BALDWIN FILTERS®
a CLARCOR company

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Filter Performance and Micron Ratings

Micron Ratings are arbitrary values assigned to filters or media. Although a "micron" is a length (1 millionth of a meter), a "micron rating" is not actually a measured value. The micron rating for a filter quotes a particle size without establishing the filter's efficiency at removing that size of particles. A window screen will remove some 5 micron particles, but it will not be very efficient. Since a micron rating cannot be verified, filter manufacturers are safe in assigning any number that they want. Baldwin does not recommend comparing filters based on micron ratings.

To compare filters, the filter industry has established standardized tests for measuring performance. These tests include Life and Efficiency Tests (SAE J726, J806, and J905) and Beta Ratio Tests (SAE J1858). These SAE standardized test methods, along with the meticulous recording of test conditions, ensure that filter comparisons are "apples to apples."

Life and Efficiency Tests measure the filter's ability to remove a standardized contaminant from a standardized fluid that is flowing at a constant rate and a constant temperature. The test continues until the contamination trapped in the media raises the differential pressure drop across the filter to a specific, predetermined level. Life and Efficiency Test results will include a Time Weighted Efficiency (%) and a Capacity (grams).

Beta Ratio Tests are by far the most accurate and objective way to compare the performance of filters. A Beta Ratio Test measures a filter's ability to remove particles of given sizes. In other words, the test measures the filter's efficiencies at specific particle sizes. The beta ratio test equipment actually counts the particles in the fluid before the filter and after the filter. This ratio is the Beta Ratio.

$$ß = \frac{Particles\ Upstream}{Particles\ Downstream} = \frac{20{,}000\ particles}{1{,}000\ particles} = 20$$

The beta ratio will generally be between 1 and 75. Beta ratios can also be converted to efficiencies using the following formula:

$$\left(\frac{ß - 1}{ß}\right) x\ 100 = Efficiency\ (\%)$$

Examples:

$ß_{10} = 2$: (2-1) / 2 x 100 = 50.0%
efficient for 10 micron particles.
50% efficiency is generally considered nominal.

$ß_{15} = 75$: (75-1) / 75 x 100 = 98.7%
efficient for 15 micron particles.
$ß = 75$ is generally considered absolute.

In summary, equipment owners should consider several factors when choosing filters for their applications. For best results, customers should consult the latest edition of the Baldwin Applications Book and Cross-Reference Product Guide and select filters based on Original Equipment Manufacturer (OEM) part numbers. When comparing filters, the questionable nature of micron ratings encourages users to try to obtain standardized test information for apples-to-apples product comparisons.

**If you have further questions,
please contact our
Service Engineering Team at (800) 822-5394.**