

Erosion Resistance of LaserBond Crushalloy™ and HVOF Tungsten Carbide

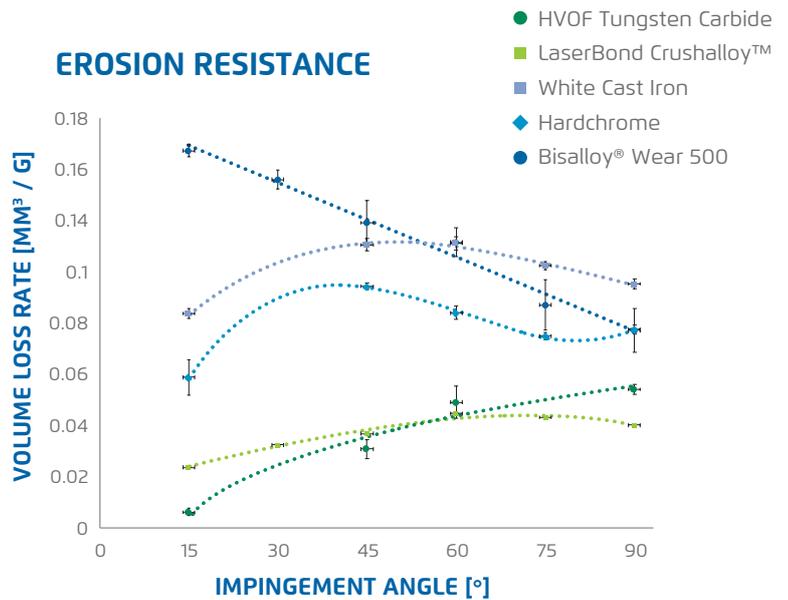
Erosion is a form of wear that a part is subject to when it is heavily impacted by hard particles. Application examples include components in drilling, mining, and slurry pumps. To reduce wear and extend wear life, materials that combine a high hardness with some ductility, are especially suitable for components subject to high erosion.

To test and predict the erosive wear resistance of a material, the test ASTM G76 "Standard Test Method for Conducting Erosion Tests by Solid Particle Impingement Using Gas Jets" is a commonly accepted industry standard. In this test a material sample is fixed onto an inclined support that can be adjusted to different angles from 15-90°. The sample is then impinged with aluminium oxide particles at a high velocity of up to 100 m/s. The particles erode the surface of the sample and remove material from the surface, causing wear.

Erosive wear resistance is dependent on the angle of attack. Hard materials are extremely resistant at low impact angles, whereas ductile materials perform better at high angles. Only when a ductile matrix material is combined with hard, wear resistant carbides, good erosion resistance over all angles can be achieved, as it is the case for LaserBond Crushalloy™ and HVOF Tungsten Carbide.

The graph above compares the erosion resistance of LaserBond's Crushalloy™ and HVOF Tungsten Carbide with white cast iron, the wear plate material Bisalloy® 500 and a hard chrome coating. The wear resistance of Crushalloy™ is more than 5 times as high than Bisalloy® Wear 500 at shallow angles and twice as high at 90°, making it the ultimate choice for applications with varying impact angles. HVOF Tungsten Carbide has extreme erosion resistance at shallow angles and performs still well at high impingement angles.

EROSION RESISTANCE



EROSIVE WEAR TEST



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