



## TECHNICAL DATA SHEET

### GRODAL CU 1350 N

#### HEAVY-DUTY MULTI-PURPOSE COPPER and ALUMINIUM WIRE DRAWING FLUID

GRODAL CU 1350 N is a synthetic ester based, water extendible, copper wire drawing lubricant, formulated for drawing of rod, intermediate and fine copper wire. GRODAL CU1350 N is the best compromise, as unique fluid to meet the requirements of lubricity needed in the drawing of 8-mm rod and the detergency needed for drawing the fine sizes. For Aluminium wire drawing GRODAL CU 1350 N is used neat, with no emulsion in water, and it is useful to draw intermediate and fine sizes. GRODAL CU 1350 gives excellent finish quality on the surface of the wire and it is the best choice in drawing lines producing enamelled wire. Furthermore, it is possible to draw copper or aluminium wire in the same enamelling line using the same product, neat to draw aluminium and emulsified to draw copper.

GRODAL CU-1350 N forms very stable emulsions with water of medium hardness showing excellent bio-stability. We recommend to use water whose hardness is lower than 400 ppm as CaCO<sub>3</sub>, although the longest service life will be obtained when water of low mineralization like reverse osmosis or deionized water is used. GRODAL CU 1350 N shows a low tendency to foam.

Because of its high lubricity GRODAL CU 1350 N may be used in other metalworking operations such as rolling, sheet deep drawing, cold forming, etc. The great heat transfer ability combined with the high film strength of GRODAL CU 1350 N allows high drawing speeds, excellent finish and long die life, no matter the material of the die (diamond polycrystalline, hard metal or diamond).

The emulsions of GRODAL CU 1350 N are stable even at very high temperatures over 55 °C, nevertheless we recommend that the emulsion temperature, while working, be lower than 45°C

#### ADVANTAGES

- Improves die and capstan life.
- Works well in modern high-speed machines.
- Provides great finish on the wire.
- Can be used to draw different sizes of copper wires by changing the concentration.
- Leaves the machine and the wire very clean.
- Economical to use.
- Only 1 product for aluminium or copper

#### TYPICAL CHARACTERISTICS

- Appearance	viscous brown liquid
- Specific gravity	0.90
- Kinematic viscosity at 40 °C	45 mm <sup>2</sup> /s
- Flash point	180 °C
- Pour point	- 10 °C
- pH range (10% emulsion)	7.5 - 9

## OPERATING DATA

<u>Wire type</u>	<u>Concentration % volume</u>
Aluminium intermediate and fine	used neat
<u>Copper</u>	
- Rod	12-18 %
- Intermediates	4-10 %
- Fine	3 - 5 %

It is highly recommended that GRODAL CU-1350 N be added to the water and not the other way around. Start with a clean pre-washed system. The product must be mixed at a low rate, at a point in the system with highest agitation, and farthest from any filtration system. (To prevent possible premature mixing or emulsion separation, shut down filtration for the first day of operation.) The ideal water temperature is 30 °C to 35 °C. It is recommended that water hardness be lower than 400 ppm as CaCO<sub>3</sub>. Do not allow the drums be kept at temperatures below 0 °C or in places where rain could wet the drums.

## ANALYTICAL CONTROL

The concentration can be determined using a simple refractometer with the scale in ° Brix. The reading corresponds to the actual concentration. (Refractometer factor = 1). Other procedure consists in splitting the emulsion with concentrated sulphuric acid. A detailed procedure will be provided upon request.

## NOTES REGARDING THE USE IN BOTH ALUMINIUM AND COPPER WIREDRAWING

When GRODAL CU 1350 N is to be used to draw copper and aluminium in the same line, like in enamelling lines, we recommend to have different tanks. One tank contains the emulsion for copper wiredrawing, the other tank, with no filtering system, contains the pure GRODAL CU 1350 N. To change from aluminium wiredrawing to copper no special procedure is needed, just clean the drawing machine and supply the machine with the emulsion. To change from copper to aluminium it is imperative to clean and dry the drawing machine before supplying the pure GRODAL CU 1350 N. In drawing Aluminium no filtration system is recommended. When the solids content in the oil is high, say 10 %, transfer the oil to another tank and let the fines and sludge settle down (it may take several weeks). Use the upper oil again and dispose of the sludge in the bottom.

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**GRAUER & WEIL (INDIA) LTD. (Lube Division)**  
**Registered Office : 'Growel House' , Akurli Road, Kandivli (E), Mumbai - 400 101, India**  
**Tel. : 91 - 22 - 66993000 , Fax : 91 - 22 - 669930101/11,**  
**E-mail : lubricants@growel.com, Website : www.growel.com**