TRident ENgineering

LABORATORY EVALUATION

METHOD 1 Analysis of the Contamination classes according to ISO 4406:99 in 1 ml by paricle counter.

Code Number	6	7	8	9	10	11	12	13	14	15	16
Qty. of Particles	0.3	0.6	1.3	2.5	5	10	20	40	80	160	320
Up to Inclusive	0.6	1.3	2.5	5	10	20	40	80	160	320	640
Code Number	17	18	19	20	21	22	23	24	25	26	
Qty. of Particles	640	1300	2500	5000	10000	20000	40000	80000	160000	320000	
Up to Inclusive	1300	2500	5000	10000	20000	40000	60000	160000	320000	640000	

Contaminants specification per 1 ml of oil by particle counter For the determination of the ISO-code (contamination classes) the quantity of the particles in the size 4≥µm , 6≥µm , 14≥ µm according ISO 4406 are used. The code is independent of the particle size Example for presentation :

Code No. 20/16/12

Particles 4≥ µm | Particles 14≥ µm

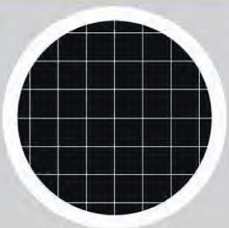
Particles 6≥ µm

METHOD 2 Analysis of the Contamination classes according to NAS [National Aerospace Standard] 1638 CONTAMINANTS SPECIFICATIONS (per 100ml) by particle counter

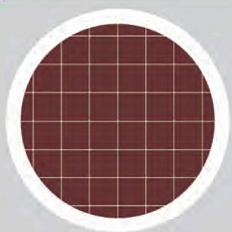
Grade		00	0	1	2	3	4	5	6	7	8	9	10	11	12
Number & Sizes Of Contaminants	5 ~ 15 µm	125	250	500	1,000	2,000	4,000	8,000	16,000	32,000	64,000	128,000	256,000	512,000	1,024,000
	15 ~ 25 µm	22	44	89	178	356	712	1,425	2,850	5,700	11,400	22,800	45,600	91,200	182,400
	25 ~ 50 µm	4	8	16	32	63	126	253	506	1,012	2,025	4,050	8,100	16,200	32,400
	50 ~ 100 µm	1	2	3	6	11	22	45	90	180	360	720	1,440	2,880	5,760
	Upper 100 µm	0	0	1	1	2	4	8	16	32	64	128	256	512	1,024

Not existing — For Missile — For NC M/C — New Oil

METHOD 3 : Oil Testing by contamination checking Kit (CCK) by weighing method on 0.8 micron membrane.

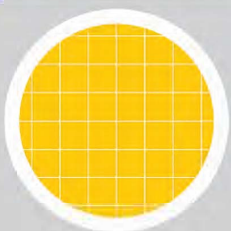


An example of very high contamination level which can critically damage hydraulic equipment (10 mg / 100 ml) **Above NAS 12**

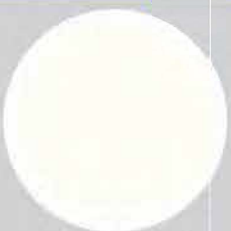


An example of contamination level which requires immediate cleaning (4 mg / 100 ml) **Above NAS 12**

An example of contamination level to which the oil can be cleaned to (1 mg / 100 ml) **NAS 7-8-9**



An example of contamination level which requires cleaning (2 mg / 100 ml) **NAS 10-11-12**



An example of contamination level which the oil can be cleaned to (0.5 mg / 100 ml) **NAS - 6**

• Weighing of membrane Size : 0.8 Micron x 25 mm Dia Say : 17Mg. (a) – approx • Assembly the glass apparatus as shown in the above figures • Take 17 ml of oil and add 35 ml of cleaned Benzene and stir well for diluting • Switch on vacuum pump and pour this diluted oil in graduated glass cylinder • Take another 16 ml of oil and add 35 ml of cleaned Benzene and stir well for diluting Pour the same. So, total 33 ml of oil has passed through the membrane • Now, weight the membrane. Say : 20 mg.(b) i.e. (b) – (a) = contamination / 33 ml. 20 mg – 17 mg = 3 mg / 33 ml. as per NAS 1638, Contamination level to be checked in 100 ml of oil. So, multiply by 3. i.e. 3 mg x 3 = 9 mg & 33 ml x 3 = 99 ml. (100 ml) so, contamination level is 9 mg / 100ml. • Paste this patch / membrane on test report by using transparent tape. • Match with given photographs of membrane patches in catalogue. The patch at the beginning of the cleaning cycle will be brown / brown yellow and tends to get lighter in subsequent patches. The oil is totally cleaned when the original white color of Membrane. To know the maximum size of the particle / contaminant, the patch can be observed under a microscope.

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