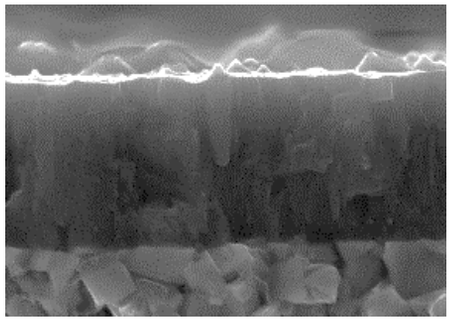
Heat resistant type AlCrN-based PVD coating

- A next-generation PVD coating featuring heat resistance, wear resistance and high adhesion.
- Significantly improves the lifetime of cutting tools, forging dies and die-casting dies etc., which are used in harsh high temperature, high surface pressure atmospheres.

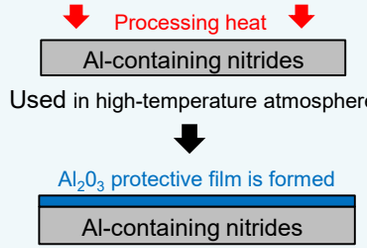
AlCrN coating **Acro**



Cross Section of **Acro**

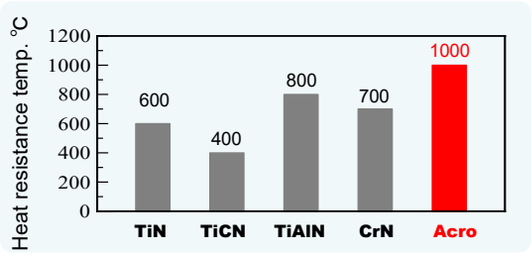
TiAlN coating evolves to AlCrN coating

- The higher the Al content, the better the wear resistance in high-temperature atmospheres, because Al-containing nitrides form an Al_2O_3 protective film on the top surface by processing heat.
- AlCrN, which can contain a large amount of Al without destroying its strong B1 crystal structure is becoming the mainstay of heat-resistant PVD.
- AlCrN coating "Acro" is recommended for applications used in harsh high temperature and high surface pressure environments.



Heat resistance temperature up to 1000 ℃

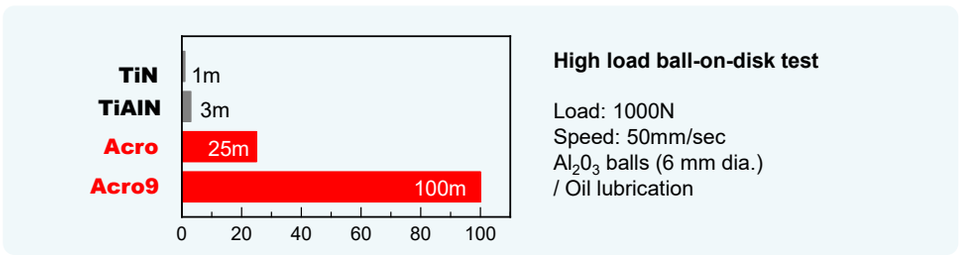
PVD coating provides the highest heat resistance temperature of 1000℃, protecting1 tools and molds when used in high temperature environments.



Heat resistance temperature of each coating film

Resistant to high face pressure

- The AlCrN layer, which combines the high toughness of CrN and the high hardness of AlN, provides excellent wear resistance in high surface pressure environments.
- In particular, the thick-film type Acro9 offers overwhelming characteristics.



Distance to film wear (m)

Heat resistant type AlCrN-based PVD coating

Lineup

Acro
Aluminum chrome nitride

Wide range of applications from cutting tools to molds.
All-round heat-resistant coating

- Hardness: 4000HV＜
- Thickness: 3±1μm
- Heat resistance temp. : 1000℃
- Surface roughness : Rz＜1.5
- Friction coefficient : 0.5
- Coating temp.:＜500℃

Acro9
Aluminum chrome nitride / Thick film

Thick AlCrN layer prevents mold erosion
Coatings for die casting molds

- Hardness: 3000HV＜
- Thickness: 9±2μm
- Heat resistance temp. : 1000℃
- Surface roughness : Rz＜4.0
- Friction coefficient : 0.5
- Coating temp.:＜500℃

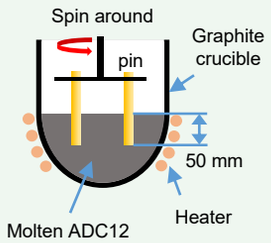
Acro9P
Aluminum chrome nitride / Thick film

Smooth surface properties prevent burn-in
Acro9 for die-cast pins

- Hardness: 3000HV＜
- Thickness: 9±2μm
- Heat resistance temp. : 1000℃
- Surface roughness : Rz＜1.0
- Friction coefficient : 0.5
- Coating temp.:＜500℃

Dissolution test of aluminum alloy (ADC12)

With 9 μm thick coating which is three times thicker than the conventional coating, it prevents molten aluminum from entering the mold substrate and suppresses the occurrence of melting damage.

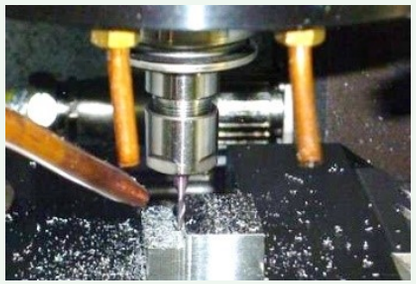


TiAlN

Radical nitriding + Acro9

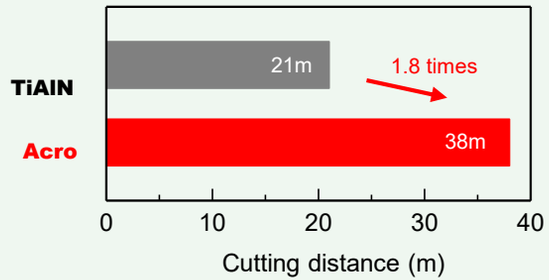
Pin tip after dissolution test (700℃ x 8h)

High-speed dry cutting of SUS-based parts



High-speed dry cutting of SUS material with high heat load is now possible.

- Tool: φ6mm carbide E/M
- Work material : SUS304
- Cutting speed : 100m/min
- Side cutting / Dry cutting



Cutting distance to reach life standard (VB=0.05mm)