



## TOTAL WIRE PROCESSING

HAKUFORM wire drawing products  
Solutions for cold heading qualities  
and all types of wire drawing



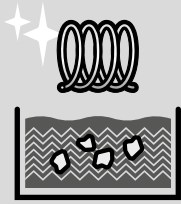
Harmony in  
Chemistry

## SURFACE PREPARATION

## ZINC PHOSPHATE

Descaled, clean wire is the basis for efficient wire processing

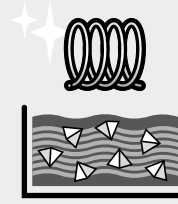
A zinc phosphate layer on carbon steel decisively increases the performance in drawing and cold heading



ALTERNATIVE TO ALKALINE PICKLING

### HAKUPUR 23-98

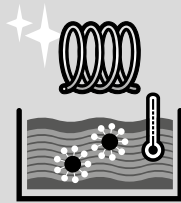
- Good descaling
- Acidic pickling product
- Free of permanganate
- Unproblematic in wastewater treatment



ACTIVATING

### ACTIVATOR 1

- Grain refinement
- Faster layer formation
- Better anchored and thus more efficient zinc phosphate coatings

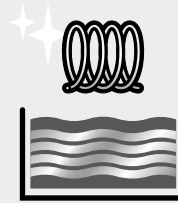


ALKALINE DEGREASING

### HAKUPUR 50s

Also for stripping and dephosphating e.g. before the heat treatment of high-strength steel grades

- Excellent fat and dirt dissolving power
- Clean surfaces with good wettability



ZINC PHOSPHATING

### DECORRDAL 60-75

(Iron-sided)

- Perfect for cold heading grades as well as first and second drawing
- Low sludge
- Fine crystalline
- No nitrite detoxification required
- Almost infinite bath service life
- Low area-related consumption



PICKLING

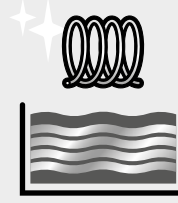
### DECORRDAL

Various additives for the targeted control of mineral acid pickling:

- Pickling inhibitor
- Pickling degreaser
- Pickling accelerator

For consistently good pickling results and long service life of the pickling baths.

- Low consumption
- Constant pickling result



ALTERNATIVE:

### DECORRDAL 60-45

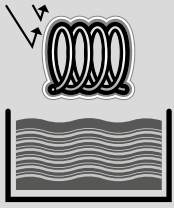
(Nitrite accelerated)

- All-rounder for dip & swiping applications
- Activation advantageous, but not required
- For first, second and third drawing as well as cold heading qualities
- Fine crystalline to almost amorphous
- (almost) Infinite bath service life



## WIRE DRAWING LUBRICANTS

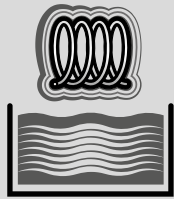
High drawing and forming performance for a modern and efficient manufacturing processes



### NEUTRALIZING

#### **ADDITIVE 530/540/550**

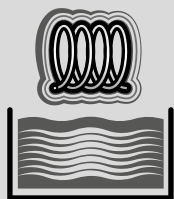
- High buffering and alkalizing capacity
- Nitrite free
- Safe protection of the subsequent lubricant baths against annoying acidic entrainment
- Also suitable for bare corrosion protection to a limited extent



### REACTIVE SOAP

#### **HAKUFORM 90-28**

- High forming performance in wire drawing and cold heading
- Also for cold massive forming
- High tool service life
- Long bath service life



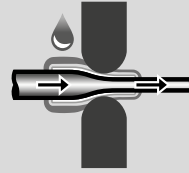
### POLYMER LUBRICANT

#### **HAKUFORM 90-33**

- Soap alternative with high forming capacity
- Can also be used on bright wire in some cases
- Free of problematic ingredients
- Constant forming performance, marginal signs of aging
- Superior cleanliness of the wire surface
- Low residues on workpiece and in dies

## ADDITIONAL WIRE DRAWING LUBRICANTS

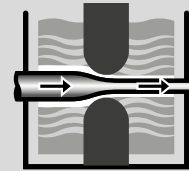
Sometimes one lubricant is not enough – the compatibility of the lubricants is crucial!



### POLYMER LUBRICANT

#### **HAKUFORM 90-33**

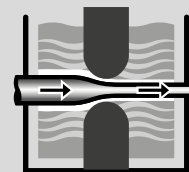
- Alternative to conventional dry drawing agents
- Use in the die box
- Powerful
- Dust-free



### DRAWING EMULSION

#### **HAKUFORM 70-4 OF**

- For wire cold rolling and first/second drawing
- Free of formaldehyde
- Boron free
- Ready to use



### FULLY SYNTHETIC WET DRAWING AGENT

#### **HAKUFLUID**

- Modern mineral oil-free, clearly water-soluble alternatives to drawing emulsions for first, second and third drawing
- Superior cleanliness of the wire surface
- Alternative to dry drawing
- Longer service life of the press oils

## COLD HEADING AND THREAD CUTTING

The right (coolant) lubricant for high performance and low tool costs

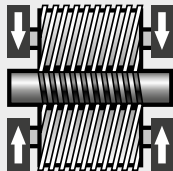


COLD HEADING/COLD FORMING OILS

**HAKUFORM 20-27**

**HAKUFORM 20-895**

and other



THREADING

**HAKUFORM 20-27**

- Cold extrusion oil and for threading

**HAKUFORM 20-45-2**

- Tapping and deep drilling

**HAKUFORM 20-895**

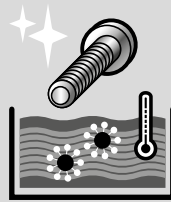
- Threading, also for stainless steel

**HAKUFORM 50-62 KX**

- Thread grinding (for carbon steel)

## FINAL TREATMENT

Here is a first overview of our options.  
More information available [pt-sales@kluthe.com](mailto:pt-sales@kluthe.com)



ALKALINE STRIPPING/  
DEPHOSPHATING

**HAKUPUR 50s**

e.g. for stripping and dephosphating prior to the heat treatment of high-strength fasteners



PHOSPHATING

**DECORRDAL 50s / 60s**

- Zinc phosphating

**DECORRDAL 70s**

- Manganese phosphating

**DECORRDAL 300s**

- Trication

**DECORRDAL 500 series**

- Trication, nickel free

**DECORRDAL ZT**

- Thin film technology

CORROSION PROTECTION

**CUSTOS**

- Emulsions and oily products

**HAKUDREN**

- Dewatering fluids

**PASSIVATIONS**

- Also chrome-free
- Usual paint systems
- Usual zinc flake systems

## HAKUFORM WIRE DRAWING PRODUCTS

### SOLUTIONS FOR COLD HEADING QUALITIES AND ALL TYPES OF WIRE DRAWING

Iron and steel wires belong to the most important semi-finished products for large-scale production of various components. Those wires are drawn to the desired size in numerous operations. **DECORRDAL zinc phosphating products** are used for immersion or swipe applications in combination with various **HAKUFORM forming lubricants**. Thicker and medium diameters are dry drawn, thinner ones are wet drawn with **HAKUFORM emulsions** or fully synthetic, clearly water-soluble **HAKUFLUID products**. The brassed "steel cord" for tire carcasses can be reduced in diameter to approx. 0.15 mm.

Wire pre-drawn with zinc phosphate and lubricant (e.g. reactive soap **HAKUFORM 90-28**) is also used for cold heading. Standard screws, fasteners of all kinds and increasingly complex drawing parts (longitudi-

nally profiled shafts for steering systems, spark plug housings, cups, sleeves, etc.) are manufactured in multi-stage, high-speed horizontal presses, using cold extrusion oils such as **HAKUFORM 20-27** for cooling and additional lubrication.

**HAKUFORM products** are used to create the threads in rolling and pressing processes, and finally the workpieces are stripped with **HAKUPUR 50**, annealed, tempered and given a final coating. Different **DECORRDAL products** are available for this, depending on the area of application.

Perfectly coordinated products for the entire process chain and technical support from a single source.

This is **#TotalWireProcessing**.





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