

Description

Trimteck® is at the forefront of applying innovations in material science to extend the life of its process control equipment. First used in the aerospace industry to harden rocket nozzles on the space shuttle, CVD-5B is a chemical vapor diffusion process using boron wherein a hard wear-resistant metal mesh is fused into the surface of a wide variety of ferrous and non-ferrous materials.

Unlike coatings, during the CVD-5B process, superheated boron atoms are diffused deep into a host surface to form a metal boride layer that permeates evenly up to 0.04". Trimteck has harnessed and perfected this advanced technology to, in many cases, effectively extend the life of our valves more than 10X.

- Economical alternative to Tungsten Carbide
- Corrosion resistant
- Lends extended life to severe service trims
- Resists temperatures of up to 1200° F
- Reduces coefficient of friction
- Not a ceramic, will not crack under duress

Case Studies

Application: Offshore Oil Production

Location: Gulf of Mexico

Background: When a production valve on an offshore platform pumping crude oil with high sulfur content and 30 percent sand needed its internals replaced every eight months, the owner and operator decided it was time for a change.

Trimteck's Solution: We designed a 18" 1500# Optimux OpGL globe valve with an anti-cavitation trim treated with our proprietary CVD-5B metal hardening process. It has been working uninterrupted for over two years.



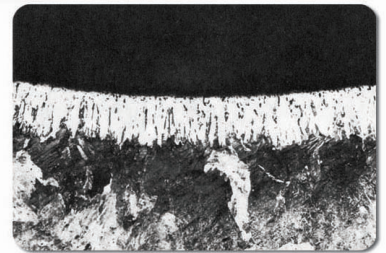
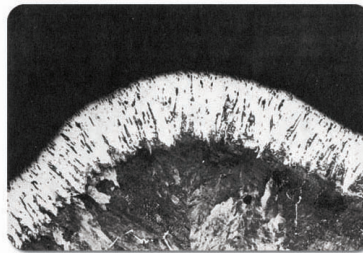
CVD-5B Hardened Severe Service Trim

CVD-5B

316 SS Optimux OpGL body and trim set hardened with CVD-5B. Note the distinctive dark gray color.



SCAN CODE TO LEARN MORE



Magnified view of .015" CVD-5B compound layers on 1045 steel. Note the hardened layer distributes itself evenly along concave and convex surfaces.

Application: Potato Steam Peeling

Location: California (USA)

Background: Steam peeler valves operate constantly and open intermittently to release high pressure steam and abrasive solids. A potato steam peeler control valve with leaky seats caused by high pressures and abrasion from solids needed expensive replacing every thirty days. The plant manager came to Trimteck with the problem.

Trimteck's Solution: We proposed an Optimux OpEXL eccentric plug valve with a CVD-5B treated trim, and it extended the life of the previous valve ten-fold.



CVD-5B Hardened Eccentric Plug

Technical Specifications

Hardness	1600-2500 KHN (Knoop), 70-80+ Rockwell C
Wear Resistance	Excellent against all hard surfaces
Corrosion Resistance	Excellent against HCL, H2SO4, HF, Salt Water, and Molten Salts
Coefficient of Friction	33% of base material
Gas Barrier	Excellent against Oxygen, Hydrogen, and H2S
Surface Finish	Finish will remain unaltered, and tolerance change is less than 0.0001"
Penetration	Up to 0.040" dependent on base material. Uniform and Continuous.
Masking	Surfaces not requiring hardening e.g. threads, welded end connections may be masked

Trim Material Characteristics

Trim Material	Hardness Rockwell C	Impact Strength	Corrosion Resistance	Maximum Temperature		Erosion Resistance	Abrasion Resistance
				°F	°C		
316 Stainless Steel	8	Excellent	Excellent	600	316	Fair	Fair
no. 6 Stellite	44	Excellent	Excellent	1500	816	Good	Good
416 Stainless Steel	40	Good	Fair	800	427	Good	Good
17-4PH (H900)	44	Good	Good	800	427	Good	Good
440C Stainless Steel	60	Fair	Fair	800	427	Excellent	Excellent
K Monel	32	Good	Excellent	600	316	Fair-Good	Good
Tungsten Carbide	72	Fair	Good on Bases Poor on Acids	1200	649	Excellent	Excellent
CVD-5B	72	Excellent	Good	1200	649	Excellent	Excellent

In addition to CVD-5B, Trimteck provides other common metal hardening processes:

- Tungsten Carbide
- Nickel
- Titanium
- Stellite
- Hard Chrome
- Zirconium

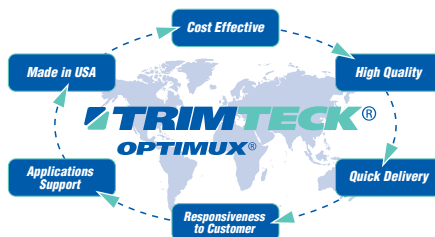
About Trimteck

Trimteck® is a NASA VDB-approved, ISO 9001-2016-registered U.S. company (Registration No. 2012-98243) with over thirty years of experience engineering, manufacturing, and marketing high-quality, cost-effective flow, pressure, and temperature control solutions and equipment for critical processes. Our products are currently helping customers safely improve quality, optimize throughput, and reduce emissions and energy costs across an array of industries in more than 50 countries.

We manufacture a comprehensive line of control valves – and variety of actuators, positioners, severe service trims, and other accessories – that our applications engineers and representatives use to solve even the most complex flow control problems quickly and economically.



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Products in
compliance with:
ASME B16.34
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