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

IL Ideal Lubricants ILUB CO.,LTD.

ILUB lubricants are double-layer-type environmentally frie

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

Operational sequence for conversion coating (Phosphating process)		Operational sequence for ILUB lubricants [2]	
Shot blasting		Shot blasting	
Alkaline degreasing	Disposal of wastewater : 4times/year	Alkaline degreasing	Disposal of wastewater : 4times/year
Rinsing with cold water	Wastewater : 100 ℓ /hour	Rinsing with warm water	Wastewater : 10 ℓ /hour
Pickling	Disposal of wastewater : 24times/year	Undercoating (=1st coating)	Disposal of wastewater : 1time/year
Rinsing with cold water	Wastewater : 100 ℓ /hour	Drying	
Undercoating (Phosphating)	Disposal of wastewater : 2times/year Waste : 400kg/year	Lubricating (Overcoating=2nd coating)	Disposal of wastewater : 1time/year
Rinsing with cold water	Wastewater : 100 ℓ /hour	Drying	
Lubricating with soap	Disposal of wastewater : 4times/year		
Drying			

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 titration.
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]

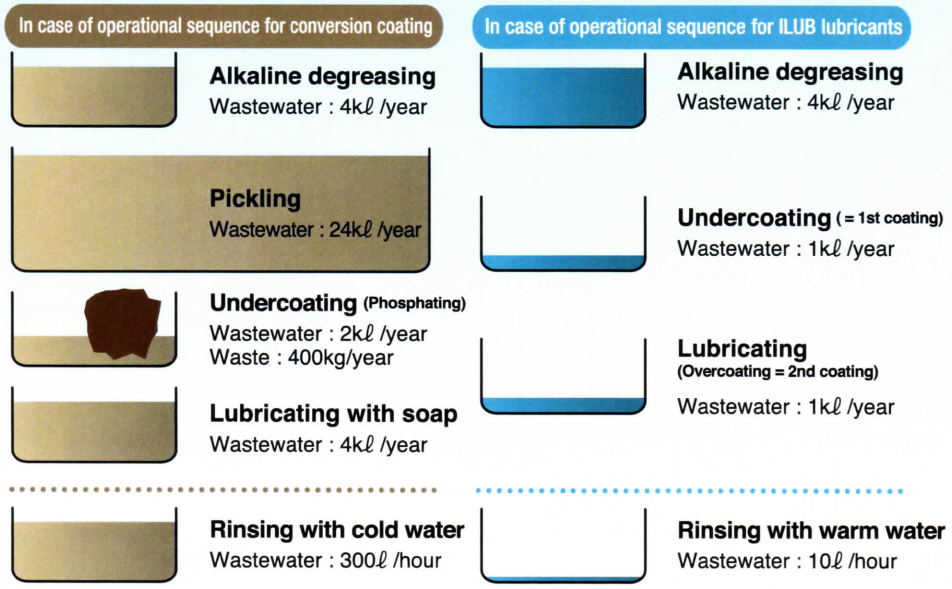
	Operational sequence for conversion coatings	Operational sequence for ILUB white lubricants [2]	Operational sequence for ILUB MoS_2 lubricants [2]
Product name	Phosphating + Lubricating with soap	ILUB IW-01 + ILUB IIW-01	ILUB IB-01 + ILUB IIW-01
Trial calculation of agents costs	2,300,000	5,000,000	6,800,000
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 : 47,593m^2 (ϕ40×15 units : 4 million pieces)
[2] : The proper use of ILUB white lubricants and ILUB MoS_2 lubricants shows Table 3.

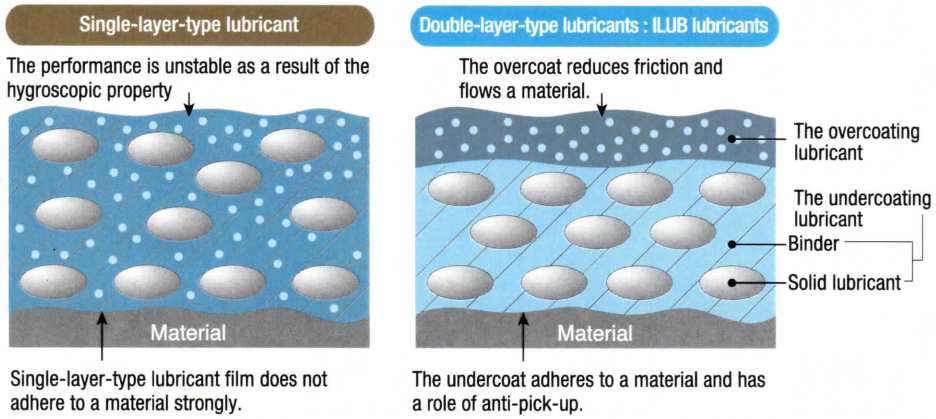
ndly lubricants for cold forging and have four advantages.

Third advantage ILUB lubricants reduce environmental risks dramatically



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.



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

Ideal Lubricants

ILUB CO.,LTD.

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 souce 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 : ￥12,000,000

Incorporation day : 1st August 2014

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

Ideal Lubricants

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