

# MINING INDUSTRY

*Exclusive polymers*



derypol

# MINING & MINERAL PROCESSING

## Minerals & Metals

### Coagulant – Flocculants

- ✓ Process water treatment
- ✓ Solid treatment
- ✓ Ultrafine solids recovery
- ✓ Raw water treatment
- ✓ Waste water treatment
- ✓ Dust control

“ Our high performance Coagulants and Flocculants help achieve challenges to increase **Economic performance & Environment protection performance** ”

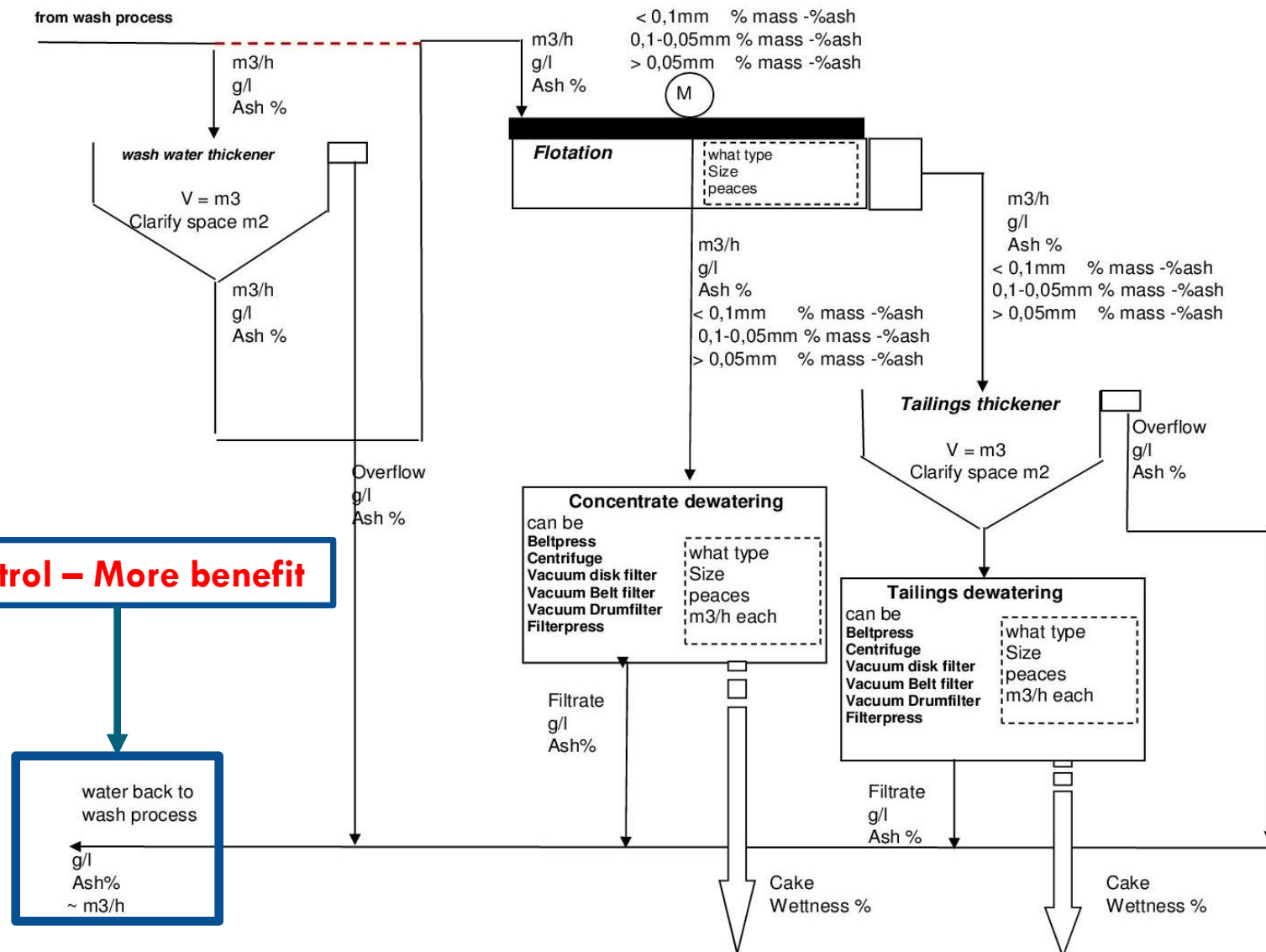
# MINERALS AND METALS

Main liquid – solid processes where our POLYMERS are used

- 1) Sizing/Separation/Concentration
- 2) Leaching
- 3) Flotation
- 4) Thickening/Clarifying
- 5) Filtration/Dewatering



# FINES CONTROL PROCESS



**Fines control – More benefit**

water back to  
wash process

$g/l$   
 $Ash\%$   
 $\sim m^3/h$

Filtrate  
 $g/l$   
 $Ash\%$

Cake  
Wetness %

Filtrate  
 $g/l$   
 $Ash\%$

Cake  
Wetness %

# OUR POLYMERS & EXCLUSIVE TECHNOLOGIES

*For Mining & Mineral Processing*

## HIMOLOC Flocculants

A unique and different technology that achieves great results.

## HYFLOC Coagulants

Wide range of synthetic polymers based on different monomers.

## HYGREEN Coagulants

Vegetal organic products, modified with quaternary amines.

- ✓ New chemistries which will deliver improved performance and value for our customers.
- ✓ New chemistries that reduce or eliminate environmental impacts.
- ✓ Mining processes can be **GREEN** using some of our technologies.

# HIMOLOC FLOCCULANTS

## *Main Benefits & Advantages*

- ✓ Quicker product activation compared to standard liquid and powder flocculants.
- ✓ Easy preparation with static mixers.
- ✓ Requires a simple feed and storage system.
- ✓ Stable settling in storage.
- ✓ Better suited for remote applications.
- ✓ Shelf life 9 months where as Emulsions are 6 months.
- ✓ Salty and high conductivity media affinity.
- ✓ Green Technology: Free of Solvents and Surfactants.
- ✓ Exclusive and innovative technology!



## HIMOLOC SERIES: ANIONIC TYPES

Anionic flocculants are required in order to remove solids and produce required settling rates to have clean recycled water needed for the continuous cleaning water

Product	Anionicity (molar %)	Viscosity	Solids (%)
GO2030	30%	<3000 cp	43 ± 1,5
GO4050	45%	< 3000 cp	40 ± 1,5
GO2010	10%	< 3000 cp	44 ± 1,5
GO4070	70%	< 3000 cp	43 ± 1,5
GO7130*	30%	<250 cp	45 ± 1,5
GA8713*	13%	<400 cp	43 ± 1,5

GO7130\* Very High Molecular Weight; Best Seller

GA8713\* Works at any pH from 1 to 14

## HIMOLOC SERIES: CATIONIC TYPES

Cationic flocculants are required in order to remove solids and produce required settling rates to have clean recycled water needed for the continuous cleaning water.

Cationic flocculants can act in dual treatments, combined with anionic flocculants. They are developed for sludge dewatering processes. Our HIMOLOC range contains a unique & exclusive monomer that improves their efficiency in conductivity medias or when it is necessary to flocculate oils or fats.

Product	Cationicity (molar %)	Viscosity	Solids (%)
DR2200	4%	<2000 cp	43 ± 1,5
DR2500	10%	<500 cp	40 ± 1,5
DR3000	35%	<600 cp	45 ± 1,5
DR4000	80%	<600 cp	40 ± 1,5

# HYFLOC COAGULANTS

## Main Benefits & Advantages

- ✓ Performance at a **wide range of pH**
  - ✓ **No pH and conductivity change** of the final product
  - ✓ **Savings** in fresh water at the process
  - ✓ **Direct** application possibility
  - ✓ **Exclusive & new** monomers
- 
- **Our experience** in mining field has shown us that **coagulants** are the **key products** in the **plant processes**
  - These coagulants **have the power to remove the main fines** and flocculants is only used to recover fines better as desired

## HYFLOC COAGULANTS SERIES

Polyamines, PolyDadmacs and PolyBzquats developed to remove the main fine particles

HYFLOC	Appearance	Density	Viscosity	pH
<b>C410*</b>	Yellowish translucent	~ 1,17 g/cm <sup>3</sup>	~ 800 cp	3,5 - 5,5
<b>K225</b>	Colourless translucent	~ 1,05 g/cm <sup>3</sup>	~ 1400 cp	4,5 - 6,5
<b>K240</b>	Colourless translucent	~ 1,10 g/cm <sup>3</sup>	~ 10.000 cp	3,5 - 5,5
<b>K533*</b>	White-yellowish opaque	~ 1,10 g/cm <sup>3</sup>	~ 15.000 cp	3,4 - 6,5

**Hyfloc C410** is our best seller.

**Hyfloc K533** is the exclusive coagulant based in Bzquat monomer; excellent performance in high conductivity media

# HYGREEN COAGULANTS

## Main Benefits & Advantages

- ✓ Vegetable Organic Cationic Polymers
- ✓ Low molecular weight
- ✓ Direct application
- ✓ Biodegradables
- ✓ No pH and conductivity change of the sample
- ✓ Wide range of pH performance
- ✓ Sludge reduction

# HIMOLOC COAGULANTS

## Main Benefits & Advantages

HIMOLOC Coagulants: They can perform in dual treatments, combined with anionic flocculants. They are innovative coagulants with low – medium molecular weight

	Appearance	Cationicity (molar %)	Viscosity	Solids %
<b>DF100</b>	Milky white liquid	100%	<3000 cp	40 ± 1,5
<b>DR4000LMW</b>	Milky white liquid	80 %	<300 cp	50± 1,5

## HYGREEN COAGULANTS SERIES

The aim of these products is to improve the performance of the treatments, reducing environmental impact and overall costs

Hygreen	Actives	pH	Viscosity
<b>GT25</b>	23-27%	1,8 - 3	<500 cp
<b>GT90P</b>	>93%	1,8 - 2,7 (10% sol)	Powder
<b>KT2533</b>	20-22%	2 - 3	< 7000 cp

# DERYPOL COAGULANTS

## *Benefits & Advantages*

Derypol's coagulants offer the best performance:

- ✓ More fines recovery
- ✓ Better concentrate
- ✓ Less plant stops
- ✓ More life of the recycled process water
- ✓ In some cases, only the coagulant is needed

## OTHER PRODUCTS: DUST CONTROL

At DERYPOL, we understand that dust can create serious health and environmental issues and be a drain on your bottom line results. Left untreated, dust is the source of numerous problems such as:

- ✓ Acute and chronic health risk from inhalation
- ✓ Irritation to eyes, ears, nose, throat and skin
- ✓ Safety hazard caused by impaired visibility
- ✓ Fire and explosion hazards
- ✓ Increased operating cost due to lost production time
- ✓ Material losses from wind and transport
- ✓ Premature equipment-wear leading to higher maintenance and increased equipment replacement costs
- ✓ Poor relations with the work force and surrounding community

Our innovative proposal it is our new **HIMOLOC AD500**, again our exclusive HIMOLOC technology offers clean solutions for solving dust problems and achieving excellent savings

# OTHER PRODUCTS: DUST CONTROL

## BENEFITS & ADVANTAGES:

- ✓ **Bridge for any grading**
- ✓ **Environmental** image improvement Source: Reduces Carbon Footprint
- ✓ **Easy to use** solution in seconds without clogging of sprinkler
- ✓ **AGGREGATING** clay and silt once dry, increasing the grain size makes it difficult for the air suspension to be left in the dust produced by decreasing wind
- ✓ **ZERO VISCOSITY** once dissolved, which added to the fact that does not generate mud, material adhering to vehicle wheels decreases.
- ✓ **BURNABLE**, applied to coal mining gases are emitted NO<sub>x</sub>, CO<sub>x</sub> and SO<sub>x</sub> in a small proportion compared with the volume of mineral
- ✓ **Prevents generating mud** and improves the properties of the clay and silt, reducing thixotropic and increasing friction coefficient
- ✓ **ECONOMIC SAVINGS RESULTS**

**HIMOLOC  
AD500**

**Viscosity**

< 1500 cps

**pH**

2.0 – 4.0

**Molecular  
Weight**

Very High



**derypol**

# APPLICATIONS

Some of the primary industries we serve include the following:

- ✓ Bauxite & Alumina
- ✓ Coal
- ✓ Construction Minerals - sand, gravel, crushed stone & cement
- ✓ Iron Ore
- ✓ Oil Sands
- ✓ Pigment & Clay fillers – Kaolin & Titanium
- ✓ Phosphate - phosphoric acid & phosphate fertilizer
- ✓ Potash
- ✓ Precious Metals - Gold, Silver and Platinum
- ✓ Base Metals - Copper
- ✓ Other Industrial Minerals

## KEY IDEAS TO REMEMBER

- 1 Less fines circulating means less stops in production which translates to **more benefit**
- 2 Less fines means less ashes on the concentrate which translates to **more benefit**
- 3 Wide **cationic and anionic** range and different molecular weight help form different floc size depending on the ratio height/width of the decanter.
- 4 **HIMOLOC** technology it is the **easiest and greenest** technology in terms of flocculants and at the same time the most innovative.
- 5 **HYGREEN** products there are new vegetable coagulants that provide excellent results in terms of **performance and savings**

We are offering 3 types of competitive advantages: **innovation**, **cost reduction** (savings) and **differentiation**

Our business grows...  
...together with you!



*"No Water, No Life.  
No Green, No Blue."*

*– Sylvia Earle*