



ILUB lubricants offer a new technology of the lubrication for a cold forging.

ILUB lubricants reduce waste and total cost dramatically.

ILUB lubricants exceed performance of single layer lubricants.

ILUB lubricants are double-layer-type environmentally friendly lubricants for cold forging.

ILUB



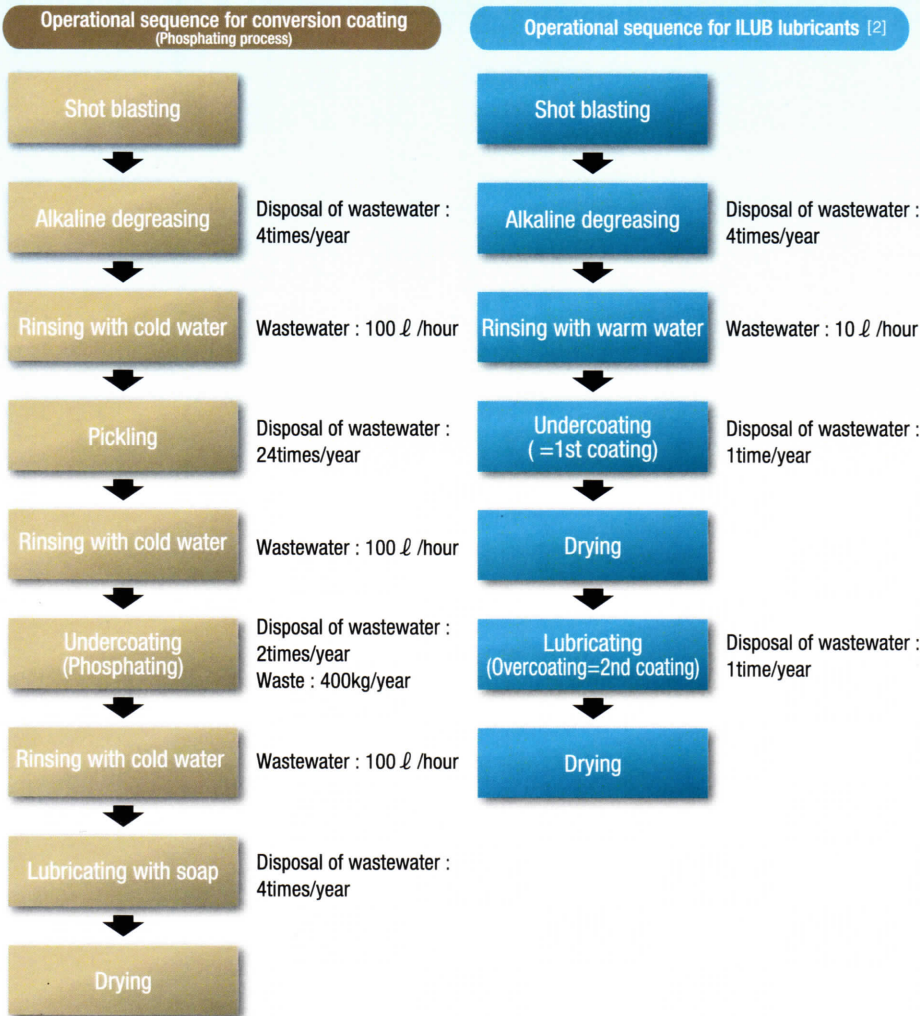
Ideal Lubricants

ILUB CO.,LTD.

ILUB lubricants are double-layer-type environmentally friendly

First advantage

ILUB lubricants reduce the length of the operational sequence for a surface treatment of metal slugs. [1]



Conversion coating needs the large number of processing steps and the long processing time. ILUB lubricants reduce processing steps, processing time, wastes and production costs.

For quality control
Conversion coatings need difficult titrator. ILUB lubricants use very easy moisture analyzer. Moisture analyzer is the workhorse for reliable quality control on the factory.

Second advantage

Reducing total cost

Table 1 Comparison of treatment costs per year (¥) [1]

	Operational sequence for conversion coatings	Operational sequence for ILUB white lubricants [2]	Operational sequence for ILUB MoS ₂ lubricants [2]
Product name	Phosphating + Lubricating with soap	ILUB IW-01 + ILUB IIW-01	ILUB IB-01 + ILUB IIW-01
Trial calculation of agents costs	2,300,000	5,000,000	6,800,000
Trial calculation of the others costs	8,000,000	700,000	700,000
Total costs	10,300,000	5,700,000	7,500,000

In comparison with conversion coatings, ILUB lubricants reduce the length of the operational sequence for surface treatment, waste and total cost dramatically.

[1] : The terms of the comparison : Treatment tank capacity : 1,000ℓ, Aggregate surface area of annual treatment : 47,593m² (φ40×15 units : 4 million pieces)

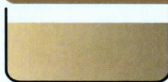
[2] : The proper use of ILUB white lubricants and ILUB MoS₂ lubricants shows Table 3.

Environmentally friendly lubricants for cold forging and have four advantages.

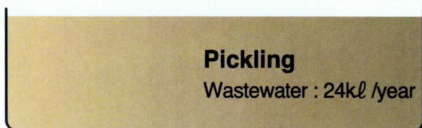
Third advantage

ILUB lubricants reduce environmental risks dramatically

In case of operational sequence for conversion coating



Alkaline degreasing
Wastewater : 4kl /year



Pickling
Wastewater : 24kl /year



Undercoating (Phosphating)
Wastewater : 2kl /year
Waste : 400kg/year

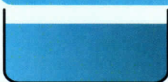


Lubricating with soap
Wastewater : 4kl /year

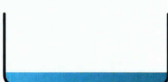


Rinsing with cold water
Wastewater : 300l /hour

In case of operational sequence for ILUB lubricants



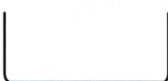
Alkaline degreasing
Wastewater : 4kl /year



Undercoating (= 1st coating)
Wastewater : 1kl /year



Lubricating (Overcoating = 2nd coating)
Wastewater : 1kl /year



Rinsing with warm water
Wastewater : 10l /hour

Conversion coating uses a strong acid and discharges a lot of wastewater.

There are harmful substance such as phosphorus and zinc in the wastewater.

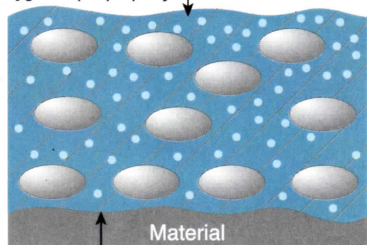
ILUB lubricants does not discharge the wastewater.

Fourth advantage

Double-layer lubricant films made from ILUB lubricants show better performance than single-layer lubricant film made from single-layer-type lubricants.

Single-layer-type lubricant

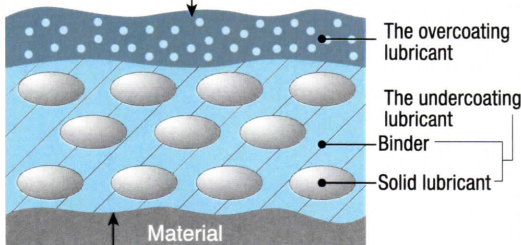
The performance is unstable as a result of the hygroscopic property



Single-layer-type lubricant film does not adhere to a material strongly.

Double-layer-type lubricants : ILUB lubricants

The overcoat reduces friction and flows a material.



The undercoat adheres to a material and has a role of anti-pick-up.

It is difficult for a single-layer-type lubricant film achieves both a low shearing resistance and a well adhesive.

Double-layer-type lubricant films have been developed as a solution for this difficulty. The undercoat is superior in film strength and adhering to a material. It has a role of anti-pick-up. The overcoat has low shearing resistance and is superior in reducing friction.

The structure of double-layer-type lubricant film is similar to a conversion coating. Double-layer-type lubricant shows same superior lubrication performance as a conversion coating.

Table 2 Comparison of the performance among the lubricants

◎ : Excellent ○ : Good △ : Fair × : Bad

Lubricant name	Conversion coating(Phosphating process)	Single-layer-type environmentally friendly lubricants	Double-layer-type environmentally friendly lubricants(ILUB lubricants)
Commercialization time	Approximately 1940	Approximately 2000	Approximately 2007
Lubricant type	Double-layer-type lubricant films with a chemical reaction	Single-layer-type lubricant film like a paint	Double-layer-type lubricant films like a paint
Role of film	Overcoat: Reducing friction Undercoat: Anti-pick-up	Reducing friction and anti-pick-up	Overcoat: Reducing friction Undercoat: Anti-pick-up
Proper use for materials	△ Exclusive lubricant in every material because of a chemical reaction type lubricant	△ Exclusive lubricant in every material because of a single-layer-type lubricant	○ Only control the thickness of lubricant film because of double-layer-type lubricant
Routine quality control of treating baths	△ Difficult titration	△ Measuring changeable electrical conductivity	○ Very easy moisture analysis
Length of operational sequence	△ Long	◎ Very short	○ Short
Amount of wastewater and waste	× Much	○ Little	○ Little
Cost	△ High	◎ Lower	○ Low
Stability of lubricant film	○ Stable	△ Unstable as a result of the hygroscopic property	○ Stable
Lubricating performance	◎ Excellent	△ Fair	○ Good

Table 3 Composition of ILUB lubricants and basic proper use for materials

Type of lubricant	Product name	Use of lubricant	Main composition of lubricant		Material
			Solid lubricant	Binder	
White double-layer-type lubricant	ILUB IW-01	Undercoat	High polymer	Inorganic salt	Aluminium alloys Copper alloys Carbon steels Low-alloyed steels
	ILUB IIW-01	Overcoat	Metallic soap	—	
MoS ₂ double-layer-type lubricant	ILUB IB-01	Undercoat	MoS ₂ , Graphite	Inorganic salt	Carbon tool steels Alloy tool steels Stainless steels High carbon chromium bearing steels
	ILUB IIW-01	Overcoat	Metallic soap	—	
High concentration MoS ₂ single-layer-type lubricant	ILUB IIIB-01	Single coat	MoS ₂ , Graphite	Inorganic salt	Carbon tool steels Alloy tool steels Stainless steels High carbon chromium bearing steels



ILUB CO.,LTD. develops, offers, produces and sells environmentally friendly lubricants for a plastic working. Under the guidance of Contract Prof. Tamotsu Nakamura(Shizuoka University) ILUB CO.,LTD. is developing creative ideal lubricants.

Company name : ILUB CO.,LTD.

The source of the company name : Ideal lubricant

A representative : Representative director Itaru Ishibashi

Head office address : 283-4, Izumi, Kuwana-shi, Mie, 511-0838 Japan

Capital : ¥17,000,000

Incorporation day : 1st August 2014

Company undertaking : Developing, producing and selling environmentally friendly lubricants for a plastic working.



283-4, Izumi, Kuwana-shi, Mie, 511-0838 Japan
TEL.0594-88-5851 FAX.0594-88-5853
E-mail info@ilub.biz