

**ISO 4406:1999 Hydraulic Fluid Power  
Solid Contaminant Code**

| Number of Particles per 1mL of Fluid |                     |                 | ISO Cleanliness Correlation Guide |                 |                  |               |
|--------------------------------------|---------------------|-----------------|-----------------------------------|-----------------|------------------|---------------|
|                                      |                     | SCALE<br>NUMBER | ISO<br>CODE                       | Mil Std<br>1638 | Mil Std<br>1246A | SAE<br>A54059 |
| More Than                            | Up to And Including |                 |                                   |                 |                  |               |
| 1,300,000                            | 2,500,000           | 28              | 21/19/16                          | 10              |                  |               |
| 640,000                              | 1,300,000           | 27              | 20/18/15                          | 9               |                  |               |
| 320,000                              | 640,000             | 26              | 19/17/14                          | 8               | 300              |               |
| 160000                               | 320000              | 25              | 18/16/13                          | 7               |                  |               |
| 80000                                | 160000              | 24              | 17/15/12                          | 6               |                  |               |
| 40000                                | 80000               | 23              | 16/14/12                          |                 | 200              |               |
| 20000                                | 40000               | 22              | 16/14/11                          | 5               |                  | 12            |
| 10000                                | 20000               | 21              | 15/13/10                          | 4               |                  | 11            |
| 5000                                 | 10000               | 20              | 14/12/9                           | 3               |                  | 10            |
| 2500                                 | 5000                | 19              | 13/11/8                           | 2               |                  | 9             |
| 1300                                 | 2500                | 18              | 12/10/8                           |                 | 100              | 8             |
| 640                                  | 1300                | 17              | 12/10/7                           |                 |                  | 7             |
| 320                                  | 640                 | 16              | 12/10/6                           |                 |                  | 6             |
| 160                                  | 320                 | 15              | 11/9/6                            |                 |                  | 5             |
| 80                                   | 160                 | 14              |                                   |                 |                  |               |
| 40                                   | 80                  | 13              |                                   |                 |                  |               |
| 20                                   | 40                  | 12              |                                   |                 |                  |               |
| 10                                   | 20                  | 11              |                                   |                 |                  |               |
| 5                                    | 10                  | 10              |                                   |                 |                  |               |
| 2.5                                  | 5                   | 9               |                                   |                 |                  |               |
| 1.3                                  | 2.5                 | 8               |                                   |                 |                  |               |
| 0.64                                 | 1.3                 | 7               |                                   |                 |                  |               |
| 0.32                                 | 0.64                | 6               |                                   |                 |                  |               |
| 0.16                                 | 0.32                | 5               |                                   |                 |                  |               |
| 0.08                                 | 0.16                | 4               |                                   |                 |                  |               |
| 0.04                                 | 0.08                | 3               |                                   |                 |                  |               |
| 0.02                                 | 0.04                | 2               |                                   |                 |                  |               |
| 0.01                                 | 0.02                | 1               |                                   |                 |                  |               |
| 0.00                                 | 0.01                | 0               |                                   |                 |                  |               |

| HYDRAULIC FLUID CLEANLINESS LEVEL RECOMMENDATIONS   |                       |
|---|-----------------------|
| TYPE OF SYSTEM PRESSURE                             | ISO CLEANLINESS LEVEL |
| Low Pressure Systems (<50 bar/725 PSI)              | 21/19/16              |
| Medium Pressure Systems (50-150 BAR/ 725-2200 PSI)  | 20/18/15              |
| Normal Pressure Systems (150-250 BAR/2200-3600 PSI) | 19/17/14              |
| High Pressure Systems (250-400 BAR/3600-5800 PSI)   | 17/15/12              |
| COMPONENT TYPE                                      |                       |
| Gear Pump, Manual Controls                          | 19/17/14              |
| Gear Pump, Vane Pump Directional Controls           | 19/17/14              |
| Piston Pump, Proportional Controls                  | 18/16/13              |
| Servo Valve   | 16/14/11              |