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### **BAKERS GUARD PROTECTIVE COATING**

This rust inhibiting coating is a blend of asphalt petroleum and coal tar pitch materials and resins dispersed in petroleum solvents. It combines good abrasion resistance with good anti-corrosion properties. It is easily applied using airless or air-assisted airless spray equipment. When applied to metal surfaces, a barrier film is formed, thereby extending the useful life of the treated metal. This is a fast drying firm film coating. This product when applied to the interior and bottom of refuse containers will considerably improve the durability and life span thus providing a value added feature to the container.

#### PHYSICAL PROPERTIES

Appearance	Black liquid
% Solids Weight	66
% Solids Volume	45
Weight/gal	10.68 ± 0.3 lbs/gal
Specific Gravity	1.28
Viscosity, #3 Zahn Cup, seconds	30-35
V.O.C. (less water)	3.6 lbs/gal
pH	N/A
Cryptometer/#3.5 Wedge, ASTM D1212	8-12
Flash Point, Setaflash	50°F (min.)
Water Content	<1%

#### FILM PROPERTIES

Performance testing reflects coating on unpolished Q panels with 7 day air-dried films at 2 mils dry.

Dry Film	Firm
Dry-to-Handle at room temperature, ASTM D1640	To touch – 10 min; tack-free 45 mins
Chemical Stability	Good
Salt Spray, ASTM B117, 250 Hours @ 2 mils 500 hours @ 4 mils	<3/32 inch creep @ scribe <3/32 inch creep @ scribe
Fire Resistance, Dry Film	Self Extinguishing
Humidity Resistance, ASTM D2247, 250 Hours	Pass
Alkali Resistance	Good

## **BENEFITS**

- Good abrasion resistant
- Easy to apply
- Fast processing/quick drying time
- Good film build capability
- Good corrosion resistance
- Dried film contains no toxic or hazardous chemicals to leach into environment

## **History and Development:**

Baker Waste Equipment began applying a similar product to their containers approx. 3 ½ years ago in order to provide an inside protection, in addition to the prime coat. As a result of this concept, BWE began a journey to exploit this product and continue to improve on the characteristics of its formulation. Eventually a product, **Bakers Guard**, was developed whose performance was superior without the primer coat, and that would harden sufficiently to maintain its protection even in hot humid summer conditions.

Initially **Bakers Guard** was brought to some of the publicly traded companies and Southeast based independent haulers, who raised the bar with questions/concerns on the coating at that time. Due to concerns brought up in discussions, Bakers Waste went back to the lab, and began additional testing and documentation. The concerns were:

1. Durability to include abrasion resistance, corrosion resistance
2. Adhesion and the ability to adhere even if it were scratch, torn, etc.
  - a. This would include concern of a bubbling effect that occurs on other coating, with condensation build up
3. Effects of heat/fire
  - a. Would it become tacky if exposed to heat (summer months)
  - b. Would it put off toxic/hazardous fumes in the event of fire?
  - c. What are the flash points that may cause a fire or interact with other materials
  - d. If volatile materials are dumped into a truck, would it in some way add to the potential of a fire/flame, etc?
4. Leach ate characteristics
  - a. Would this product interact with any garbage and add to the leach ate process, adding a contaminate which could spill out via drain plug, dumping into a truck, ending up at the landfill causing contamination.
5. Drying times, hardness, ability to be painted over for the exterior for coastal applications.
6. Protection of metal relative to environment
7. Cost associated with supply this technology.

Due to these concerns, we again approached the Labs and testing with samples, with the help of those who tested in the field maintenance facilities.

Lab results were positive due to a re-formulation and a creation of a hybrid from the original product. Hardeners and resins were added, along with other components.

Lab, field-testing results were as follows:

1. In maintenance facilities they hammered the samples, and dropped pieces on the floor. The result was minor chipping both inside and out. (Lab results are shown in the above.)
2. They bent a piece of a sample at a 90-degree with a rounded break. The result was a spider webbing effect with no chipping. Lab results showed good adhesion with no apparent peel up which should eliminate condensation build up at that point which could have resulted in a bubbling effect.
3. They burnt the product using a torch. The result was no fire, but simply a white residue. They also used a cigarette lighter to see if it became soft, tacky. Results were it is self-extinguishing, does not burn! (Lab results are above.)
  - a. It does not become tacky when exposed to heat.
  - b. There are no toxic fumes when burnt (Per Lab Results)
  - c. It does not interact with garbage resulting in a “flash point” causing a fire.
  - d. It will not contribute, and cause a fire in a truck, once the contents of the container are inside.
4. Lab reports show it will not contribute/cause leaching within the container resulting in water runoff that is contaminated/toxic.
5. Lab reports show that drying times begin in 10 min., tack free in 45 min.
  - a. The coating can be painted over, with no evidence of “bleeding”. This does not imply that the exterior paint is superior to existing products with regard to discoloration. We are still testing product performance to characterize how it will hold up over the longer term. However, the coating will add to exterior protection, and will maintain color at least equal to conventional enamel coatings. Gloss retention has not yet been measured.
  - b. They found that the coating could be slightly peeled or dug into with a fingernail. This is due to the mil thickness that is applied, and the extended time required to completely harden throughout the unit. The sample supplied had 10 mils. This is within the BWE target range of 8 to 10 mils (compared with a typical paint thickness of 2-3 mils). This thickness may take days to totally harden, though it is already supplying superior protection within 8 to 12 hours.

6. One of the barometers of paints, and its effectiveness is “Salt Spray Hours”.  
Normal paint has a salt spray hour rating of 125-35.
  - a. Our coating is rated at several times that result (See above report).
    - i. This significantly adds to the life of the metal inside the container.
    - ii. Outside coatings will have approx. 4 mils, with a paint of 3 mils.  
Or roughly a 620 salt spray hour rating vs. 125 SSH with existing paints.
7. Cost:
  - a. Inside coating—None it is included in our pricing.
  - b. Outside coating—Additional charge of \$50 per container. From the bottom of sleeves down.

We are indebted to those independent haulers who approached this with an open mind and willingness to support our efforts on the testing of this product. As we well know, the proof of the pudding is out in the field at various service locations and environments.

We look forward to adding “Value” to the products we offer at Baker Waste, with a positive impact on your container cost, both initial purchase and ongoing maintenance. We firmly believe that our success will be greatest if we can support your success.

Respectfully submitted,

Bakers Waste Equipment Inc.