



EternAloy® TCHP (Tough-Coated Hard Powder)

EternAloy® TCHP Grade: TL-3 HVOF Applied onto M42 HSS Substrate

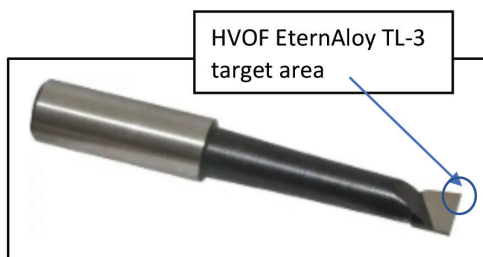
EternAloy Coating Material:Grade TCHP TL-3
Substrate Material:M42 HSS, 68 HRC
HVOF Equipment:Praxair TAFA Model JP-5000®

| | Grit Blasting Media | Surface Roughness, Ra (after grit blasting, before thermal spray) | Surface Roughness, Ra (after thermal spray) | Adhesion Bond Strength, psi (Failure in the Epoxy, not in the Coating) |
|----------|---------------------------|---|---|--|
| Sample 1 | Aluminum oxide – 60 mesh | 71 | 106 | 10,763 |
| Sample 2 | No grit blasting | 8 | 140 | 11,231 |
| Sample 3 | Silicon Carbide – 36 mesh | 84 | 100 | 10,622 |
| Sample 4 | Silicon Carbide – 60 mesh | 103 | 111 | 10,736 |

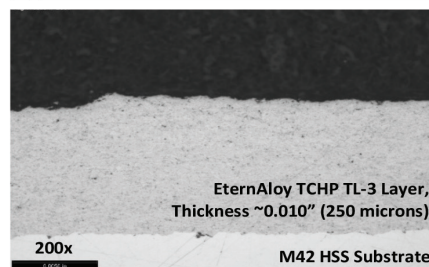
- Excellent Adhesion Bond Strength on relatively harder HSS (high speed steel) substrates.
- Potential to apply EternAloy TCHP TL-3 material onto components where grit blasting could damage a component, such as a precision ground blade.
- Standard grit blasting using 60 mesh aluminum oxide has the potential to work well on HSS components, eliminating the need to change grit blasting media specifically for HSS components in a production environment.

APPLICATION:

The HVOF process can allow for specific areas of a component to be coated with EternAloy Corporation's TCHP TL-3 material. For example, in the boring bar pictured below, the TCHP TL-3 could be applied only onto the area used for cutting. This same concept can be applied to numerous geometries of a variety of cutting tools.



Typical cross-section microstructure



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