



## **Metal-Shield Physical Properties**

### **High corrosion Resistance:**

Laboratory testing of these coatings indicates excellent corrosion protection in ASTM B117 salt spray testing as well as in vigorous "scab cycle test" now employed by the automotive industry. This corrosion protection is a result of the bonding of the calcium sulfonate to the metal surface.

### **Resistance to Undercutting:**

The high affinity of the calcium sulfonates for bare metal resists the formation of the undercutting in areas where a film has been damaged.

### **Moisture Displacement:**

The calcium sulfonate has a higher affinity for metal than water does. This gives the product the ability to displace water from metal surfaces.

### **Surface Preparation:**

Modified sulfonates adhere and perform well over poorly cleaned metal surfaces including rusty metal and oily surfaces.

### **Acid Envioments:**

The excess basicity in Hy-Tech Metal Shield serves to neutralize any acids that penetrate the coating. This makes them well suited to help against problems associated with todays acid rains.

### **Electrical Conductivity:**

Modified overbased calcium sulfonates are not good conductors of electricity. Since stray electric currents accelerate corrosion, modified calcium sulfonates are effective in metal joints and seams where currents would concentrate.

### **Thermal Property Stability:**

Modified calcium sulfonates do not exhibit a melting point. Any softening or dropping points are in excess of 500° F. Modified calcium sulfonates remain flexible even when frozen in an applied coating.

## **CHEMISTRY:**

### **Adhesion:**

Metal Shield obtains adhesion through charge attraction. The positively charged calcium and double bonded oxygen's have a strong affinity for the negatively charged metal surfaces.

### **Corrosion Resistance:**

The calcium carbonate available has a solubility of  $1 \times 10^6$  in any water entering the coating. This is enough to set up a buffered pH of about 10.1. this pH range is too basic for active corrosion (rust) and a passivating layer is formed.

**Hy-Tech Thermal Solutions, LLC**  
Brevard County Florida  
*"Home of the Kennedy Space Center"*  
**(321) 984-9777**