



## ADDITIVES AND WAXES FOR WIRE DRAWING



## FORMULATION COMPONENTS FOR WIRE DRAWING

- » Anti-deposition agents
- » Anti-tap / Anti-wear
- » Emulsifiers
- » Wetting agents
- » Waxes
- » Defoamers
- » Rheology modifiers

## IMPORTANT CHARACTERISTICS FOR WIRE DRAWING

### LUBARIT® in liquid wire drawing



- » Effective die lubrication
- » Good heat transfer
- » High wetting efficiency
- » Low foaming
- » Easy to clean post drawn wire
- » Stable product blends

### CERETAN® in powder wire processes



- » Good anti-wear
- » Low wire breakage
- » Optimal wire topology
- » Low dusting
- » Easy to clean post drawn wire
- » Easy to recycle



# Additives for wire drawing products

Product	Chemistry	Percentage of Active, Water & non-aqueous	Tank side defoamer	Surfactant	Dispersant Water Based	Dispersant Oil Based	Wire drawing Water based	Wire drawing Oil based	Wire drawing Dry powder	Anti-tap / Anti-wear
<b>ANTIDEPOSITION AGENTS</b>		<b>LIQUID</b>								
EDAPLAN® 395	anc				○					
EDAPLAN® 494	ac				●					
EDAPLAN® 516	ac				●					
EDAPLAN® 916	fa				●	○				
EDAPLAN® 930	ac				○	●				
<b>ANTIFOAMS &amp; DEFOAMERS</b>		<b>LIQUID</b>								
FOAM BAN® 155	sil,pa							●		
FOAM BAN® 1860	3D, poa						●	○		
FOAM BAN® 2699	poa		●				○			
FOAM BAN® 2875	oms							○		
FOAM BAN® 3057	wx, mo		○				○			
FOAM BAN® HP970	3D						●			
FOAM BAN® TK-360	3D, poa		●				●			
<b>RHEOLOGY MODIFIERS</b>		<b>LIQUID</b>								
TAFIGEL® AP 16	ac						○			
TAFIGEL® AP 20	ac						●			
TAFIGEL® PUR 61	pur						○			
<b>SURFACTANTS/EMULSIFIER</b>		<b>LIQUID</b>								
EDAPLAN® 916	fa					○				
LEUKONÖL LBA-2	sco							●		
LUBARIT® EXP 6533/1	pos						●			●
METOLAT® 200	es			●			○	●		●
METOLAT® 250	svo			○			●			
METOLAT® 388	pge			●						
METOLAT® 1299	es									●
METOLAT® 1602	es			○			●	○		●
METOLAT® TH-75	sfo							●		
<b>WETTING AGENTS</b>		<b>POWDER</b>								
METOLAT® P 530	snc			●			●		●	○

○ Recommended ● Highly recommended

3D = 3-Dimensional siloxane  
 ac = Acrylic  
 anc = Anionic copolymer  
 es = Ester wax  
 fa = Fatty acid  
 mo = Mineral oil

oms = Organically modified polysiloxane  
 pa = Paraffin wax  
 pge = Polyglycol ester  
 poa = Polyalkalene technology  
 pos = Phosphate ester  
 pur = Polyurethane

sco = Sulphated castor oil  
 sfo = Sulphated fish oil  
 sil = Silicone  
 snc = Sulphated naphthalene condensate  
 svo = Sulphated vegetable oil  
 wx = Wax



# Waxes for wire drawing products

Product	Chemistry	Percentage of Active Water & non-aqueous	Melting Point [°C]	Particle size [Micron D <sub>98</sub> ]	Wire drawing Water based	Wire drawing Oil based	Wire drawing Dry powder	Corrosion Protection	Anti-wear
<b>WAXES POWDER</b>									
CERETAN® MA 7008	ebs		143–151	8			●		
CERETAN® MA 7250	ste		98–108	50			●		
CERETAN® MC 6015	ca		81–89	15			●		
CERETAN® MF 5108	ptfe		320–340	8			●		○
<b>WAXES LIQUID</b>									
LUBARIT® 267/B	ptfe		–	5		●			●
LUBARIT® 276/F	ptfe		–	8	○				●
LUBARIT® 328/G	am		147–153	30	●				
LUBARIT® 328/R	am		143–151	18	●				
LUBARIT® 368/W	pe/ptfe		104–112	18	●				
LUBARIT® 408/W	cp		–	–	○			●	
LUBARIT® 868/F	ca blend		87–93	10	○				
LUBARIT® 901/A	am, pe		150	10		●			
LUBARIT® 998	pe		125–135	9	○				
LUBARIT® 1102/2	pe		130–136	25	●				
LUBARIT® 7040	pe		120–130	3	○				
LUBARIT® 7040 ET	ft,pe		103 & 114	0.3	●				
LUBARIT® CA 300	ca blend		72–80	3	●				
LUBARIT® T-304/D60	fb		102	–				●	
LUBARIT® WT 18040	ft		112–115	20	●				
OMBRELUB CD	cst		140–150	–	●				●
SÜDRANOL® 195	hdpe		128–137	–	●				
SÜDRANOL® 340	pe		95	–	●				●

○ Recommended ● Highly recommended

am = Amide  
ca = Carnauba wax  
cp = Co-polymer  
cst = Calicum stearate

ebs = Ethylene bis stearamide  
fb = Functional blend  
ft = Fischer-Tropsch wax  
hdpe = High density polyethylene

pe = Polyethylene  
ptfe = Polytetrafluoroethylene  
ste = Stearamide

### FURTHER RECOMMENDATIONS

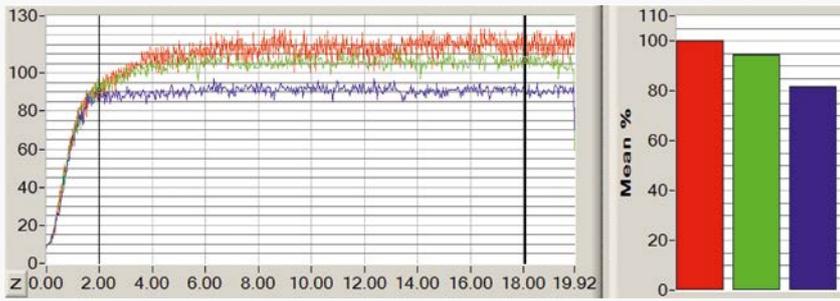
LUBARIT® 328/R is a surfactant rich wax, we encourage reducing the addition level of other surfactants and emulsifiers in the wire drawing formulation

LUBARIT® 408/W for non-cuprous applications

SÜDRANOL® 340 for cuprous alloy applications



## MICROTAPPING TORQUE TEST



Curves obtained at 2%, 5% and 10% **LUBARIT® EXP 6533/1** in deionized water (DI). Vertical axis shows torque (N/cm) and horizontal axis shows millimeters of depth of the tapping. The mean values of five measurements are taken between 2 and 18 mm of depth.

Results show the required force for tapping markedly decreases on increasing addition levels of **LUBARIT® EXP 6533/1**.

Within the data acquisition range from 2 to 18 mm the mean force value drops relative to the amount of **LUBARIT® EXP 6533/1** in the dilution, as shown.

Reference		Maximum value (N/cm)	Mean value (N/cm)	S.D. (N/cm)
<span style="color: red;">■</span> LUBARIT® EXP 6533/1	2%	124.0	111.3	7.1
<span style="color: green;">■</span> LUBARIT® EXP 6533/1	5%	113.0	104.9	3.9
<span style="color: purple;">■</span> LUBARIT® EXP 6533/1	10%	97.0	90.6	2.3

## SOLUBILITY TEST (12 DAYS, AMBIENT) LUBARIT® EXP 6533/1



**LUBARIT® EXP 6533/1** dissolves completely in DI water and is perfectly stable at all dilution rates.



**COMPETITOR A** Insolubility increases at higher concentrations. Solutions flocculate over time.



**COMPETITOR B** Compatible and stable at low treat rates. High treat rate results in solid flocculation.

## FOAM TEST BY HAND SHAKING

Hand shake data (5% dilution in DI water)

System	Initial		5 Day	
	Time (s)	Height (cm)	Time (s)	Height (cm)
<b>LUBARIT® EXP 6533/1</b>	15	b	15	b
	30	b	30	b
	60	c	60	c
Competitor A	15	c	15	1.0
	30	c	30	1.0
	60	c	60	1.0
Competitor B	15	2.0	15	2.2
	30	2.0	30	2.2
	60	2.0	60	2.2

c = Collar of foam  
b = Blanket of foam

**LUBARIT® EXP 6533/1** initially shows only a blanket of foam reducing to a collar after 60 seconds. After 5 days aging only a blanket of foam persists. These are very good and consistent results.

The competitive product B develops more foam initially and after five days than **LUBARIT® EXP 6533/1**, competitive product A shows a collar of foam immediately after the hand shake test. However, the stability of competitive product A is very poor, as it shows increased development of foam after reshaking of the five days aged solution.



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