



**CYPHER  
ENVIRONMENTAL**

“Always do what's right.”



Smith Environmental Solutions  
(Sask. Distributor)



# DUSTY ROADS?



**Environmentally  
Friendly, Non-Toxic  
& Non-Corrosive**



**DUST/BLOKR**® is a formula consisting of natural ingredients specifically engineered for haul roads and access roads. Applicable to almost any soil type, it is applied using standard equipment and techniques.

**DUST/BLOKR**® was designed to provide an environmentally friendly, non-corrosive and cost-competitive replacement for calcium and magnesium chloride, as well as hydrocarbon based products and even water!

**DUST/BLOKR**® is not adversely affected by heavy rains or long periods of dry weather and has no adverse effect on the environment or vehicles, due to its non-corrosive properties. When used at large-scale mining operations, vast amounts of water, fuel and operating costs are saved.



## REDUCES MAINTENANCE COSTS

- Enhances engineering properties & stability of the road base
- Reduced need to grade treated roads



## NON-CORROSIVE & ENVIRONMENTALLY FRIENDLY

- Will not cause corrosion on vehicles or application equipment
- No adverse impact on roadside vegetation or nearby water bodies



## INCREASED WATER RESISTANCE RESULTING IN BETTER PERFORMANCE IN ALL WEATHER CONDITIONS

- Helps shed water, resulting in a more stable road in wet conditions
- Does not get slippery when wet



## REQUIRES LESS FREQUENT RE-APPLICATION AS COMPARED TO TRADITIONAL DUST SUPPRESSANTS



## COST COMPETITIVE WITH CHLORIDES & HYDROCARBONS



## DRAMATIC FUEL SAVINGS COMPARED TO WATERING ROADS



BETTER ROADS.  
BETTER BOTTOM LINE.  
BETTER PLANET.

## CLIENT RESULTS

"Treating our roads (with DUST/BLOKR®) would permit us to get going much sooner after heavy rain due to the fact that its stabilizing effect would allow us to maintain the proper profiling and allow rain water to run off. Quicker drying would occur, resulting in increased production."

Mike Proulx, Acting mine manager, Smd Lefa Gold, Guinea



## APPLICATIONS

- HAUL ROADS
- ACCESS/SECONDARY ROADS
- TAILINGS PILES
- PARKING LOTS
- TARMACS, RUNWAYS & HELIPADS
- EROSION CONTROL





90%+ 

REDUCTION IN AIRBORNE DUST GENERATED FROM THE ROADS

85%+ 

REDUCTION IN WATER CONSUMPTION

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**SUPERIOR DUST CONTROL  
AND SOIL STABILIZATION**

# **DUST/BLOKR<sup>®</sup>**/SB

## How It Works

### Introduction

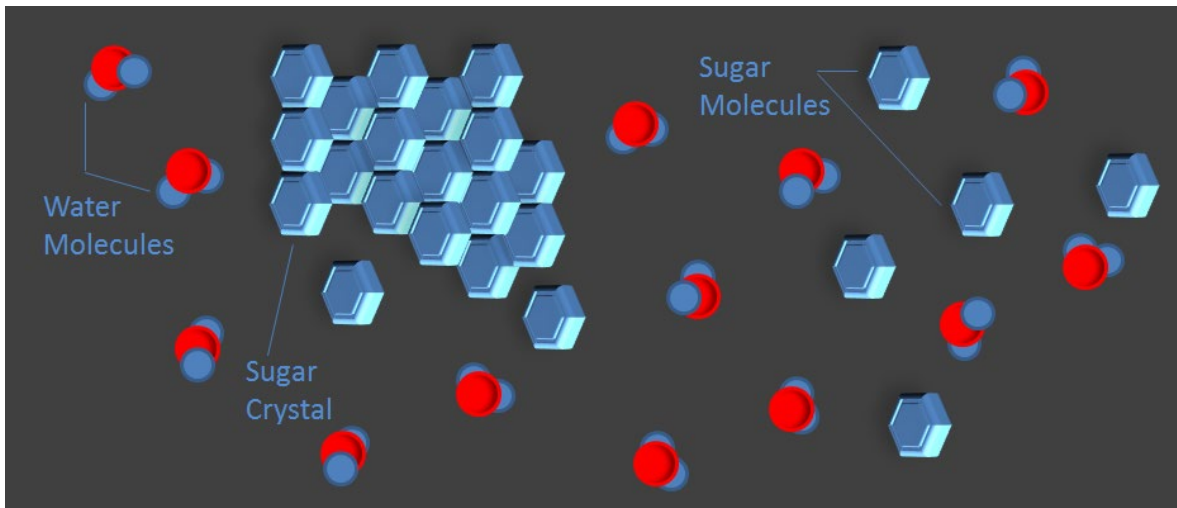
DUST/BLOKR<sup>®</sup>/SB contains three main constituents: sugars, starches, and minerals. These components are all commonly found in nature and play a big role in our everyday lives. Sugar is the universal term for sweet, short-chain, soluble carbohydrates that are primarily composed of the elements carbon, hydrogen, and oxygen. Sugars can be derived from multiple sources; simple sugars are called monosaccharides and include glucose (also known as dextrose), fructose, and galactose. Granulated sugar which is most customarily used in the food industry is sucrose, also known as a disaccharide.

### The building blocks of Sugar- Greatest binding influence in DUST/BLOKR<sup>®</sup>/SB

Hydrogen bonding is the greatest contributing factor to sugar's stickiness. When sugars are crystalline in structure, they are unable to stick to other molecules but can be easily dispensed or poured. When a liquid such as water is added to crystalline sugar, the formerly strong oxygen-hydrogen bonds will begin to degrade and cause the newly available hydrogen atoms to seek out other materials to bind to.

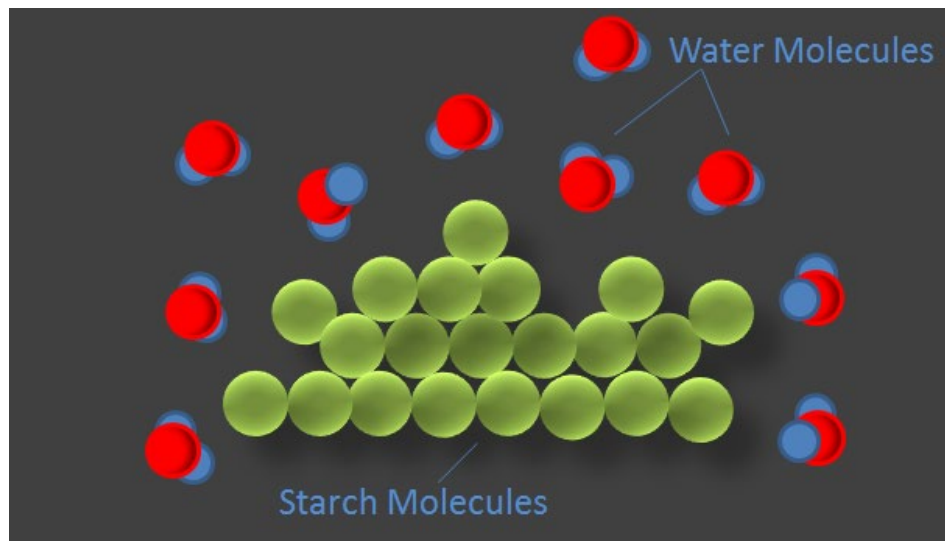
Available hydrogen atoms have an opportunity to stick to the closest surfaces; some will be attracted to the hydrogen molecules in the liquid, and some will bind with another available hydrogen or oxygen atom present in the sugar. This bonding action results in the sticky nature of sugar. When the bonds in sugar are broken there is more opportunity for the molecules to grab onto whatever they're in contact with, including other sugar molecules and surrounding particles. The new bonds are more secure because there are so many of them. Therefore, it is harder to pull them apart.





## Starches and Minerals

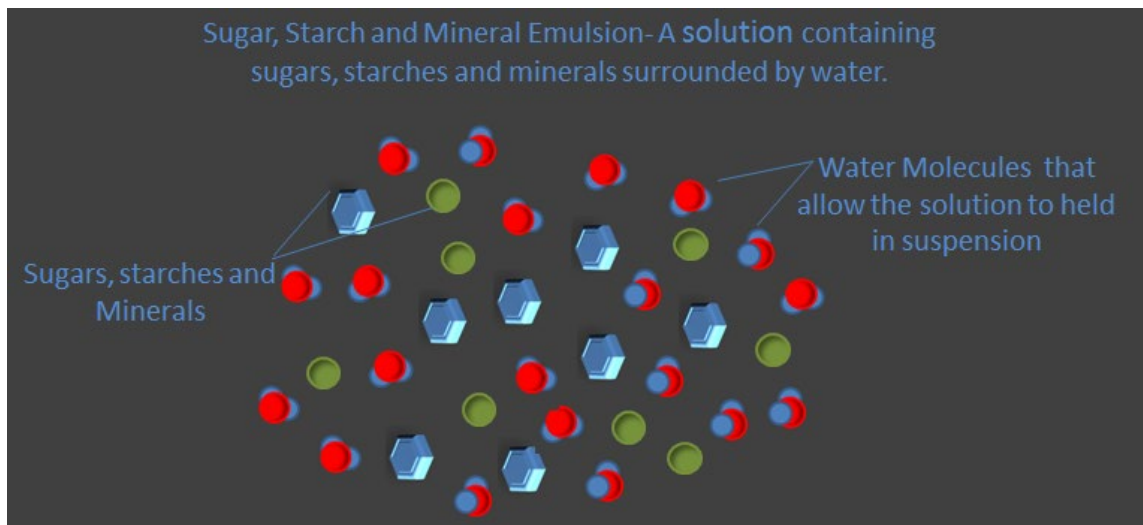
Starch is a term with the following meanings: "strong, stiff, strengthens, stiffen". Starches are comprised of polymeric carbohydrates consisting of a large number of glucose units joined by glycosidic bonds. They are insoluble in cold water and alcohol due to two types of molecules: the linear and helical amylose and the branched amylopectin. The minerals incorporated in DUST/BLOKR<sup>®</sup>/<sub>SB</sub> are not unlike starches; due to their strong chemical makeup they are insoluble in water and have the opportunity to form bonds with other available molecules providing further strength and durability when applied. The bonds fashioned between the minerals, starches, and sugars are, in most cases, stronger than the bond that would be formed between these components and water. Consequently, they are less likely to be dissolved or run-off with the application of water.



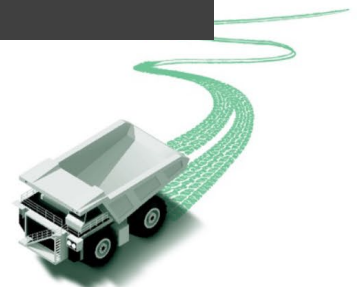
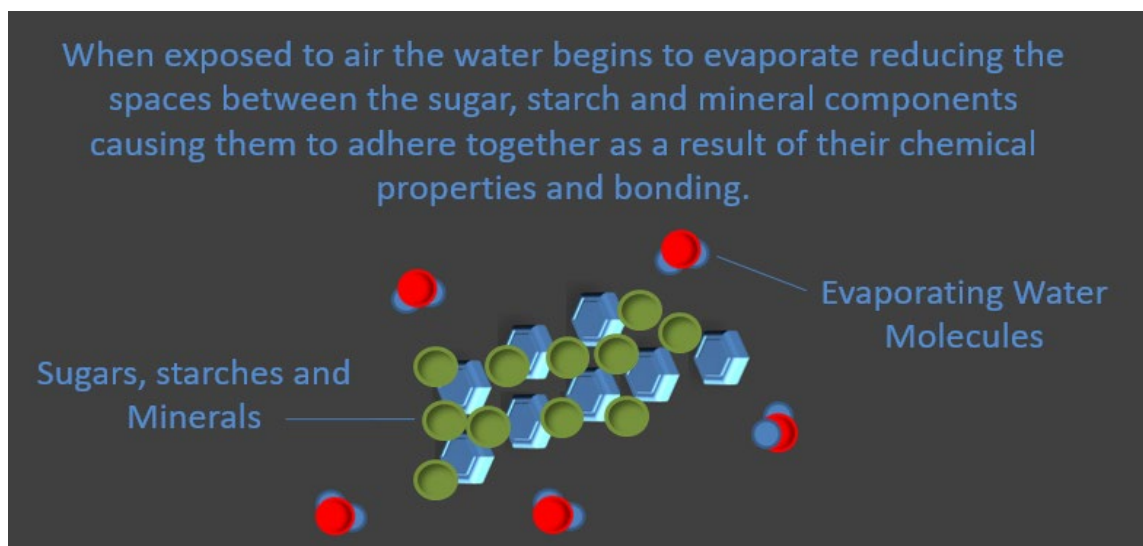
## How DUST/BLOKR<sup>®</sup>/SB works

The unique blend of materials utilizes the functional properties of sugars, starches, and minerals allowing DUST/BLOKR<sup>®</sup>/SB to bind and harden any loose particulate matter thereby decreasing dust on surfaces. DUST/BLOKR<sup>®</sup>/SB is applied in a diluted form; water evaporates from the product as it dries. Dust control is achieved during this process as the high-viscosity, naturally adhesive material traps loose particulate.

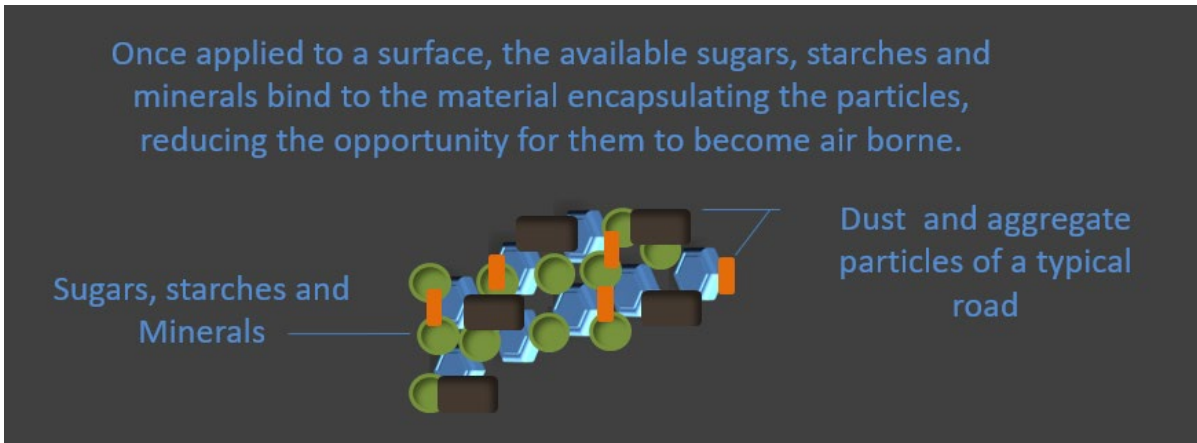
- 1) Water is added to the highly concentrated product allowing for suspension of the active inputs, sugars, starches, and minerals.



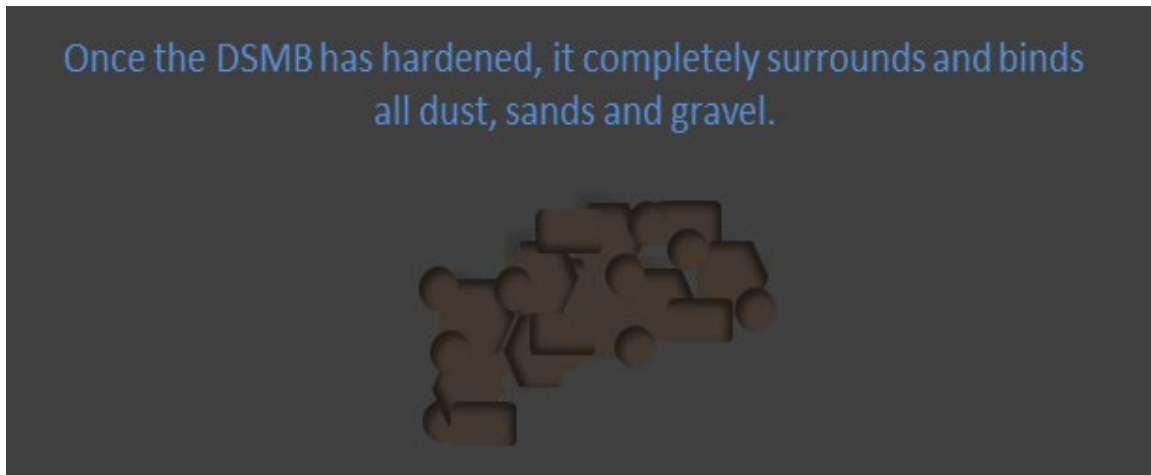
- 2) As water evaporates, the molecules bind together to form a cohesive matrix.



- 3) The newly formed matrix will now function to attract and bind the loose soil, dust or other particulates that may otherwise become air born and create dust.



- 4) Over time; as more water evaporates, the solution becomes firm and durable preventing any of the encapsulated dust generating material from becoming air born.



DUST/BLOKR<sup>®/SB</sup>'s unique blend of materials also functions to reduce road surface issues in the rain or in wet conditions. The incorporated sugars compete for water making it less available to bind with other soil molecules while providing some minimal structural support and added road stability. The insoluble mineral component forms a bond with the sugar molecules creating some means of insolubility and will have less of a chance to run off in wet conditions. Once wet, the product will re-set as the road surface dries, re-binding any loose materials. For these reasons, DUST/BLOKR<sup>®/SB</sup> is not adversely affected by heavy rain, yet very effective and long lasting in dry weather with no adverse effects on the environment or vehicles using the road due to its non-corrosive properties.

