

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

IMR TEST LABS

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).



Reviewed by

[Redacted signature]



Mike St. Phillips
ICP Supervisor

Reviewed by

[Redacted signature]

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 ¹	0.21	0.21	██████████
Mn	1.42	1.54	██████████
P	0.010	0.012	██████████
S ¹	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	█
Mo	0.05	<0.01	█
Al	0.036	0.039	██████████
Nb	<0.01	0.01	██████████
Ti	<0.010	<0.010	██████████
B ³	<0.0005	<0.0005	██████████
N ²	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

¹Determined by combustion-infrared absorbance

²Determined by inert gas fusion

³Determined by ICP-MS

Results in weight percent unless otherwise indicated

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