

Diffusion Hardening Process
Future-oriented New Technology

THE SURFACE TREATMENT KANUC PROCESS

KANUC

What is Kanuc?

Kanuc is a diffusion hardening process.

During the process nitrogen diffuses into the steel to be treated from the surface toward the core to react on the alloying elements therein thus to form a hardened layer of 20~60 microns.

Features

- No white layer (iron nitride) is formed.
 - Easily weldable.
 - Free from chipping or stripping.
 - Excellent in heat checking resistance.
 - Composite treatment is possible.
- Uniformly treatable to complex shapes and into deep holes.
- Appropriate for hardening stainless steels.
- Suitable for increasing wear resistance of hard metals.
- Least dimensional change due to treatment.
- Least surface roughening after treatment.

Type of processing

Kanuc

» Heavy Duty Equipment and Mass Production Components «

Basic and diffusion-grounded Kanuc treatment. No deformation or surface roughening.

Cr—content in steel increases surface hardness.

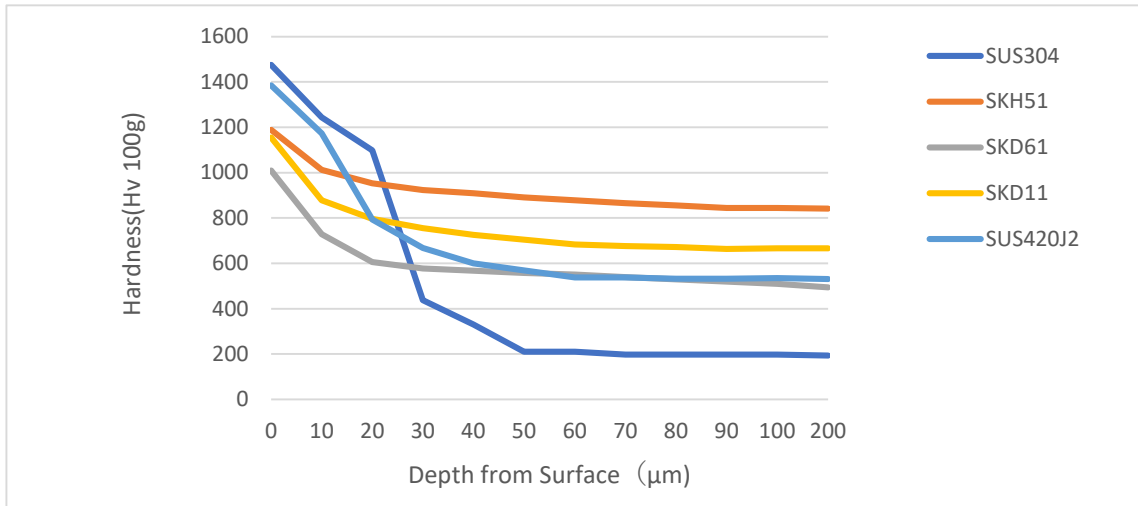
New Kanuc

» Life Up of Various Dies «

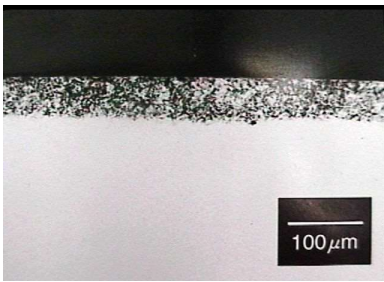
Extensively used for longer life and wear resistance of large-sized diecasting dies to super precision plastic molds. Also applicable to precision stainless steel components.

Technical data

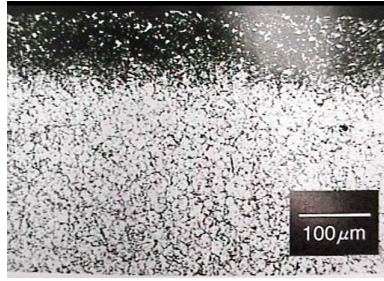
Hardness Curves of Substrate Materials after Kanuc Treatment



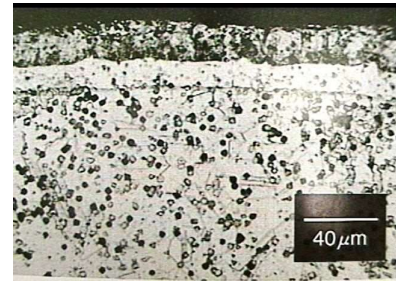
Microscopic Structures after Kanuc Treatment



SKD61



SKH51



SUS304

Steel Grades suitable for Kanuc Application

Steel Grade	Japanese Industrial Standard	Cr content %	Hardness Hv 100g
Cold Working Tool	SKD11, SLD8, DC53, SKD12	5.0~14.0	1,000~1,400
Hot Working Tool	SKD4, SKD5, SKD7, SKD8, SKD61, SKD62	2.0~6.0	800~1,100
Plastic Molding Steel	Cr-Mo tic, 13Cr—Stainlesitic, Ni-Cr-Mo tic, Ni-Cr-Mo-Cu tic	0.4~13.0	600~1,400
High Speed Steel	SKH51~59, SKH2, SKH3, SKH4, SKH10	3.5~4.5	1,200~1,400
Powder High Speed Steel	HAP, ASP, DEX, FAX, SPMR8	4.0~6.0	1,200~1,400
Cr-Mo Steel	SCM435, SCM440, SCM445,	1.0~2.0	600~800
Malaging Steel	YAG, MAS1, KMS-CF90, QM300, NAG21	~ 0.1	1,000~1,200
Austenitic Stainless Steel	SUS303, 304, 316, 316L	16.0~24.0	1,200~1,400
Ferritic Stainless Steel	SUS405, 410L, 430, 430F	10.0~30.0	900~1,200
Martensitic Stainless Steel	SUS410, 416, 420J2, 420F, 440A, 440C	10.0~20.0	900~1,400
Martensitic Heat Resisting Steel	SUH1, 3, 4, 11	7.0~20.0	1,000~1,400
Austenitic Heat Resisting Steel	SUH31, 36, 37	15.0~25.0	1,000~1,400

Company Profile

In order to increase durabilities, Kanuc offers the most appropriate treatment to meet your requirements.

Name of Company

Kanuc Corporation

President

Hiroya Horikoshi

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Tokai Branch

Overseas base

Thailand

China

Indonesia

Foundation

01-Aug-98

Capital

¥11,000,000

MainBank

Shimizu Bank

Takajo - cho Branch

Business Line-Up

Kanuc Surface Treatments



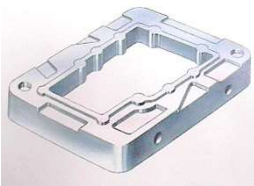
Case Study

To solve problems of heat seizure, scratch, chipping, short life, heat check, etc.

Surface is hardened to the level of hard metals!!

High Durability

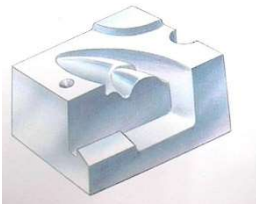
No risk of deformation, No need of re-finishing.



(1) Aluminum Diecasting Dies

(SKD61)

Diffusion-based Kanuc treatment is superior in heat checking and seizure resistances, providing any precision to heavy-duty die with a long life. Application to magnesium dies is highly reputed as well.



(2) Plastic Injection Molds

(plastic molding steels)

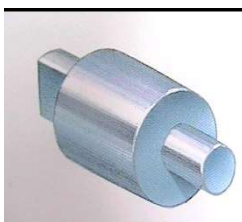
Kanuc treatment is not subject to change in surface roughness (smoothness). Particularly effective against wears of super precision molds, cavity mirror finish and chiveau patterns. Treated layer is weldable as usual.



(3) Hot Forging Dies

(matrix high speed steels)

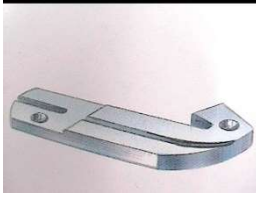
Kanuc treatment and subsequent PVD coating form a composite layer. Extensive dies life increase is available. Kanuc diffusion layer near die surface helps increase the coating adhesion, resulting in optimization of the PVD characteristics.



(4) Cold Stamping Dies

(matrix high speed steels)

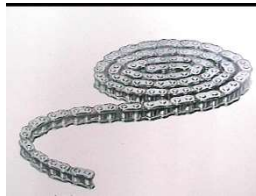
Kanuc and PVD combination provides PVD with a higher adhesion than conventional sole PVD processes. Increased adhesion leads to a longer die life and stability. Appropriate for forging or fine blanking dies.



(5) Shooters

(SUS304)

Stainless steel surface is hardened to the level of cemented carbide steel with superior wear resistance. Components are free from dimensional change and uniformly treated into deep holes. No affinity to solder or aluminum wax is another feature.



(6) Stainless Steel Chains

(SUS304)

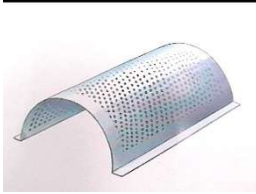
In Kanuc process, chains are treatable as built-up. Excellent wear resistance is obtained. Treated chains are not subject to elongation, contributing to oil-free operation, reducing the rate of defect products.



(7) Slurry Pumps

(high chromsum cast irons)

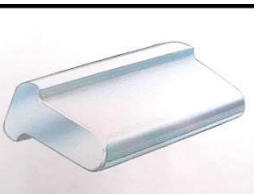
Kanuc treatment is also applicable to stainless cast irons, contributing to the life up of pumps, refiners, etc. under the severest condition. In comparison with conventional spraying or welding processes, cost reduction effect is remarkable.



(8) Stainless Steel Screens

(SUS304,430)

To reduce the wear due to powders in conveying, crashing screening, etc. the use of Kanuc treatment to stainless steels is most suitable. It prevents products from contamination and helps long-run production. Life extension is more than triple.



(9) Hard Metal Piercing Punches

(G3)

Kanuc treatment doubles the number of shots until grinding is needed. Total punch life extension is more than double.