

# Ultra Precise Polishing

for Higher grade manufacturing

TDC will offer the best solution for customers  
by combination of various processing methods!



If you have any question or inquiry, please do not hesitate to contact us

**TDC Corporation**

Web : <https://mirror-polish.com>

Mail : [tdc@mirror-polish.com](mailto:tdc@mirror-polish.com)



24-15 Chojamae lidoi Rifu-cho, Miyagi JAPAN

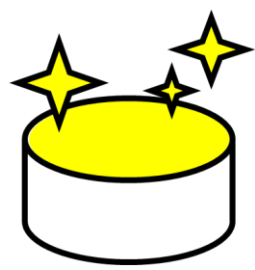
TEL +81(0)22-356-3131

FAX +81(0)22-356-3578

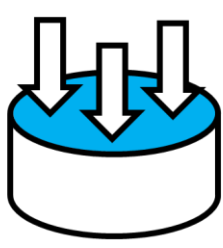
Fine Polish **TDC**

# Exclusive Technology of Super Precise Mirror Polish

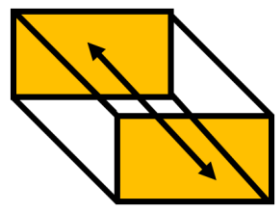
TDC processes wide variety of material such as metal, ceramics, glass, resin, and others.



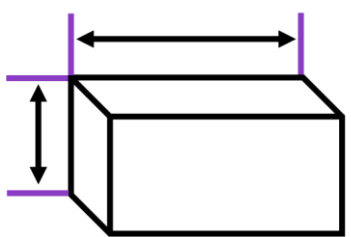
**Roughness: Ra1 nm**



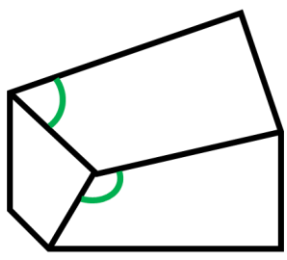
**Flatness: 30 nm**



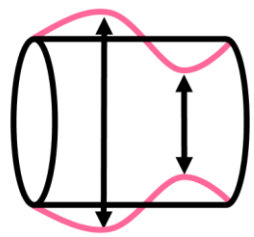
**Parallelism: 100 nm**



**Tolerance: ±100 nm**



**Angle: ±3 deg**



**Cylindricity: 500 nm**

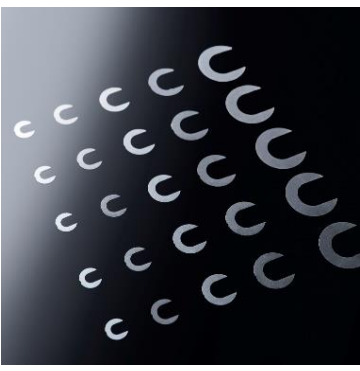
## Processing example



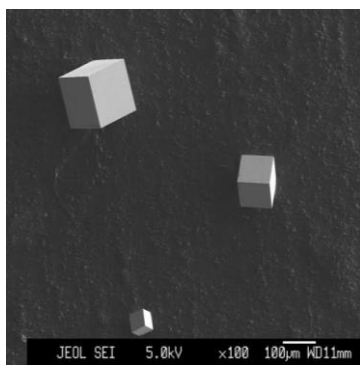
**Super precision polished Roll**  
Applied to high spec film, Nanoimprinting technology.  
Max : dia.450\*L3,000 mm  
Ra1.5 nm, Rz8 nm  
(Stainless steel)



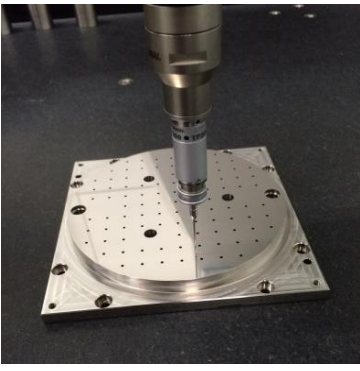
**Super precision polished Foil**  
By using TDC's original polishing system, nano-surface in 100M Length is possible.  
Ra1 nm, Rz6 nm  
(Stainless steel)



**Spacer & Shim**  
TDC's super precision shims, spacers, washers without thickness variation enable assembly precise.  
We also accept materials and shapes different from TDC standard shim on request.



**Micro cube**  
TDC produces micrometer size cubes using its expertise.  
Picture in the left is a SEM image of micro cubes of 50, 100, and 150 micron size.



**Chuck plate**  
We achieve not only precise flatness, but also other extremely difficult requirements such as size tolerance, angle, parallelism at the same time.  
Flatness: 0.1 micrometer  
Size: Φ 100 mm



**Other shapes**  
We have many special lapping machines for polishing not only flat items but curves, Inner diameter of cylindrical shape, spherical bodies.  
Their polishing will also be finished in Ra1 nm level.

TDC : Leading manufacturer in Japan 

**New Proposal**

**for nanoimprinting (NIL) mold!!**



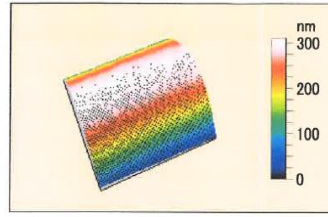
**Ra1 nm**  
**RZ10 nm**

**Unrivaled Lapping Technology  
for Precise Mirror Polish Rolls**

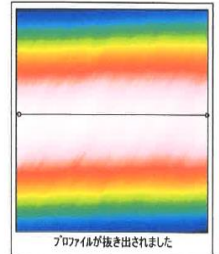
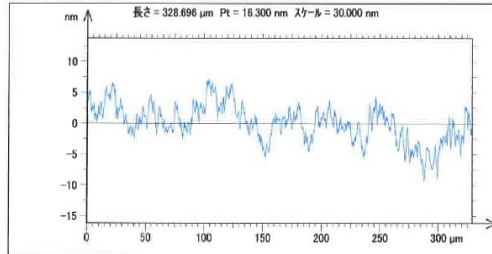
Fine Polish  **TDC**

# What is Precise Mirror Polish Roll?

Do you have problems with damage and noise on the roll surface?



TDC developed a brand new machine in house which realizes a perfect surface without any damages, noises or frosted marks.



JIS B0601			
振幅ハロメータ 粗さプロファイル			
Ra	1.544	nm	スクリーン幅 0.08 mm
Rz	8.233	nm	スクリーン幅 0.08 mm

With TDC technology, it is possible to achieve nano-level surface roughness regardless of the material while precisely controlling the dimension and shape accuracy.

## Feature of Super Precise Roll's Process

Materials	Stainless Steel, Nickel, Aluminum, Titanium, Quartz Glass, Cemented Carbide, Silicon, Surface Coatings (Nickel Plating, Hard Chrome Plating)	Surface Roughness	Ra1nm、 Rz10nm
Outer Dia.	Max : 500mm	Length	Max : 3000mm
Accuracy Guaranteed	Scratch free, Mirror finish, Size Tolerance, Cylindricity, Coaxially	Application	Mold for Films, Nanoimprint (NIL)

- From one piece to large scale production
- From material procurement to all processing processes
- For more information on delivery time, price and other specifications, please contact us as follows

### Contact Us

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**[E-mail]** [tdc@mirror-polish.com](mailto:tdc@mirror-polish.com)

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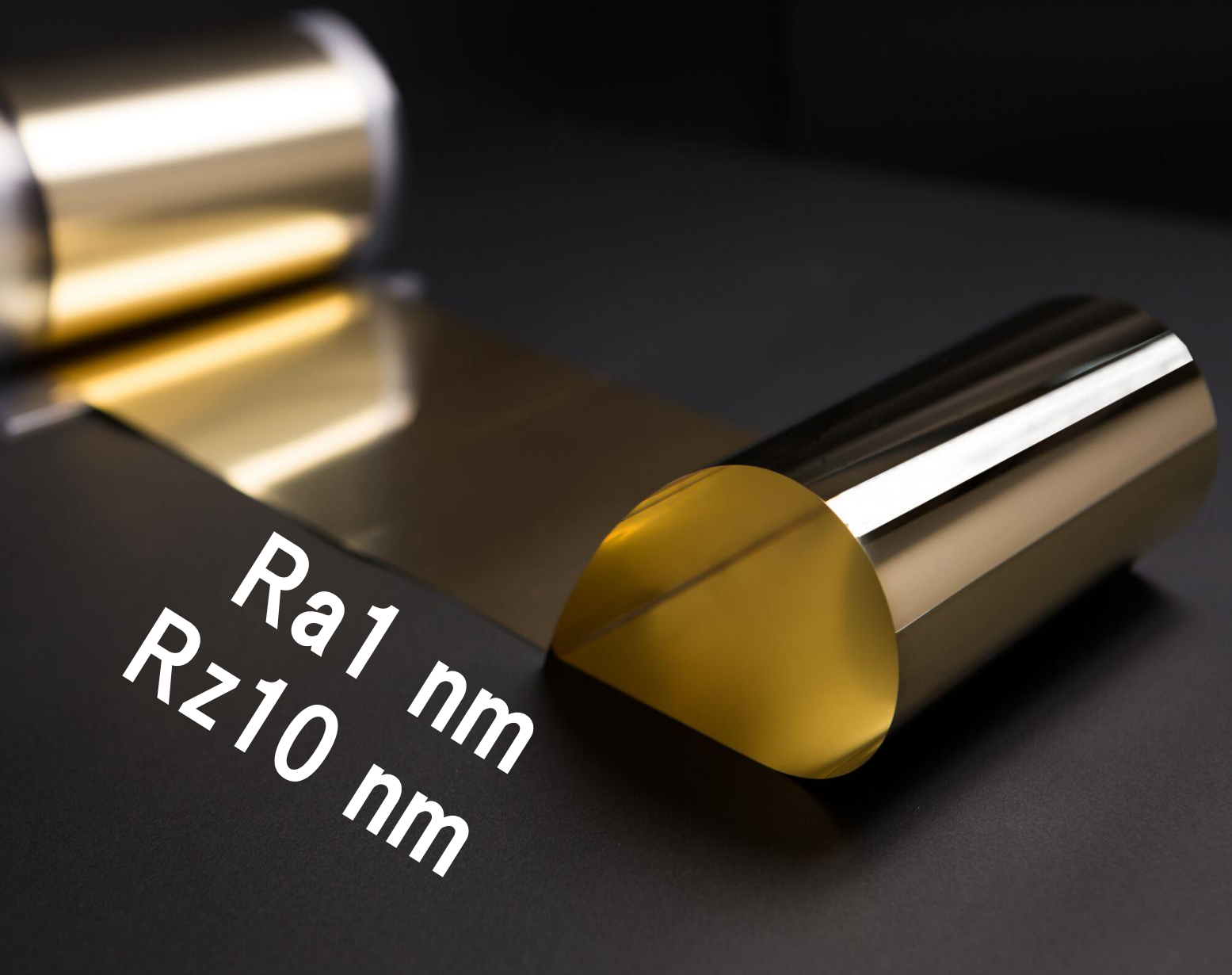
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TDC : Leading manufacturer in Japan 

# Mirror Polished Foil

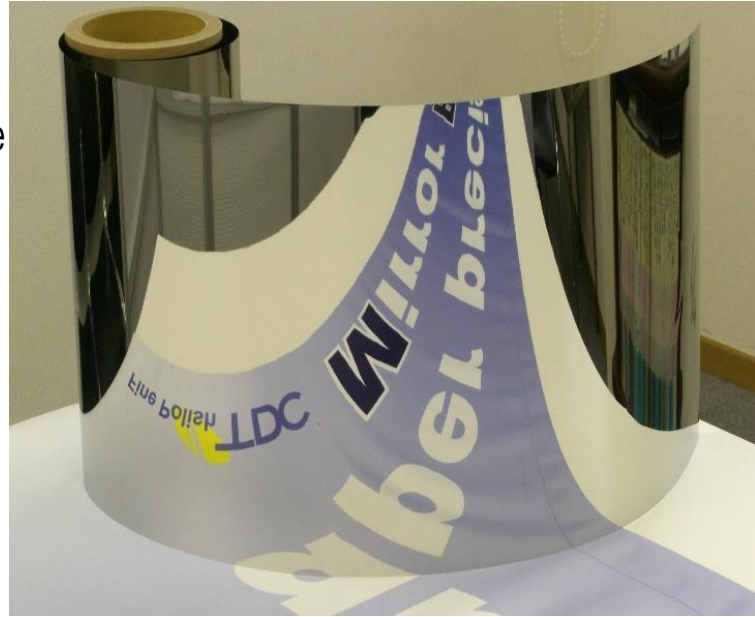
## Over 100 Meters!!



**Workpieces over 100 meters in length  
Realizing roughness in nano-level**

# What is Precise Mirror Polish Foil?

TDC offers thin foil polishing service which is realized by an original machine specifically developed for long foils. It continuously supplies foil to the lapping machine for polishing. After the polishing, it automatically rolls them up again.



## Specification

- Ra1 nm, Rz6 nm (case: SUS304)
- Width up to 300 mm
- Length as your request
- Stainless Steel, Brass, Nickel, Amorphous Metals, Aluminum, Hastelloy, Iron, Molybdenum, and others

### Cost Reduction

This foil will help you simplify the post-step process and realize a cost down.

### Handy

By polishing the foil continuously, we can provide a mirror polished foil in any length as long as you desire.

### Application

Device processes for flexible devices, fine film production process, base for various precision deposition process, and others.

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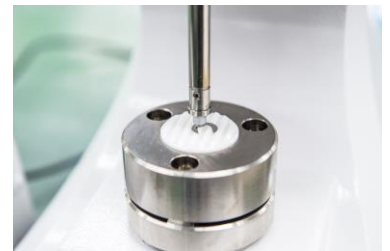


# Spacer/Shim (Feeler Gauge)

**Reduce looseness and fine tune precision equipment assembly to a higher degree of accuracy.**

## TDC's Shims, Spacers, Washers

TDC's super precision shims, spacers, washers without dispersion in thickness enable high assembly precision. TDC provides shims for M2 to M8 as TDC standard shim. (Please refer to the price list below)



## Why TDC's Spacer?

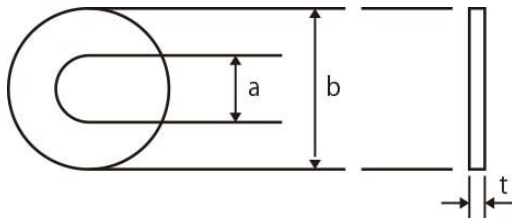
- |                 |   |
|-----------------|---|
| Precision       | TDC supplies shims with tolerance of thickness $\pm 0.5\mu\text{m}$ or $\pm 1\mu\text{m}$ in compliance with the customers' requirements. |
| Low Cost        | TDC provide a shim from one piece as per the below price list.  |
| Prompt Delivery | TDC standard type shims can be shipped on the day of your order if stocks are available.  |
| Convenience     | We also accept materials and shapes different from TDC standard shim on request.  |

## Specification for TDC Standard Shim

### TDC Super Precision Shim

- Material SUS304
- Thickness Tolerance  $\pm 1\mu\text{m}$  (0.001mm)
- Measurement Equipment Mitsutoyo Laser Hologage

Precise adjustment is available for assembling of precision equipment, mold and jig. TDC can provide not only TDC standard shim as per the below drawing but also any other shapes like washer or square.



TDC can provide not only TDC standard shim but also shims in any other shapes and sizes on request.

## Processing Achievement

Price List (TDC Standard Shim) ※ Please refer to the above drawing about each size.

Type	Size a(mm)	Size b(mm)	$\pm 1\mu\text{m}$ (JPY) ※Excluding Tax	$\pm 1\mu\text{m}$ (JPY) ※Excluding Tax
For M2,M3	3.3	6.5	@400	@600
For M4	4.5	8	@460	@690
For M5	5.5	10	@550	@830For
For M6	6.5	12	@650	@980
For M8	8.5	16	@850	@1,280

Thickness Size t(um)  
10,11,12,13,14,15,16,17,18,19,20,30,40,50,60,70,80,90,100

\*TDC provide a shim from one piece. \*The prices do not include any transportation charge.  
\*The price do not include any tax.

## Mirror Fit Spacer

TDC developed a “Mirror fit spacer” with mirror polished surface, not affecting the volume of variation in assembling equipment, contributing to the stability of dimensions.



Surface Roughness Ra 1nm



Surface Roughness Ra 80nm

- From one piece to large scale production
- From material procurement to all processing process
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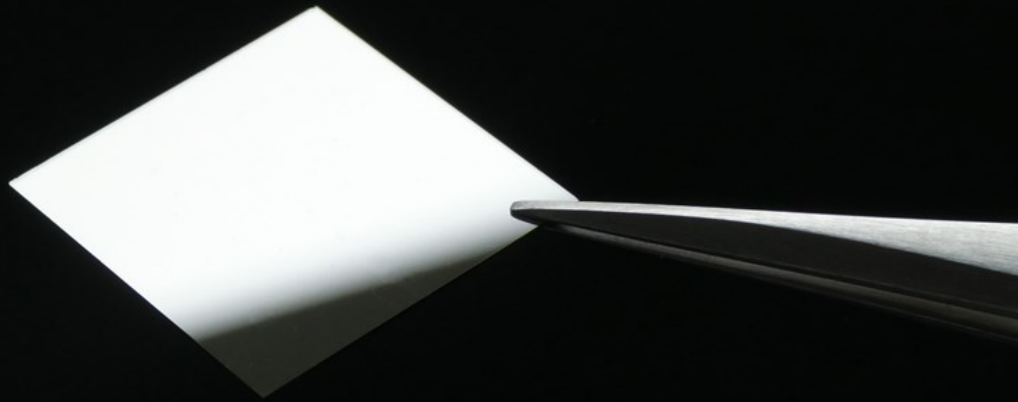
### Contact Us





# Polishing service for Diamond wafers

TDC's unique technology  
for dramatically high-efficiency and low-load polishing



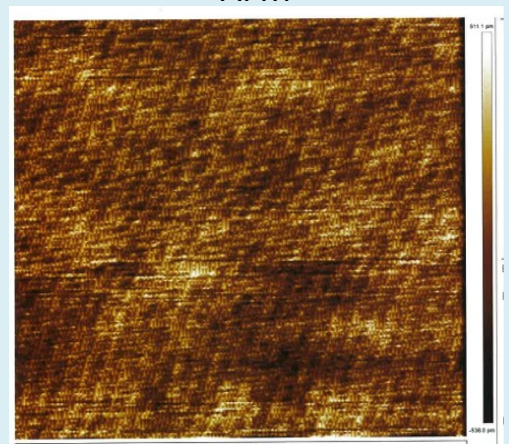
## 【Capability】

Single/Poly-crystal diamond  
Size: 3inch (maximum)

## 【AFM image】

Sa 0.116 nm Rmax 1.4 nm  
(single crystal CVD diamond)

AFM



Contact

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24-15 Chojamae Idoi Rifu-cho Miyagi 981-0113, JAPAN  
TEL : +81-22-356-3131  
E-mail : [tdc@mirror-polish.com](mailto:tdc@mirror-polish.com)  
LinkedIn : <https://www.linkedin.com/company/9138010/>

