Section 3:

# APPENDIX

# Replacement Element

**Used in FS Series, MFS & MFD Series, AKS & AKD Series, KLS & KLD Series and X-Skid - Standard Capacity Series**

## Pressure Elements

### 9" Elements

| Model Code | P/N | Description |
|---|---|---|
| KW | 7630767 | Water Removal Element |
| KWV | 7628759 | Water Removal Element (viton) |
| KZ1 | 7630768 | 1 Micron Element |
| KZ1V | 7615685 | 1 Micron Element (viton) |
| KZ3 | 7628664 | 3 Micron Element |
| KZ3V | 7615706 | 3 Micron Element (viton) |
| KZ5 | 7628345 | 5 Micron Element |
| KZ5V | 7628665 | 5 Micron Element (viton) |
| KZ10 | 7627464 | 10 Micron Element |
| KZ10V | 7628662 | 10 Micron Element (viton) |
| KZ25 | 7628663 | 25 Micron Element |
| KZ25V | 7615694 | 25 Micron Element (viton) |

### 18" Elements

| Model Code | P/N | Description |
|---|---|---|
| KKW | 7628654 | Water Removal Element |
| KKWV | 7615323 | Water Removal Element (viton) |
| KKZ1 | 7615325 | 1 Micron Element |
| KKZ1V | 7615337 | 1 Micron Element (viton) |
| KKZ3 | 7628657 | 3 Micron Element |
| KKZ3V | 7628760 | 3 Micron Element (viton) |
| KKZ5 | 7628658 | 5 Micron Element |
| KKZ5V | 7615359 | 5 Micron Element (viton) |
| KKZ10 | 7628655 | 10 Micron Element |
| KKZ10V | 7628656 | 10 Micron Element (viton) |
| KKZ25 | 7615339 | 25 Micron Element |
| KKZ25V | 7615346 | 25 Micron Element (viton) |

### 27" Elements

| Model Code | P/N | Description |
|---|---|---|
| 27KW | 7629168 | Water Removal Element |
| 27KWV | 7603050 | Water Removal Element (viton) |
| 27KZ1 | 7628576 | 1 Micron Element |
| 27KZ1V | 7603061 | 1 Micron Element (viton) |
| 27KZ3 | 7628577 | 3 Micron Element |
| 27KZ3V | 7629172 | 3 Micron Element (viton) |
| 27KZ5 | 7628578 | 5 Micron Element |
| 27KZ5V | 7603077 | 5 Micron Element (viton) |
| 27KZ10 | 7628575 | 10 Micron Element |
| 27KZ10V | 7603056 | 10 Micron Element (viton) |
| 27KZ25 | 7629170 | 25 Micron Element |
| 27KZ25V | 7603065 | 25 Micron Element (viton) |

**Used in MFD-BC Filter Cart and HFS-BC**

### 9" Elements

| Model Code | P/N | Description |
|---|---|---|
| 9GW | 7604551 | Water Removal Element |
| 9GZ3 | 7604564 | 3 Micron Element |
| 9GZ5 | 7604569 | 5 Micron Element |
| 9GZ10 | 7604553 | 10 Micron Element |
| 9GZ25 | 7604559 | 25 Micron Element |

**Used in X-Skid - High Capacity Replacement Elements**

### 16" Elements

| Model Code | P/N | Description |
|---|---|---|
| 16QPML-Z1B | Contact Factory | 1 Micron Element |
| 16QPML-Z1V | 7602695 | 1 Micron Element (viton) |
| 16QPML-Z3B | Contact Factory | 3 Micron Element |
| 16QPML-Z3V | 7602698 | 3 Micron Element (viton) |
| 16QPML-Z5B | Contact Factory | 5 Micron Element |
| 16QPML-Z5V | 7602700 | 5 Micron Element (viton) |
| 16QPML-Z10B | Contact Factory | 10 Micron Element |
| 16QPML-Z10V | 7602692 | 10 Micron Element (viton) |
| 16QPML-Z25B | Contact Factory | 25 Micron Element |
| 16QPML-Z25V | 7602697 | 25 Micron Element (viton) |

### 39" Elements

| Model Code | P/N | Description |
|---|---|---|
| 39QPML-Z1B | 7603313 | 1 Micron Element |
| 39QPML-Z1V | 7603314 | 1 Micron Element (viton) |
| 39QPML-Z3B | Contact Factory | 3 Micron Element |
| 39QPML-Z3V | 7603320 | 3 Micron Element (viton) |
| 39QPML-Z5B | Contact Factory | 5 Micron Element |
| 39QPML-Z5V | 7603323 | 5 Micron Element (viton) |
| 39QPML-Z10B | 7632409 | 10 Micron Element |
| 39QPML-Z10V | 7603309 | 10 Micron Element (viton) |
| 39QPML-Z25B | Contact Factory | 25 Micron Element |
| 39QPML-Z25V | 7603318 | 25 Micron Element (viton) |

## Pressure Elements

### Used in X-Skid - Coreless Replacement Elements

**16" Elements**

| Model Code | P/N | Description |
|---|---|---|
| 16QCLQFZ1 | Contact Factory | 1 Micron Element |
| 16QCLQFZ1V | Contact Factory | 1 Micron Element (viton) |
| 16QCLQFZ3 | Contact Factory | 3 Micron Element |
| 16QCLQFZ3V | 7628349 | 3 Micron Element (viton) |
| 16QCLQFZ5 | Contact Factory | 5 Micron Element |
| 16QCLQFZ5V | Contact Factory | 5 Micron Element (viton) |
| 16QCLQFZ10 | Contact Factory | 10 Micron Element |
| 16QCLQFZ10V | 7628348 | 10 Micron Element (viton) |
| 16QCLQFZ25 | Contact Factory | 25 Micron Element |
| 16QCLQFZ25V | 7628475 | 25 Micron Element (viton) |

**39" Elements**

| Model Code | P/N | Description |
|---|---|---|
| 39QCLQFZ1 | Contact Factory | 1 Micron Element |
| 39QCLQFZ1V | 7628372 | 1 Micron Element (viton) |
| 39QCLQFZ3 | Contact Factory | 3 Micron Element |
| 39QCLQFZ3V | 7628374 | 3 Micron Element (viton) |
| 39QCLQFZ5 | Contact Factory | 5 Micron Element |
| 39QCLQFZ5V | 7628375 | 5 Micron Element (viton) |
| 39QCLQFZ10 | Contact Factory | 10 Micron Element |
| 39QCLQFZ10V | 7628732 | 10 Micron Element (viton) |
| 39QCLQFZ25 | Contact Factory | 25 Micron Element |
| 39QCLQFZ25V | 7628373 | 25 Micron Element (viton) |

### Dimicron® Elements - Used in MTS Series and SVD Series

| Model Code | P/N | Description |
|---|---|---|
| MTE02 | Contact Factory | 2 Micron Element |
| MTE05 | Contact Factory | 5 Micron Element |
| MTE10 | Contact Factory | 10 Micron Element |
| MTE20 | 7617620 | 20 Micron Element |
| MTE30 | 7617621 | 30 Micron Element |

*Note - Be sure to order the correct number of elements: MTS1 = 1, MTS2 = 2, MTS3 = 3, MTS4 = 4..

### Handy Filter Systems Replacement Elements

| Model Code | P/N | Description |
|---|---|---|
| M3 | 7616070 | 3 Micron Element |
| M10 | 7631073 | 10 Micron Element |
| MZ3 | 7627545 | 3 Micron Element |
| MZ10 | 7628733 | 10 Micron Element |

### AMFS Unit (and all carts/skids using 18"/27" GeoSeal®) Replacement Elements

| Model Code | P/N | Description |
|---|---|---|
| KKWV | 7615323 | Water Removal Element (viton) |
| KKGZ3V | 7615301 | 3 Micron Element (viton) |
| KKGZ5V | 7615304 | 5 Micron Element (viton) |
| KKGZ10V | 7630721 | 10 Micron Element (viton) |
| 27KWV | 7603050 | Water Removal Element (viton) |
| 27KGZ3V | Contact Factory | 3 Micron Element (viton) |
| 27KGZ5V | 7603035 | 5 Micron Element (viton) |
| 27KGZ10V | 7603028 | 10 Micron Element (viton) |

### Dimicron Elements - Used in KLC and OxiStop

| Model Code | P/N | Description |
|---|---|---|
| KLE02 | 7632742 | 2 Micron Element |
| KLE05 | Contact Factory | 5 Micron Element |
| KLE10 | 7632741 | 10 Micron Element |
| KLE20 | 7632739 | 20 Micron Element |
| KLEA02 | 7632743 | 2 Micron Element w/Water Removal |
| KLEA20 | 7632740 | 20 Micron Element w/Water Removal |

### Ion eXchange Unit Replacement Elements

| Model Code | P/N | Description |
|---|---|---|
| IXE36-5.5 | 3348961 | Standard Ion Exchange Resin Element |
| KKZ5V | 7615359 | 5 Micron Pre/ Post Element |
| KKZ10V | 7628656 | 10 Micron Pre/ Post Element |

## Pressure Elements

### Triton-A Unit Replacement Elements

| Model Code | P/N | Description |
|---|---|---|
| 9VZ1V | 7604651 | 1 Micron Element |
| 9VZ3V | 7604664 | 3 Micron Element |
| 9VZ5V | 7604673 | 5 Micron Element |
| 9VZ10V | 7628743 | 10 Micron Element |
| 9VZ25V | 7604656 | 25 Micron Element |
| PAB3P3N.75AS | 7633710 | Breather (cart version) |
| ABF-S40 | 7627888 | Breather (shroud version) |

### Triton-E Unit Replacement Elements

| Model Code | P/N | Description |
|---|---|---|
| KKGZ1V | 7604651 | 1 Micron Element |
| KKGZ3V | 7604664 | 3 Micron Element |
| KKGZ5V | 7604673 | 5 Micron Element |
| KKGZ10V | 7628743 | 10 Micron Element |
| KKGZ25V | 7604656 | 25 Micron Element |
| MBF-3-M-P20 | 7627888 | Air Breather Element |

### LSN, LSA, LSW Unit Replacement

| Replacement Element Part Numbers | | | | |
|---|---|---|---|---|
| Size | 3µ | 5µ | 10µ | 20µ |
| RLD250 | 1307539 | 2201054 | 1305954 | Contact Factory |
| RLD400 | 1313317 | 2201055 | 1304608 | Contact Factory |
| LPF160 | 7620903 | 7620906 | 7620895 | Contact Factory |
| LPF240 | 7620931 | 7631656 | 7620924 | Contact Factory |
| LF660 | 7621004 | 7621008 | 7620996 | Contact Factory |

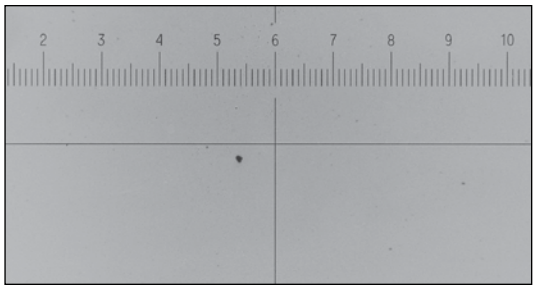
## Comparison Photographs for Fluid Contamination Class

***Magnification x 100***
***1 scale mark = 10 µm***

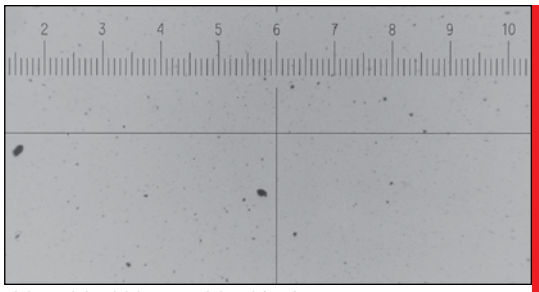
Photos are representative of:

a) 100 ml sample pulled through 0.8 µm 47mm patch or

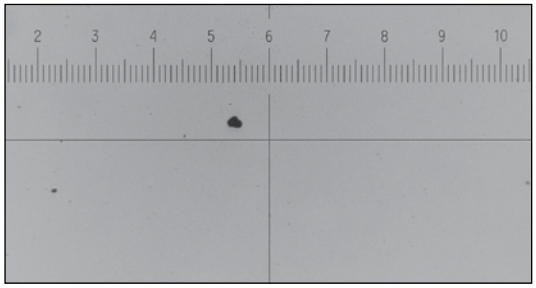
b) 28 ml sample pulled through 0.8 µm 25 mm patch



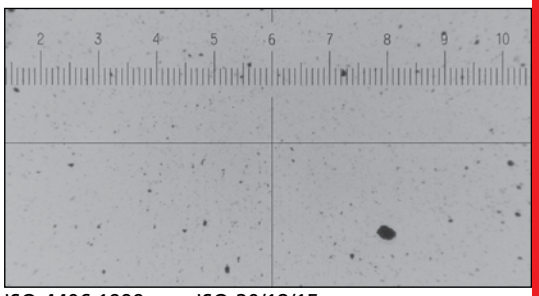
ISO 4406:1999 ISO 14/12/9
NAS 1638 Class 3
SAE AS 4059(D) Class 4



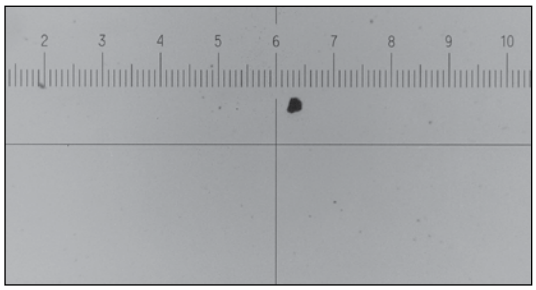
ISO 4406:1999 ISO 19/17/14
NAS 1638 Class 8
SAE AS 4059(D) Class 9



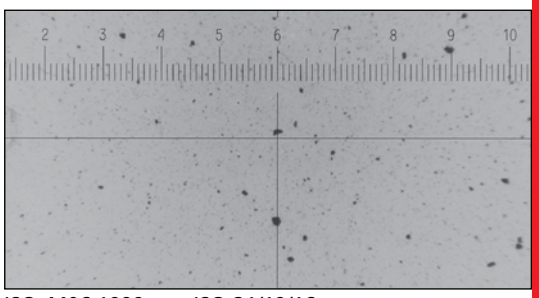
ISO 4406:1999 ISO 15/13/10
NAS 1638 Class 4
SAE AS 4059(D) Class 5



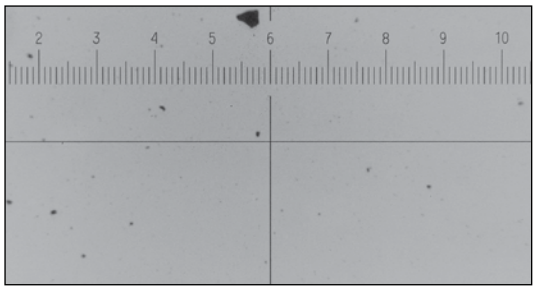
ISO 4406:1999 ISO 20/18/15
NAS 1638 Class 9
SAE AS 4059(D) Class 10



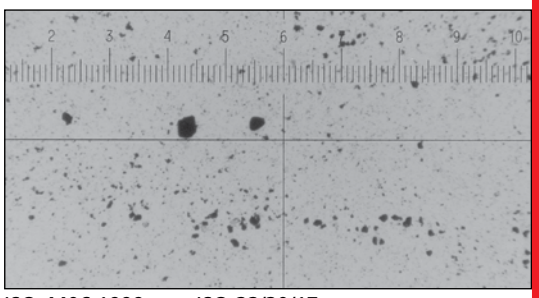
ISO 4406:1999 ISO 16/14/11
NAS 1638 Class 5
SAE AS 4059(D) Class 6



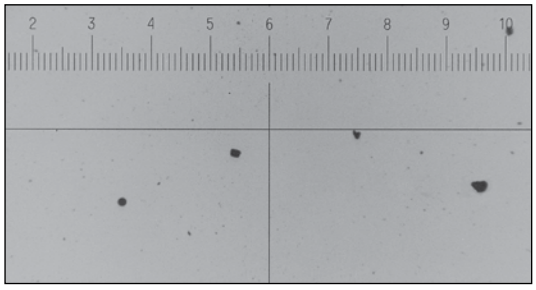
ISO 4406:1999 ISO 21/19/16
NAS 1638 Class 10
SAE AS 4059(D) Class 11



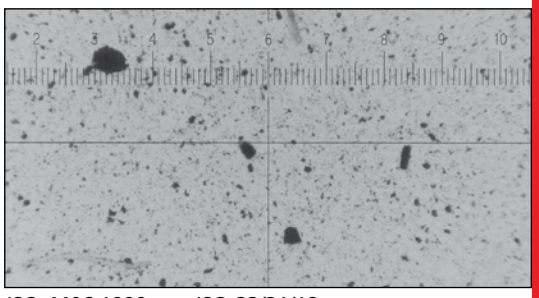
ISO 4406:1999 ISO 17/15/12
NAS 1638 Class 6
SAE AS 4059(D) Class 7



ISO 4406:1999 ISO 22/20/17
NAS 1638 Class 11
SAE AS 4059(D) Class 12



ISO 4406:1999 ISO 18/16/13
NAS 1638 Class 7
SAE AS 4059(D) Class 8



ISO 4406:1999 ISO 23/21/18
NAS 1638 Class 12
SAE AS 4059(D) Class 13

# Contamination Types

## Contamination Types

***All photos x 48 magnification***

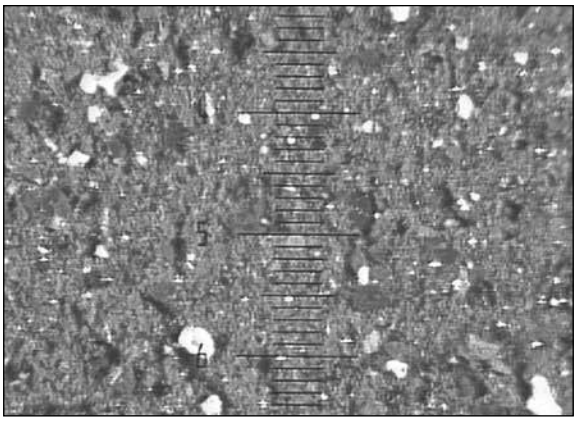
*1 scale mark = 45 µm*

**Particle Type:**

Mainly rust; white particles; additives

**Effect:**

- Rapid oil aging
- Breakdowns in pumps, valves
- Wear and tear

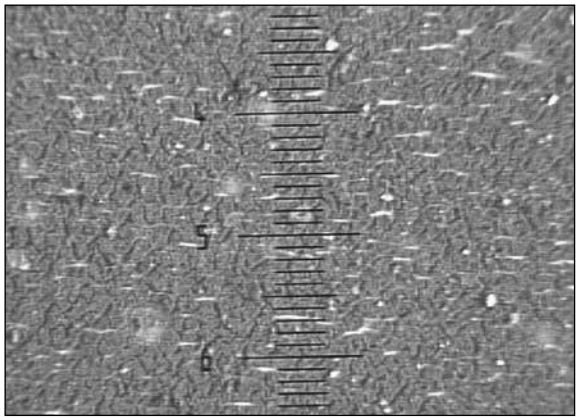


**Particle Type:**

Oil aging products

**Effect:**

- Blocking of filters
- Silting-up system

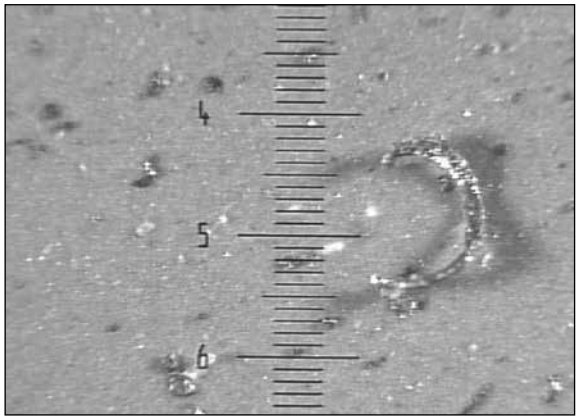


**Particle Type:**

Metal

**Effect:**

- Breakdowns in pumps, valves
- Wearing of seals
- Leakage
- Oil aging

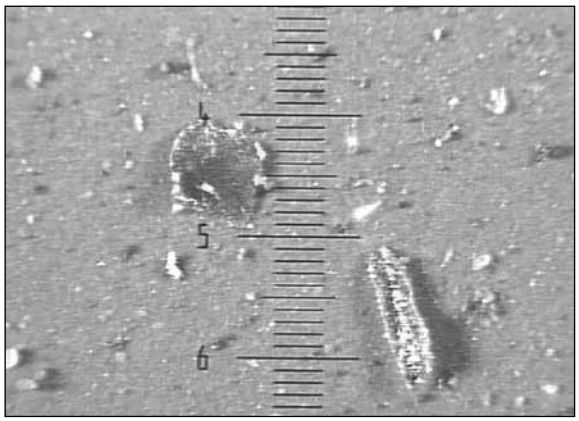


**Particle Type:**

Particles in bronze, brass and copper

**Effect:**

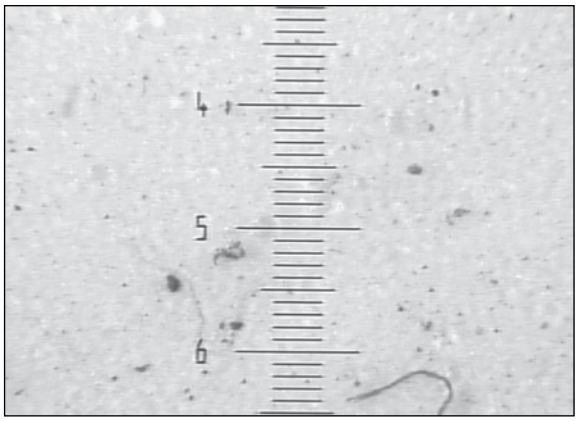
- Breakdowns in pumps, valves
- Oil aging
- Leakage
- Wearing of seals



## Contamination Types

***All photos x 48 magnification***

*1 scale mark = 45 µm*

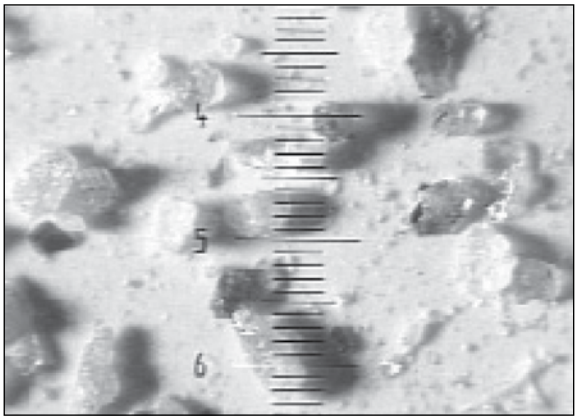



**Particle Type:**

Gel-type residue from filter element

**Effect:**

- Blocking of filter
- Silting-up

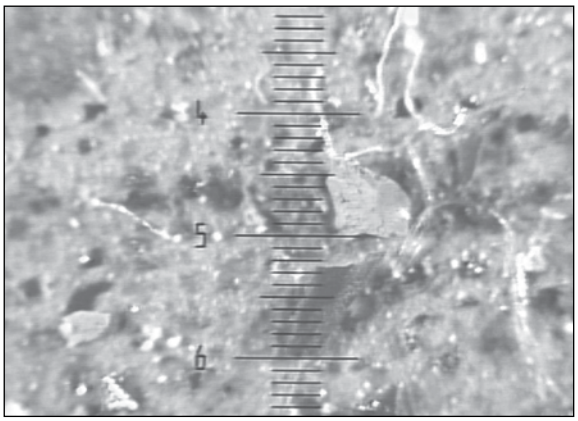



**Particle Type:**

Silicates due to lack of, or inadequate, air breather filter

**Effect:**

- Heavy wear on components
- Breakdowns in pumps, valves
- Wearing of seals

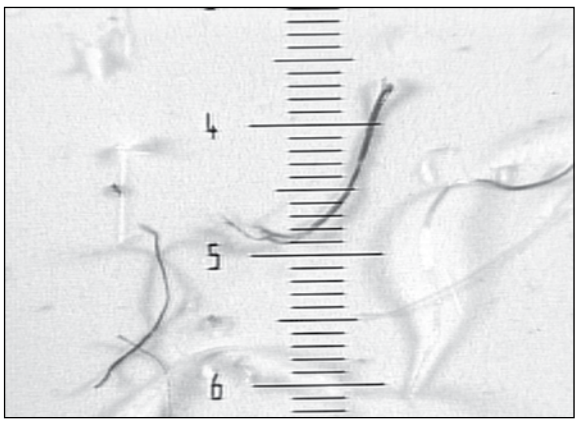



**Particle Type:**

Colored particles (red/brown)
Synthetic particles (blue)

**Effect:**

- Breakdowns in pumps, valves
- Wearing of seals




**Particle Type:**

Fibers due to initial contamination, open tank, cleaning cloths, etc.

**Effect:**

- Blocking of nozzles
- Leaking from seat valves

# Contamination Classification

## Contamination Classification According to NAS 1638-01/1964

Extended to particle range 2 - 5 µm

| NAS-Class | Number of Particles/100 ml | | | | | | Amount of Contamination (ACFTD) [mg/l] |
|---|---|---|---|---|---|---|---|
| | 2 - 5 µm | 5 - 15 µm | 15 - 25 µm | 25 -50 µm | 50 - 100 µm | > 100 µm | |
| 00 | 625 | 125 | 22 | 4 | 1 | 0 | — |
| 0 | 1,250 | 250 | 44 | 8 | 2 | 0 | 0.01 |
| 1 | 2,500 | 500 | 88 | 16 | 3 | 1 | — |
| 2 | 5,000 | 1,000 | 178 | 32 | 6 | 1 | — |
| 3 | 10,000 | 2,000 | 356 | 63 | 11 | 2 | — |
| 4 | 20,000 | 4,000 | 712 | 126 | 22 | 4 | 0.1 |
| 5 | 40,000 | 8,000 | 1,425 | 253 | 45 | 8 | — |
| 6 | 80,000 | 16,000 | 2,850 | 506 | 90 | 16 | 0.2 |
| 7 | 160,000 | 32,000 | 5,700 | 1,012 | 180 | 32 | 0.5 |
| 8 | 320,000 | 64,000 | 11,400 | 2,025 | 360 | 64 | 1 |
| 9 | 640,000 | 128,000 | 22,800 | 4,050 | 720 | 128 | 3 |
| 10 | 1,280,000 | 256,000 | 45,600 | 8,100 | 1,440 | 256 | 5 |
| 11 | 2,560,000 | 512,000 | 91,200 | 16,200 | 2,880 | 512 | 7 - 10 |
| 12 | 5,120,000 | 1,024,000 | 182,400 | 32,400 | 5,760 | 1,024 | 20 |
| 13 | — | 2,048,000 | 364,800 | 64,800 | 11,520 | 2,048 | 40 |
| 14 | — | 4,096,000 | 729,000 | 129,600 | 23,040 | 4,096 | 80 |

## Contamination Classification According to SAE AS 4059(D)

| | ISO 4402 Calibration | >1 µm | >5 µm | >15 µm | >25 µm | >50 µm | >100 µm |
|---|---|---|---|---|---|---|---|
| | ISO 11171 Calibration | >4 µm(c) | >6 µm(c) | >14 µm(c) | >21 µm(c) | >38 µm(c) | >70 µm(c) |
| Contamination Classes | SAE Code | A | B | C | D | E | F |
| | 000 | 195 | 76 | 14 | 3 | 1 | 0 |
| | 00 | 390 | 152 | 27 | 5 | 1 | 0 |
| | 0 | 780 | 304 | 54 | 10 | 2 | 0 |
| | 1 | 1,560 | 609 | 109 | 20 | 4 | 1 |
| | 2 | 3,120 | 1,220 | 217 | 39 | 7 | 1 |
| | 3 | 6,250 | 2,430 | 432 | 76 | 13 | 2 |
| | 4 | 12,500 | 4,860 | 864 | 152 | 26 | 4 |
| | 5 | 25,000 | 9,730 | 1,730 | 306 | 53 | 8 |
| | 6 | 50,000 | 19,500 | 3,460 | 612 | 106 | 16 |
| | 7 | 100,000 | 38,900 | 6,920 | 1,220 | 212 | 32 |
| | 8 | 200,000 | 77,900 | 13,900 | 2,450 | 424 | 64 |
| | 9 | 400,000 | 156,000 | 27,700 | 4,900 | 848 | 128 |
| | 10 | 800,000 | 311,000 | 55,400 | 9,800 | 1,700 | 256 |
| | 11 | 1,600,000 | 623,000 | 111,000 | 19,600 | 3,390 | 512 |
| | 12 | 3,200,000 | 1,250,000 | 222,000 | 39,200 | 6,780 | 1,020 |

# Contamination Classification

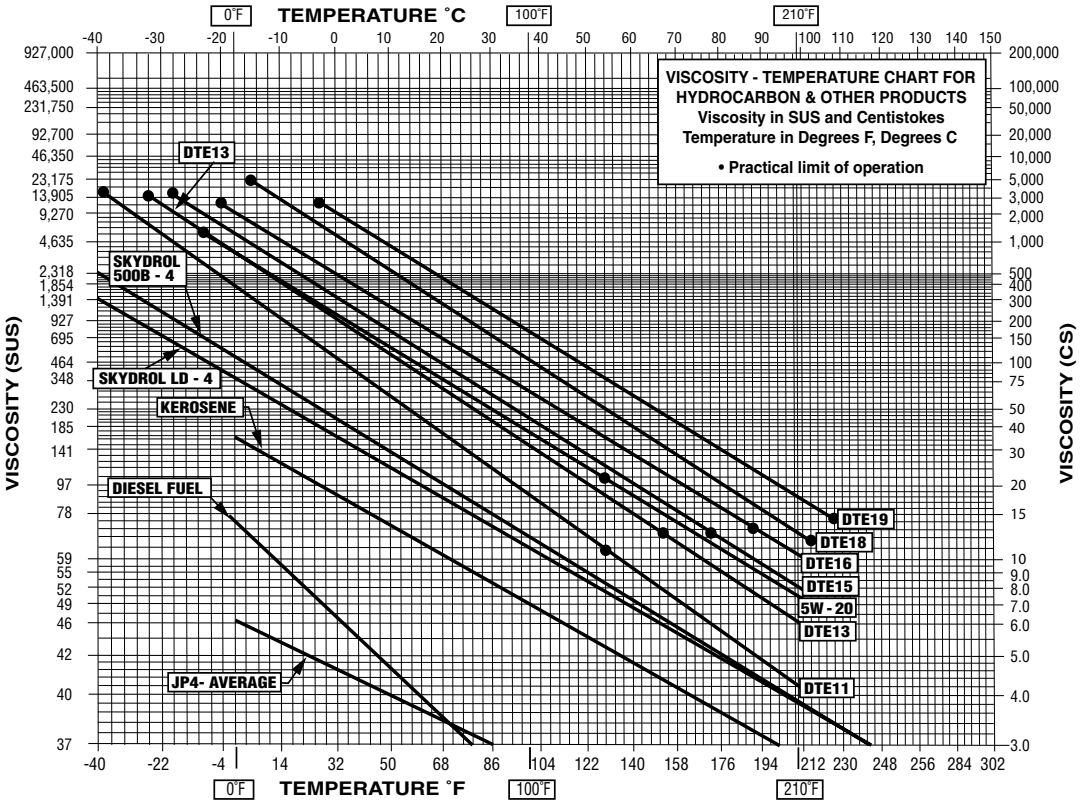
## Contamination Classification in Accordance with ISO 4406:1999

| ISO-Class | Number of Particles/ 1 ml more than | Number of Particles/ 1 ml up to and up including | ISO-Class | Number of Particles/ 1 ml more than | Number of Particles/ 1 ml up to and up including |
|---|---|---|---|---|---|
| 0 | 0.00 | 0.01 | 15 | 160 | 320 |
| 1 | 0.01 | 0.02 | 16 | 320 | 640 |
| 2 | 0.02 | 0.04 | 17 | 640 | 1,300 |
| 3 | 0.04 | 0.08 | 18 | 1,300 | 2,500 |
| 4 | 0.08 | 0.16 | 19 | 2,500 | 5,000 |
| 5 | 0.16 | 0.32 | 20 | 5,000 | 10,000 |
| 6 | 0.32 | 0.64 | 21 | 10,000 | 20,000 |
| 7 | 0.64 | 1.3 | 22 | 20,000 | 40,000 |
| 8 | 1.30 | 2.5 | 23 | 40,000 | 80,000 |
| 9 | 2.50 | 5 | 24 | 80,000 | 160,000 |
| 10 | 5 | 10 | 25 | 160,000 | 320,000 |
| 11 | 10 | 20 | 26 | 320,000 | 640,000 |
| 12 | 20 | 40 | 27 | 640,000 | 1,300,000 |
| 13 | 40 | 80 | 28 | 1,300,000 | 2,500,000 |
| 14 | 80 | 160 | | | |

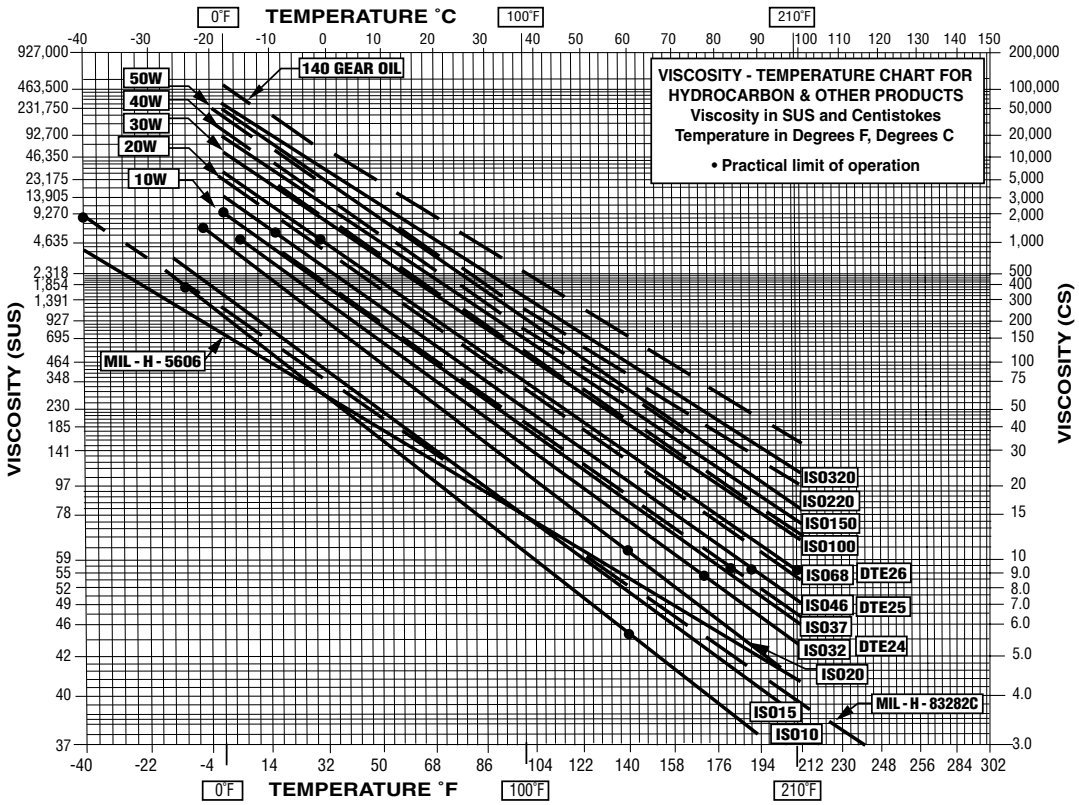
- Current ISO codes are made up of 3 numbers representing the number of particles ≥4 µ(c), ≥6 µ(c) and ≥14 µ(c). *The particle count is expressed as the number of particles per ml.*
- Reproducibility below scale number 8 is affected by the actual number of particles counted in the fluid sample. Raw counts should be more than 20 particles. If this is not possible, then refer to bullet below.
- When the raw data in one of the size ranges results in a particle count of fewer than 20 particles, the scale number for that size range shall be labeled with the symbol ≥.

EXAMPLE: A code of 14/12/≥7 signifies that there are more than 80 and up to and including 160 particles equal to or larger than 4 µ(c) per ml and more than 20 and up to and including 40 particles equal to or larger than 6 µ(c) per ml. The third part of the code, ≥7 indicates that there are more than 0.64 and up to and including 1.3 particles equal to or larger than 14 µ(c) per ml. The ≥ symbol indicates that less than 20 particles were counted, which lowers statistical confidence. Because of this lower confidence, the 14 µ(c) part of the code could actually be higher than 7, thus the presence of the ≥ symbol.

# Viscosity Chart



# Viscosity Chart



# FluidMonitoring Software FluMoS

## FluidMonitoring Software FluMoS light

FluMoS Light fluid monitoring software is a software package for importing, displaying and processing data from Schroeder Industries fluid sensors. 3 sensors can be connected at the same time!

FluMoS Light can be used in conjunction with the latest generation of HSI interface sensors (TCM, TMU, TMS, TWS-C) and the sensors without HSI interface (TIM, TPM).

The FluMoS Light software is used to:

- Online display of measured values on the PC in table and graphic formats
- Storage of log files on hard disk
- Display of log files from hard disk/diskette and storage as graphic file
- Processing of stored log files with Microsoft Excel

**Applications:**

- Remote monitoring of values measured by sensors
- Condition-based maintenance planning

## FluidMonitoring Software FluMoS mobile

Schroeder FluMoS Mobile for Android – Your Access to Schroeder's FluidControl Units

Get your fluid condition monitoring measurement data on your Android device!

FluMoS Mobile is a tool for displaying and downloading measurement data from the FluidControl Unit FCU 1315 and TMU via *Bluetooth*® wireless technology connection as well as the SensorMonitoring Unit SMU 1200 to your Android device. When the TCM, TWS-C, TMS and other smart sensors are used in conjunction with the CSI-C-11, the FluMos Mobile App can be accessed via WiFi connection to display and download measured data.

FluMoS Mobile Features (Version 1.10)

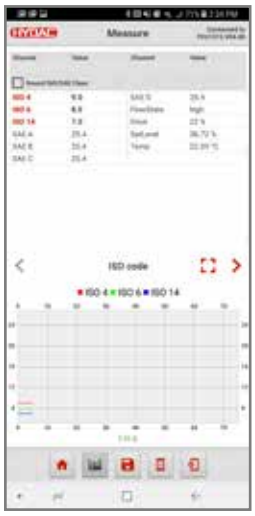
- Displays current measurement values (solid particle contamination, water saturation and temperature) of your FluidControl Unit FCU1315 and TMU in table format.
- Displays measurement value progress (solid particle contamination, water saturation and temperature) of your FluidControl Unit FCU1315 and TMU in graphic format (one graphic per measurement channel)
- Selective download of log files in .dat format from the internal memory of the FCU1315 and TMU or SMU 1200 to your Android device
- Online storage of measurement data on your Android device

[possible with successor version]

You can easily forward the .dat files per e-mail to other devices such as a PC.

The files can then be processed in FluMoS.

## FluidMonitoring Software FluMoS mobile - Screenshot


# Notes Section:

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