



NATIONAL TRANSPORTATION SAFETY BOARD
Investigative Hearing

Norfolk Southern Railway general merchandise freight train 32N
derailment with subsequent hazardous material release and fires,
in East Palestine, Ohio, on February 3, 2023

GROUP	F
EXHIBIT	
6	

Agency / Organization

Federal Railroad Administration

Title

Filling Density Calculation OCPX 080370

Tank Car Filling Limit & Filling Density Calculations

Tank Number	OCPX 080370	Commodity Name					
Tank Specification	105J300W	VINYL CHLORIDE STABILIZED					
Tank Capacity (gals)	24,620						
Load Limit (lbs)	182,200						
Light Weight (lbs)	80,800	Hazard Class	2.1	ID No.	UN1086	PG	
Scale Weight (lbs)	256,900	Scale Type :		Motion		Static	

Use this section for Filling Density Calculations !

Is the product Chlorine, Hydrogen sulfide, Nitrosyl chloride, Sulfur dioxide or Sulfuryl fluoride? If yes, then enter an "X" to the right of the product name below; otherwise, go to the Filling Limit calculation section (green).

Chlorine		Hydrogen sulfide		Nitrosyl chloride		Sulfur dioxide		Sulfuryl fluoride	
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Use this section for Filling Limit Calculations !

Step 1 : Determine the appropriate Reference Temp. °F, enter an "X" in one of the six applicable boxes below:

For Liquefied Petroleum Gas & Anhydrous Ammonia (Nov. → March) ONLY !

Insulated Tank	85 °F		
Quasi-Insulated Tank (DOT 112J or 114J)	90 °F		
Non-Insulated Tank	100 °F		

For LPG & Anhydrous Ammonia (April → Oct) & All other products year round !

Insulated Tank	105 °F		
Quasi-Insulated Tank (DOT 112J or 114J)	110 °F		
Non-Insulated Tank	115 °F		

Step 2 : Enter an "X" in one of the applicable three boxes below:

Toxic Inhalation Hazard			
Anhydrous Ammonia or Ammonia > 50%			
All Other Materials		X	

Step 3 : Enter Specific Gravity @ Reference Temperature of °F 0.91

"Optional" for Filling Limit or Filling Density Calculations

Enter product loading temperature in °F	69.33		
Enter specific gravity @ loading temperature	0.9121		

Click HERE for Results

Does the product weight of	176,100	lbs. exceed the LD LMT of	182,200	lbs.	NO
Number of lbs. exceeding the Load Limit (LD LMT)				0	
Max. allowable weight using Filling Limit (FL) calculations (lbs.) or,				182,200	
Max. allowable weight using Filling Density (FD) calculations (lbs.)					
Number of lbs. exceeding the Filling Limit or Filling Density requirement				0	
FL: Is the tank overfilled by volume @ reference temp.			°F	NO	
FL: Calculated volume in gals @ reference temp.			°F	23,236	
FL & FD: Max. gallons allowed @ loading temp.			69.33 °F	23,986	
FL & FD: Number of gallons filled @ loading temp.			69.33 °F	23,183	
FL & FD: Number of gallons overfilled @ loading temp.			69.33 °F	0	
FL & FD: Number of gallons required to reduce the volume to meet §173.24b(a)			69.33 °F	0	