.05	<0.01	
Al	0.036	0.039	
Nb	<0.01	0.01	
Ti	<0.010	<0.010	
B <sup>3</sup>	<0.0005	<0.0005	
N <sup>2</sup>	0.006	0.005	
Sn	<0.010	<0.010	
CEq	NA	NA	
Cu + Ni + Cr + Mo	0.25	0.48	
Nb + V +Ti	0.05	0.01	
Ti/N Ratio	<1.0	<1.0	

NA=Not Analyzed

Results in weight percent unless otherwise indicated

Method(s): CAP-017S (ICP-AES), CAP-079F (ICP-MS) and ASTM E 1019-18 (Comb./IGF)

<sup>&</sup>lt;sup>1</sup>Determined by combustion-infrared absorbance

<sup>&</sup>lt;sup>2</sup>Determined by inert gas fusion

<sup>&</sup>lt;sup>3</sup>Determined by ICP-MS