NSA technics

Basic Quality Control Concepts

IATA Aviation Energy Forum 2025

What is Our #1 Job?

- To put the correct amount of clean, dry, pure fuel into the correct aircraft
- To do the job safely
- To prevent fire
- To prevent spills
- To follow the QC program and make sure others do also
- To properly operate and maintain the equipment
- To always be on the lookout for potential problems

NSA technics

Quality Control is:

01

Having the Correct Equipment

02

Tests and Procedures - To ATA-103,ASTM API and Other Standards

03

Making Sure You Don't Damage the Aircraft

04

Not a Profit Center

05

An Indispensable Policy That Must Permeate Your Whole Company From The Top to the Bottom Covering Personnel, Environmental and Flight Safety

06

MOST IMPORTANTLY
The policy must be followed!

NSA technics

Looking for changes

The Key to Quality Control is to take note of anything out of the ordinary. Even if the results are still within "acceptable" limits, a sudden change to any characteristic or the performance of any piece of equipment may indicate a serious problem

BECAUSE *Testing and Sampling is Meant to Find Little Problems Before They Become Big Ones!*

NSA technics

Changes To Look For

- Any and All Test Results - Even if the Results are “Acceptable”
- “Too Good” or “Too Consistent” Results (Pencil whipping)
- Outside of Prefilter Elements
- Inside of Coalescer Elements
- Strainers Nozzle - Coffee grounds and metal shreds????
- Differential Pressure / Flow Rate
- White Buckets - All Aspects, color, odor, haze, “lace”, water, etc.
- Membrane Test Time
- Paperwork
- Labor Times for Inspection Employees
- Equipment Appearance

NSA technics

QC Required Checks

DAILY:

- ✓ Filter Sumps
- ✓ Filter Differential pressure

WEEKLY:

- ✓ Corrected Differential Pressure
- ✓ Bonding Cable/System Continuity

MONTHLY:

- ✓ Millipore & Free Water
- ✓ Nozzle Strainers

QUARTERLY:

- ✓ Water Defense System

ANNUAL:

- ✓ Filter Elements
- ✓ Filter Differential Pressure Gauge
- ✓ Filter Vessel

NSA technics

SUMPING

DAILY

Morning

Under Pressure

NSA technics

ALWAYS SUMP UNDER PRESSURE

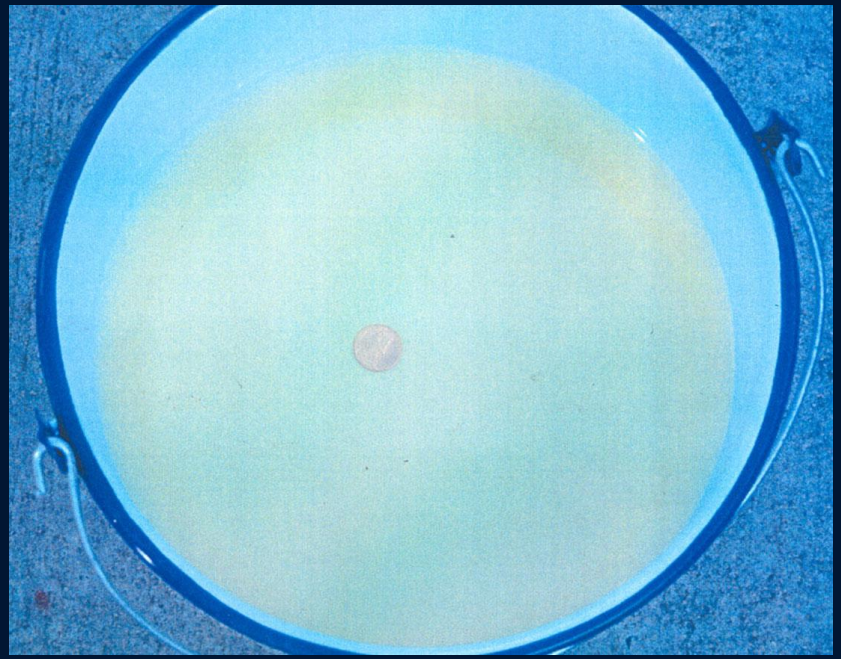
NSA technics

White bucket test

- Color - Jet Consistent and **NOT Pink!**
- Odor
- Haze / Cloudiness
- Liquid water in the bottom of the bucket
- Spill coffee, food coloring or other water-based liquid in to be sure the bucket isn’t pure water
- Particles or Debris
- Filmy or lace - like floating material
- Anything else different from the usual
- Fuel Should be Clear and Bright - No Visible Contamination

NSA technics

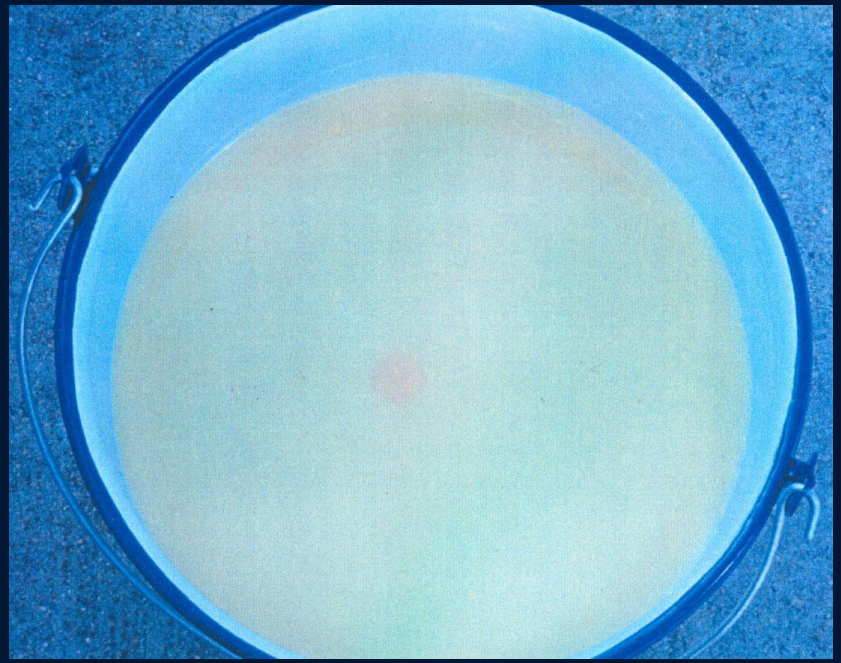
CLEAR WHITE BUCKET SAMPLE INDICATING NO WATER OR PARTICULATES. USE ANY COIN.



NSA technics

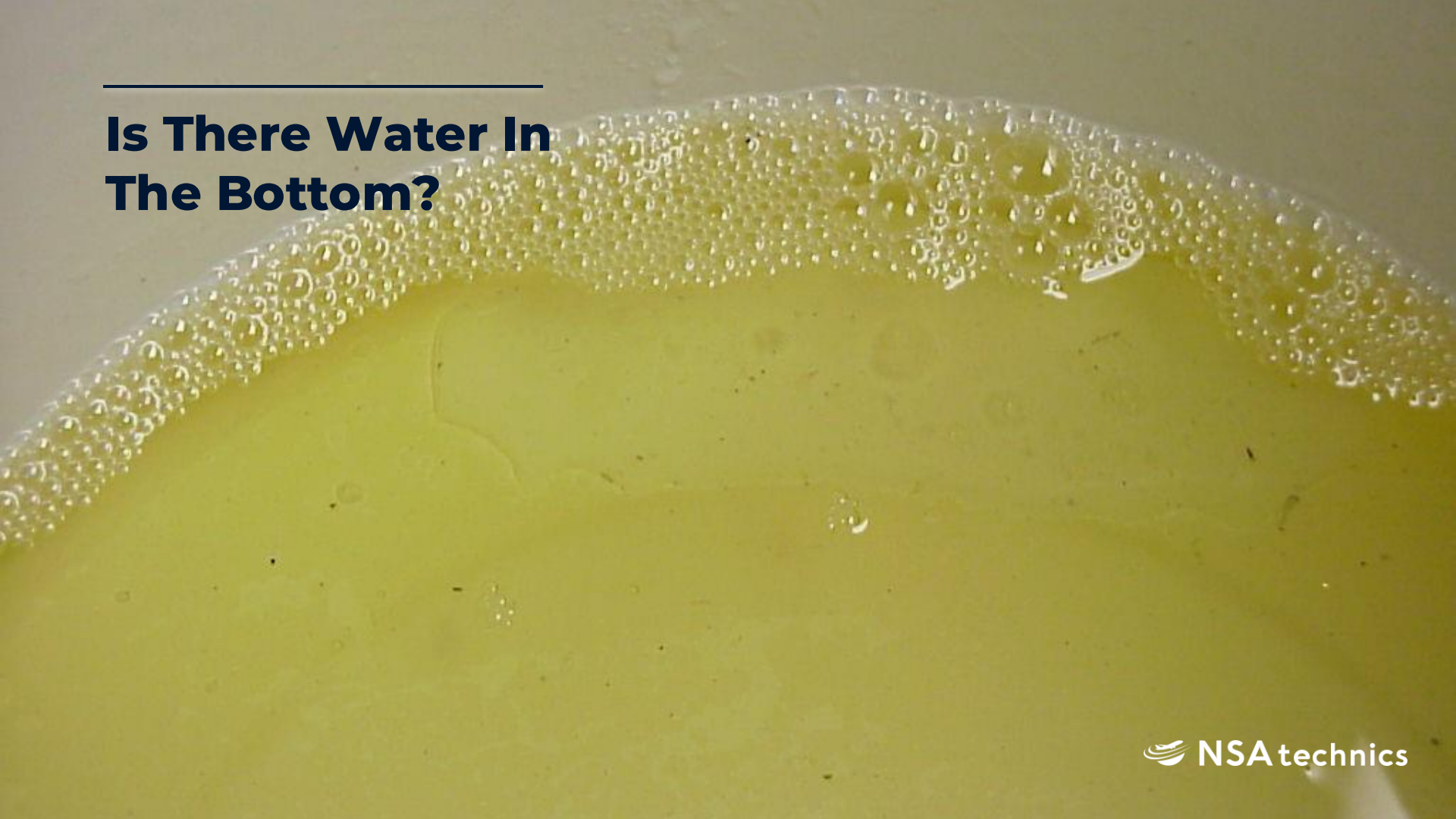
CLOUDY FUEL OBSERVED WHILE PERFORMING A WHITE PORCELAIN BUCKET TEST INDICATES ENTRAINED WATER, SURFACTANT OR BOTH

(The coin in this bucket is not visible due to haze)



NSA technics

Is There Water In The Bottom?



NSA technics


Spill In a Little Coffee
or Food Coloring
And Water is More
Distinct
NSA technics

Free water test

MUST BE CONDUCTED MONTHLY DOWNSTREAM OF ALL FILTER/ SEPARATORS Per ATA-103

Velcon Hydro Kit Aqua-Glo

Shell Water Detection Kit D-2 Inc

NSA technics

Water in Aviation Fuels

DISSOLVED WATER

- Like Humidity in Air
- Cannot be Measured With Field Equipment
- Cannot be Removed by Filtration
- 1 PPM per Degree Fahrenheit

UNDISSOLVED WATER

- Free Water
- Like Fog
- In Tank Bottoms
- Slugs
- Can be Removed By Filtration

NSA technics

Detecting Free Water In Fuel

VISUAL	Haze is Visible at 30 ppm
Velcon Hydrokit	Water Detector 15 or 30 ppm
Shell Water	Detector 15 or 30 ppm
AquaGlo Water Detector	An Instrument For Measuring Water
AFGUARD	Electronic instrument for Measuring Water Measures free water levels both above and below the 30 ppm
Water Finding Paste?	NO! Only For Water Level In A Tank Bottom
Water Probe?	Water Probe? Only for detecting water in sumps

NSA technics

Bad fuel samples

NSA technics

Millipore tests

MUST BE CONDUCTED MONTHLY

NSA technics

MiniMonitor Particulate Detector to ASTM D2276

Bonding And Grounding Hose Assembly

NSA technics

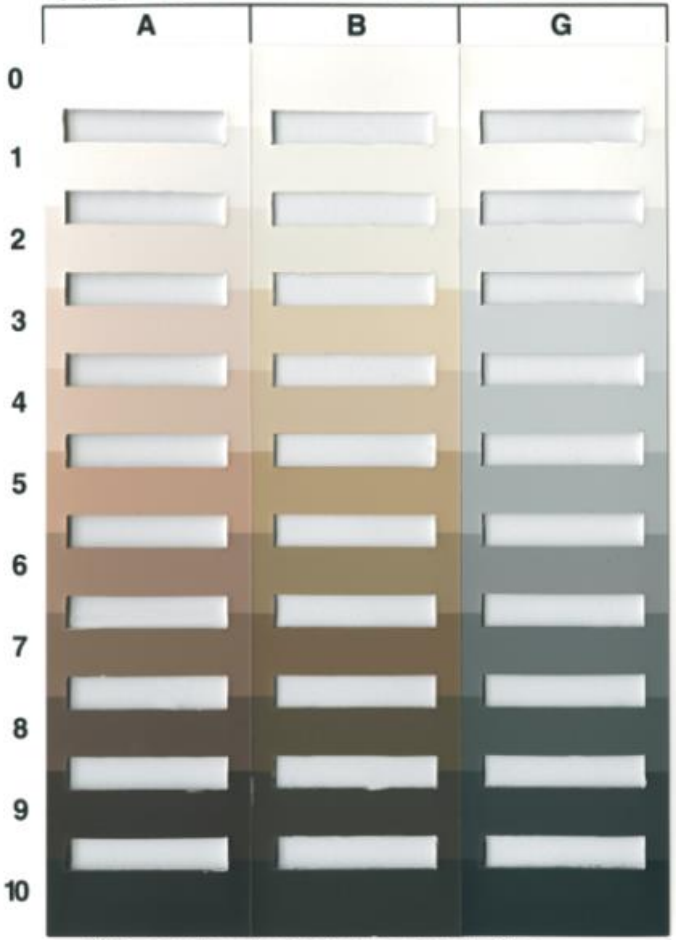
Evaluation Of Membranes

GTP “Rule of Thumb”

- Dry Color Should Be Less Than a “3”. A 2 Is Cause For Concern
- If You See a Membrane Different From Your Usual Scale
- (For Example, You Usually Get an “A-2” and Suddenly Get a G-2) This May Indicate A Serious Contamination Problem
- If You Get a Sudden Dark Membrane, Run a Test Before and After the Filter. Look For a Change.
- You Can Run The Test With Two Membranes. If The Bottom Membrane Has Color, This is “Color Bodies”, Which May Not Be a Problem
- Rust Dust, pollen, microbes, concrete dust. Visible particles cannot go through the filter!
- Particle Counting only detects dirt 4 microns and up. We have a lot of very fine dirt.

NSA technics

PROTECT FROM SOILING & EXPOSURE

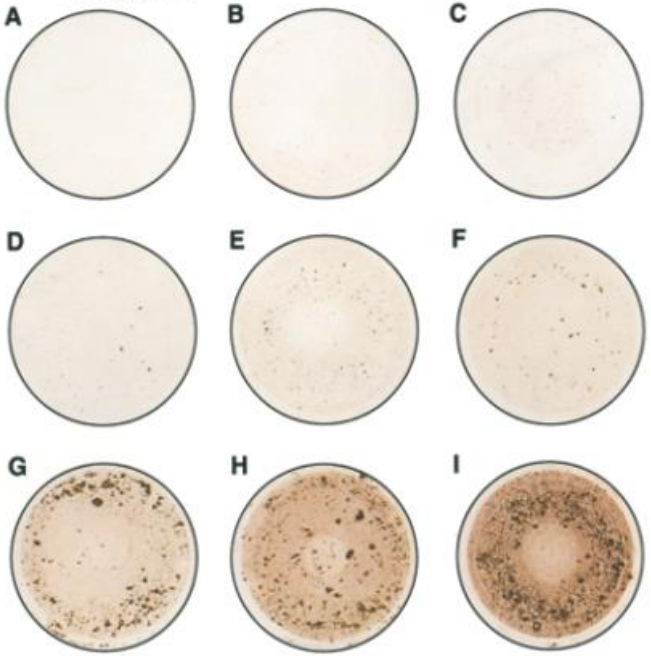


NOTE: The color samples on this chart were produced Nov. 1997 in accordance with Appendix X1 of ASTM Test Method D2276/IP216 by GAMMON TECHNICAL PRODUCTS, INC. Manasquan, New Jersey 08736.

SGTP-3940 COLOR AND PARTICLE ASSESSMENT RATING GUIDE

INSTRUCTIONS

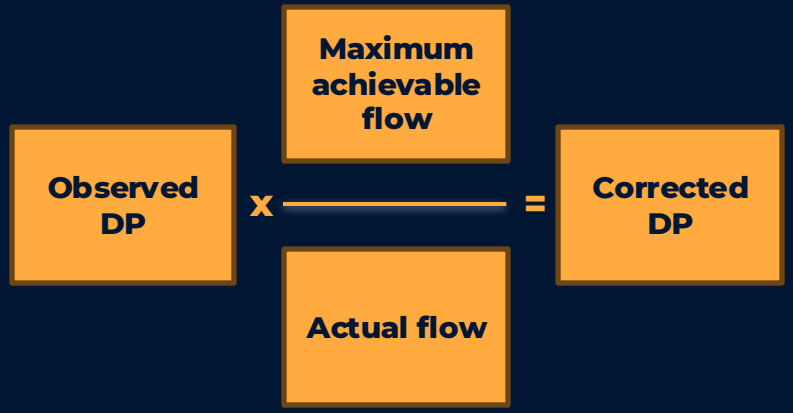
1. Place the membrane to be rated under the window having color that most closely matches the shade and color density.
2. Do not place the membrane on top of the color standard. Use the holes for viewing the membrane to obtain the greatest accuracy in comparing shades.
3. Report the rating as B-2, G-4, A-1, etc. If the color density is between two numbers, such as B-4 and B-5, report the lower number.
4. For particle assessment, ignore the background color and match only the visible particles, comparing size and number. Note the value as A through I.
5. A completely assessed membrane rating should be reported by showing the color assessment value first (scale letter and graduation number), followed by the particle assessment value letter. Example, A3-A, B1-A, G7-H, etc.



NOTE: The particle assessment portion of this page has been printed by permission of Shell Oil Co. which holds the copyright.

Corrected Differential Pressure Must be Conducted Weekly

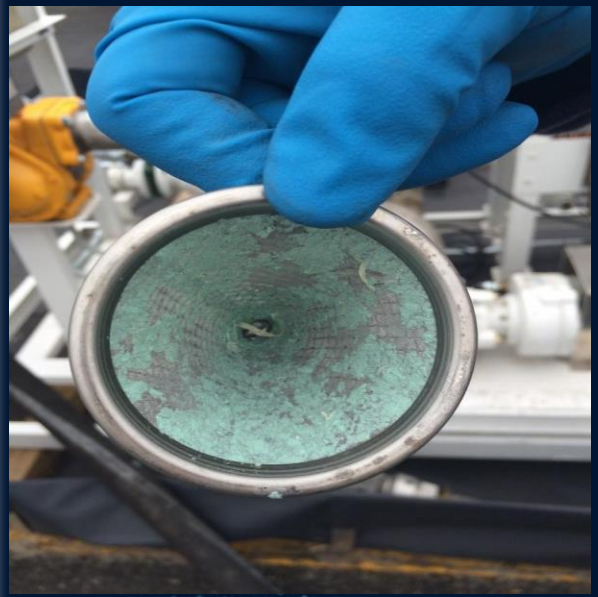
Filter: Fuel Farm #4		
Date	**Flow rate**	**Differential pressure**
1/8/00	600 GPM	6.0 PSI
1/1/00	600 GPM	6.5 PSI
1/15/00	600 GPM	7.0 PSI
1/22/00	300 GPM	5.2 PSI
1/25/00	300 GPM	**8.5 PSI**



8.5 x 600/300 = 17

NSA technics

Nozzle Strainers Checked Monthly



NSA technics

Nozzle Strainers – Critical QC Tool

01

"coffee grounds", metal shavings, nuts, bolts, teflon tape, filter fibers, small fish **– ALL BAD**

02

100 mesh = 135 micron

03

Anything unusual – **WALK THE HOSE!**

04

After defuel - accountability

NSA technics

Differential Pressure Annual Calibration

- The Gammon Gauge
- Have a free Test Procedure and Certificate
- When The Test Valve Is Operated, The Piston Should Move Smoothly To The Bottom Of the Scale.
- If It Moves Smoothly But Slowly, You May Need A New Filter.
- If It Moves In Jumps, Or Does Not Move To The Bottom Of The Scale, Clean The Glass And Piston With Scotch-Brite
- Return The Valve To The Normal Position, Stop Flow. The Piston Should Return To Zero. If Not, Clean The Tube And Piston, If This Does Not Solve The Problem, Replace The Spring
- This Pushbutton Tester Is Simple, Inexpensive And Includes A Pressure Relief Valve
- Switches and controls JIG bulletin 58

GTP-534-PB-PH PEAK-HOLD

NSA technics

Replacement Filters

NSA technics

VESSEL INSPECTION MUST BE CONDUCTED ANNUALY

Ensure structural integrity, coating condition, and separation efficiency of aviation fuel filter/water separators through annual inspections to prevent:

- Fuel contamination
- Water passing
- Equipment failure

NSA technics

VESSEL INSPECTION
EPOXY COATING CONDITION

Visual inspection for:

- Delamination
- Blistering
- Mechanical damage

NSA technics

VESSEL INSPECTION FAULTY AIR ELIMINATOR

Unreleased air creates an explosive fuel-air mixture inside the filter housing. If sparked by static electricity from rapid fuel flow volumetric ignition may occur, may lead to combustion

NSA technics

VESSEL INSPECTION

Tighten Screw Base Adapters to 40 ft. lbs

Use Calibrated torque wrench

NSA technics

Replacement Coalescer Filter Elements P.7-362 P.7-559 P.7-727 P.7-842 P.7-965 P.7-1093 P.7-1422

No reviews yet

Xinxiang Xinzheng Filter Equipment Co., Ltd. · 4 yrs · CN

Key attributes

Other attributes

condition	New
place of origin	Henan, China
brand name	xzfilter

Risks of Fake Filters in Aviation

Non-Original Filter Concerns in Our Operating Region

One of actual Key Quality Control Issue:

In our regional operations, we are observing a growing trend of **attempts to introduce non-original filter elements** into airport fuel facilities. This create a significant risk to fuel quality and aviation safety.

1. **Fuel Contamination Risk:**
   Substandard materials may dissolve into fuel.
2. **No Certification**
3. **Only several of test rigs worldwide can validate filters to EI standards.** Genuine filters undergo rigorous, EI-witnessed testing on specialized rigs — a step Fake Filters skip.

NSA technics

Faudi P. 7-1422 Coalescer Element Filter for Aviation Fuel

Product Details

Customization:	Available
Material:	Glass Fiber
Application:	Industry, Food and Beverage

Contact Supplier | Chat

Still deciding? Get samples of US$ 115.5/Piece ! Request Sample

Xinxiang Lifeierte Filter Corp. Ltd. >

Rating 5.0 >

TradeMessenger

Basic Info.

Model NO.	P.7-1422	Type	Coalescer Filter
Filter Connector	Flat Connector	Filtration Grade	Medium Filter
Activated Carbon Filter Type	Coalescer Filter	Function	Coalescer Filter Cartridges
Model	P.7-1422	Certification	ISO9001
Warranty	1 Year	Dimension	Stardard
Place of Origin	China	OEM	Yes
Transport Package	Carton	Specification	P.7-1422
Trademark	Faudi	Origin	Xinxiang, China
HS Code	8421999090	Production Capacity	10000 Pieces a Month

Risks of Fake Filters in Aviation

4. **Mechanical Failures**: Poor manufacturing alters filter performance, risking:

Particles getting into fuel.

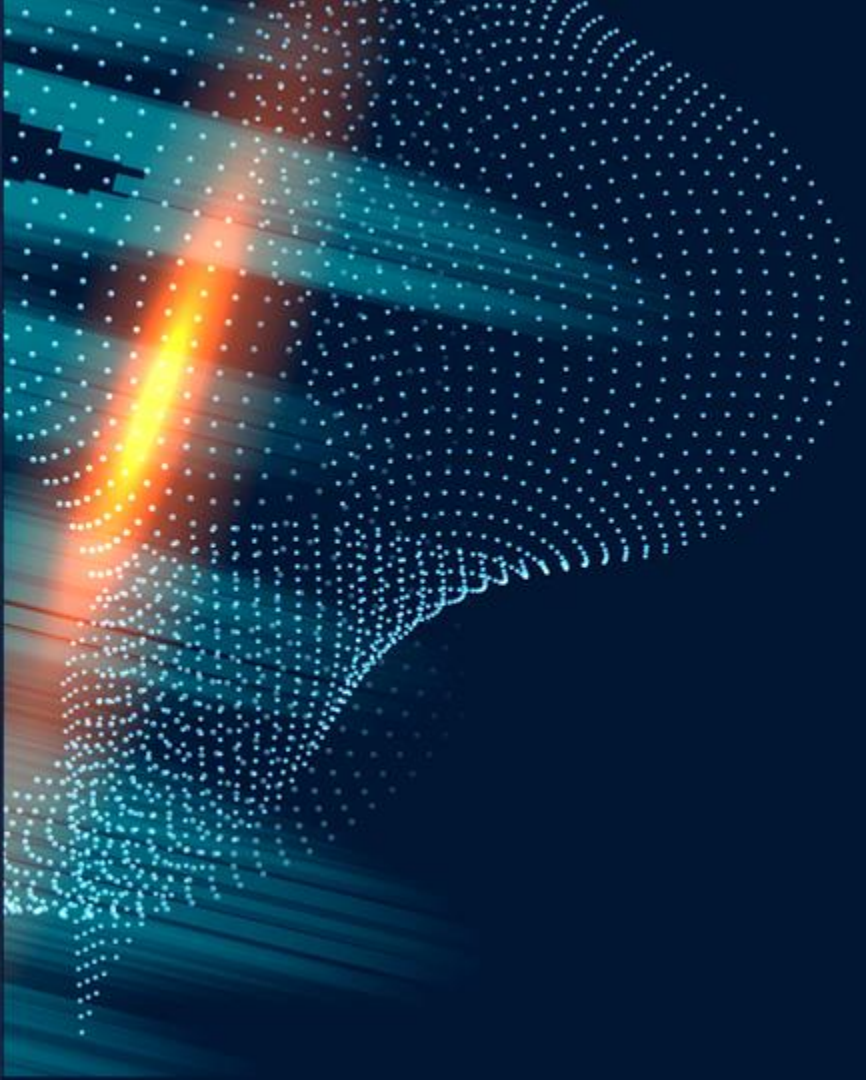
5. **Operational and Safety Consequences**

Storage Issues.

6. **Microbs Growth.**

QC an Indispensable Policy That Must Permeate Your Whole Company From The Top to the Bottom Covering Personnel, Environmental and Flight Safety!

NSA technics



NSA technics

THE END

THANK YOU!