

Fluid Cleanliness According to ISO 4406:1999

ISO Code	More Than per ml of fluid	Up To & Inc per ml of fluid
28	1300000	2500000
27	640000	1300000
26	320000	640000
25	160000	320000
24	80000	160000
23	40000	80000
22	20000	40000
21	10000	20000
20	5000	10000
19	2500	5000
18	1300	2500
17	640	1300
16	320	640
15	160	320
14	80	160
13	40	80
12	20	40
11	10	20
10	5	10
9	2.5	5
8	1.3	2.5
7	0.64	1.3
6	0.32	0.64
5	0.16	0.32
4	0.08	0.16
3	0.04	0.08
2	0.02	0.04
1	0.01	0.02
0	0	0.01

ISO Code Breakdown

1st Number = Particles Greater than 4 Micron

2nd Number = Particles Greater than 6 Micron

3rd Number = Particles Greater than 14 Micron

Recommended ISO Codes for Typical Components

Servo Control Valves	16/14/11
Proportional Valves	17/15/12
Vane & Piston Pumps / Motors	18/16/13
Directional & Pressure Control valves	18/16/13
Gear Pumps / Motors	19/17/14
Flow Control Valves & Cylinders	20/18/15
Average Cleanliness of New Oil	20/18/15

Details of Water Contamination Levels

A water count of 0 - 100 parts per million is generally acceptable for hydraulic circuits

A water count of 100 - 200 parts per million requires action to reduce the water quantity via oil replacement or special filtration

A water count of 200 - 300 parts per million indicates the oil has reached the maximum quantity of water which can be emulsified. The oil will appear cloudy and should be replaced or subjected to special water removal filtration.

A water count in excess of 300 parts per million indicates the oil is beyond its absorption limit and therefore there will be free water contained within the oil. The oil will appear cloudy and should be replaced or subjected to centrifugal or evaporative removal techniques.

Comparison of ISO Codes & NAS Classes

NAS Class	ISO Code
10	21/19/16
9	20/18/15
8	19/17/14
7	18/16/13
6	17/15/12
	16/14/12
5	16/14/11
4	15/13/10
3	14/12/9
2	13/11/8
	12/10/8
1	12/10/7

