
ARMOLOY
(U.K.) Limited



78 Rc
ARMOLOY TDC

**Thin Dense Chromium That
Delivers Unequaled Performance**

Exclusive ARMOLLOY Technology Provides Maximum Protection and Unparalleled Performance.



What is ARMOLLOY® TDC Coating?

ARMOLLOY® TDC is a low-temperature, multi-state surface finishing process.

ARMOLLOY® utilises proprietary chemical solutions and application processes that are carefully monitored to produce its TDC, a silver-satin matte chromium coating. Precise deposits ensures the coating follows the exact contours and details, without the edge build or "dog-boning" associated with conventional chrome-plating processes.

Value-added benefits of ARMOLLOY® TDC Coating.

- **78Rc** Surface Hardness
- Reducing wear and friction in moving parts
- Absolute adhesion to basis metal – no chipping, cracking, flaking or peeling
- Improved release characteristics in plastics forming tools—cores, cavities, lifters, pins, screws, plates
- Reduced maintenance and part replacement costs

Extraordinary Properties.

ARMOLLOY® TDC technology is unlike all other conventional hard chrome plating operations. Our proprietary TDC coating conforms precisely to details in metal tools, resulting in a hard (78Rc), slippery, and corrosion-resistant tool surface.

RMS finishes will improve slightly, to $\sqrt{8}$. (Below $\sqrt{3}$ the process may deter slightly.) Surfaces greater than $\sqrt{2}$ will reflect greatly improved finishes.

Both internal and external surfaces on all part configurations can be uniformly processed.

Employed as the finishing step for machine parts and manufactured components, Armoloy imparts a satiny, silver matte, micronodular finish.

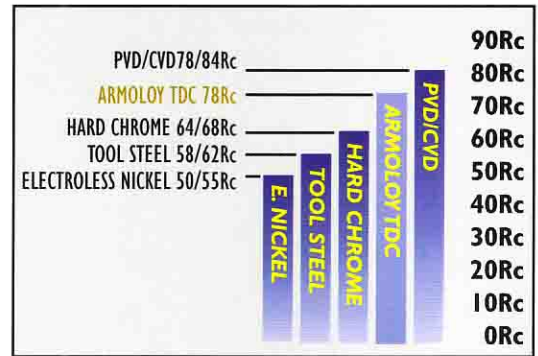
ARMOLLOY® TDC Takes the Heat.

Withstands temperatures of -240°C to 850°C (-400° to 1560°F).

78Rc Wear-Resistant Hardness.

- **78Rc** Surface Hardness
- Vickers Diamond: **1360/1400**

Comparative Hardness



Uniform Deposits With ARMOLLOY® TDC.

Normal deposit/tolerance levels

Deposit Range	Tolerance Range
1,0-2,5 microns (.00040/.0001")	$\pm 0,5$ " microns (± 0.00020 "")

2,5-7,5 microns * (.0001/.0003")	$\pm 1,25$ microns (± 0.00050 "")
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5-10 microns (.0002/.0004")	$\pm 2,5$ microns (± 0.0001 "")
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10-15 microns (.0004/.0006")	$\pm 3,0$ microns (± 0.00012 "")
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* Standard deposits are in the .0001/.0003" per surface range.

Coating Solutions That Enhance the Value of Your Product

The ARMOLLOY Corporate Laboratory

Through constant research and development, we continue to improve our existing coating technology, develop new coatings, and expand the range of functional ARMOLLOY® applications.

The Full Range of Manufacturing Metals

All Ferrous Metals: Most Non-Ferrous Metals:

- Tool Steels (1018, 4140, D-2, A-2, H-13, S-7, etc.)
- Cold Roll/Hot Roll
- Bearing Steels (52100, 8620, etc.)
- Alloy-enhanced Steels
- Stress-Proof
- High Carbon/Low Carbon Steels
- Cast Irons
- All Stainless Steels (300 and 400 Series, Inconel, 17-4, 15-5, NAK 55, etc.)
- Beryllium
- Ampco®
- MoldMax®/Protherm®
- Copper and Copper Alloys
- Bronze/Brass

Aluminium, magnesium and titanium are substrates not recommended for the ARMOLLOY® TDC coating.

A Guideline for ARMOLOY® TDC Success.

As the surface hardness and surface finish of your basis metals improve, the performance of the ARMOLOY® TDC coating also improves.

To maximize ARMOLOY® TDC performance, components should be engineered to a minimum of 50Rc, 40 pt. carbon steel with a minimum surface finish of $\sqrt{3}$

ARMOLOY® TDC can be applied to nitrided surfaces- all nitrided components submitted for ARMOLOY TDC coating should be clearly identified as having been nitrided.

ARMOLOY® TDC technology has improved the process by which its 99% pure chromium coating permeates the surface of metal components. Adhesion is absolute; once applied, the coating will not chip, flake, or otherwise separate from the basis metal.



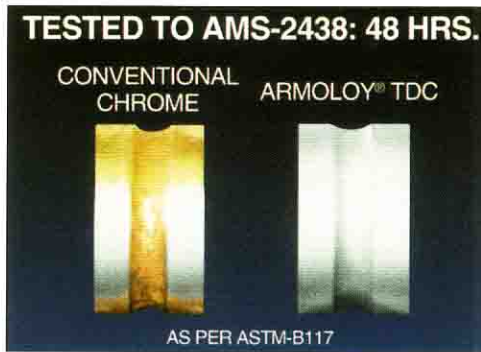
Prevention of Hydrogen Embrittlement.

ARMOLOY® TDC process control prevents the embrittlement phenomenon from occurring, though original manufacturing conditions may not, necessarily, be removable.

The ARMOLOY® TDC process will not affect the tensile, yield or fatigue properties of the basis metal. Pre- and post-baking are available upon request or specification. ARMOLOY® TDC certifies to AMS-2438, AMS QQ-C-320, AMS-2406, and most other military/industrial specifications.

ARMOLOY-to-ARMOLOY Engineering

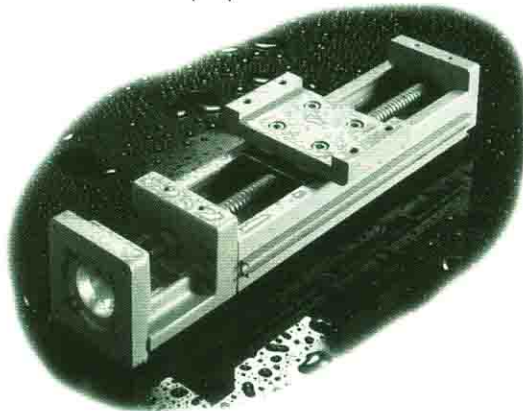
ARMOLOY® TDC coated parts reduce friction, increase wear life and enhance corrosion resistance. Where ARMOLOY® TDC coated parts run against each other, the coating's natural characteristics are enhanced, further reducing friction and significantly prolonging tool life. Discuss ARMOLOY-to-ARMOLOY with your Armoloy sales engineer to take advantage of this unique performance feature.



Corrosion Resistance.

ARMOLOY® TDC resists attack by most organic and inorganic compounds, with the exception of sulphuric acid and hydrochloric acid.

Inferior metal surface finish and low part hardness may inhibit ARMOLOY® TDC's corrosion-resistant properties.



Tested in accordance with ASTM-B117 and AMS-2438.

Safety and Cleanliness.

FDA/USDA approved for use, without concern, on food processing equipment, in clean room environments and in medical/pharmaceutical applications. Independent testing has proven no issue of toxicity or skin irritation in ARMOLOY® TDC coated parts.

The ARMOLOY Shield: Five Points of Promise

1. The highest quality chromium coating in the industry.
2. The most effective performance of any chromium coating.
3. Competitive pricing designed to reduce overall cost.
4. Consistent, on-time delivery.
5. Person-to-person engineering consultation and a commitment to further education.

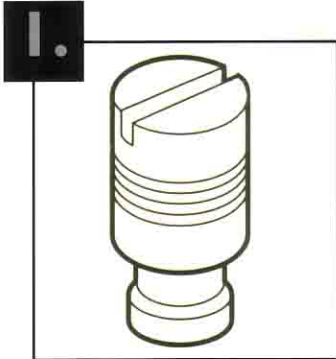
Low Coefficient of Friction

ARMOLOY® TDC imparts a micronodular, low-friction surface finish. Reduced friction means reduced heat, prolonging the wear life of high-temperature tools.



Working with your
ARMOLOY® TDC
 facility is as easy as...

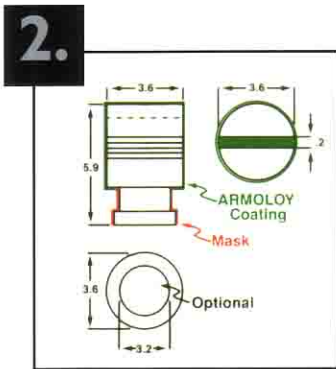
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Metal Preparation

Parts should be surface finished prior to shipment to ARMOLOY for processing. Removal of excessive paint, scale, rust or corrosion by ARMOLOY may entail additional costs.

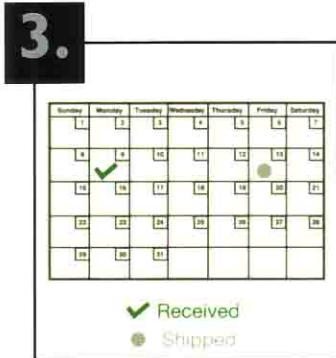
Because surface dimension is not significantly increased by coating, ARMOLOY® TDC will not fill scratches, pits and dents but rather conform to them. Removal of normal oil or grease prior to coating is standard ARMOLOY procedure.



Part Submission

Customers should submit parts to be processed accompanied by instructions indicating those surfaces requiring ARMOLOY® TDC coating. Masking of individual details is available. Basis material and hardness of the part should be specified.

All parts to be shipped to ARMOLOY for processing should be properly packaged to prevent damage and corrosion. Containers adequate to obtain maximum protection during shipping should be used.



Delivery

ARMOLOY is dedicated to meeting your delivery requirements. All orders are processed and shipped rapidly; however, special arrangements to meet your specific delivery dates can be made by contacting your ARMOLOY processing facility.



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**Proven Applications
 for ARMOLOY® TDC (Thin
 Dense Chromium) Include:**

AEROSPACE
 BEARING RACES, ROLLERS AND SURFACES
 BUSHINGS
 COMPRESSOR COMPONENTS
 CUTTING TOOLS
 CYLINDERS
 DIE-CAST DIES
 FOOD PROCESSING EQUIPMENT
 GAUGES
 GEARS AND SPROCKETS
 HYDRAULIC CYLINDERS/RODS
 MACHINE TOOL COMPONENTS
 MOLDS - PLASTIC; RUBBER; INJECTION;
 EXTRUSION; COMPRESSION; INSERT
 NUCLEAR COMPONENTS
 PUMP HOUSINGS/IMPELLERS/ROTORS/
 END PLATES
 INJECTION SCREWS
 TEXTILE INDUSTRY COMPONENTS
 THREADS (ID/OD)
 VALVES

ARMOLOY® TDC and Armoloy NTDC conform to all MIL-Specs relative to chromium coatings, including AMS-234 and AMS QQ-C-320. Internal specifications devised by individual companies can also be accommodated

Contact your ARMOLOY
 Licensee for:

- Quotations/Pricing
- Delivery (Normal/Expedited)
- Technical Information
- Engineering Specifications
- Special Products/Requirements
- Sample Testing Projects
- ARMOLOY Educational Seminar
- Other Special Services

Your ARMOLOY sales engineer is ready to assist you