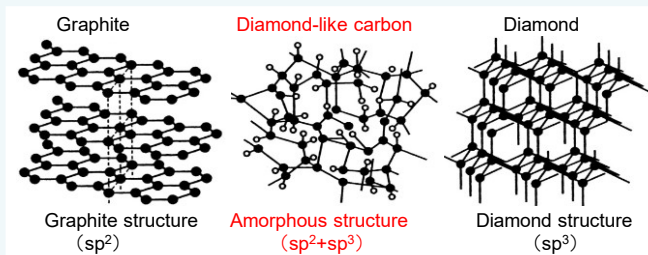


DLC type Diamond-Like Carbon

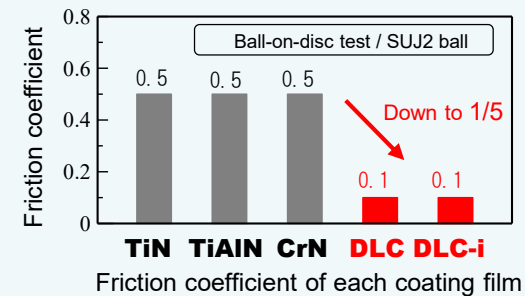
This DLC coating achieves overwhelmingly low friction characteristics. Our lineup includes high adhesion DLC for molds and machine parts and hydrogen-free thin film DLC-i for aluminum alloy cutting tools.

Diamond-Like Carbon

- DLC stands for Diamond-like Carbon, a general term for amorphous carbon structure containing sp^2+sp^3 hybridized carbon atoms
- Due to the structure is similar to diamond, hardness is its main feature
- Compare to very expensive diamonds, it can be produced on a variety of material surfaces at lower cost.

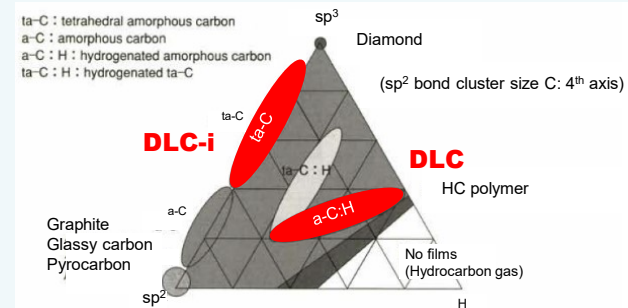


- It has an overwhelmingly low coefficient of friction compared to metallic materials.
- Even in a dry process, it has the same friction coefficient as oil lubrication.
- Can suppress adhesion of soft metals (aluminum alloys, etc.).



DLC Classification

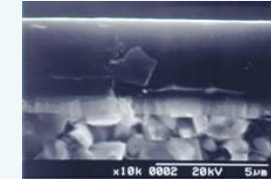
- a-C:H structure which balances hardness and toughness ⇒ **DLC**
- High-density ta-C structure approaching to diamond ⇒ **DLC-i**



DLC type Diamond-Like Carbon

Strongly adheres to substrate

- By generating an adhesion layer between the DLC layer and the substrate, it exhibits excellent adhesion (DLC-i is DLC layer only).
- Even in a high load atmosphere, which is not good for general DLC, the original low friction characteristics of DLC can be demonstrated.



- ← DLC layer
- ← Adhesion layer
- ← substrate

Lineup

DLC

a-C:H (UBMS)

- Hardness: 3000HV<
- Thickness: 1.5±0.5µm
- Heat resistance temp.: 4f00°C
- Surface roughness: Rz<0.2
- Friction coefficient: 0.1
- Coating temp.: <220°C

Reduce friction of molds and machine parts
High adhesion DLC coating by UBMS method

DLC-i

ta-C (AIP)

- Hardness: 4000HV<
- Thickness: up to 0.2µm
- Heat resistance temp.: 400°C
- Surface roughness: Rz<0.1
- Friction coefficient: 0.1
- Coating temp.: <220°C

Prevents adhesion of aluminum alloys and copper alloys
Hydrogen-free thin film DLC coating

Powder sintered shapes for SUS-based parts

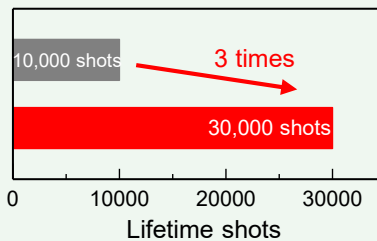


DLC with low friction and peel resistant can suppress galling caused by powder.

- Die: Carbide hardened die
- Material: SUS based powder
- Effectiveness: Suppression of galling

Other companies
DLC

DLC



Drilling of aluminum alloy (A6063)



DLC-i, which can maintain sharp cutting edges, prevents the formation of built-up cutting edges.

- Tool: φ1mm Carbide drill
- Work material: A6063 (thickness:2mm)
- V=30m/min / f=0.05mm/rev

Other
Companies
DLC

DLC-i

