



CROWN CAPITAL ENTERPRISE LIMITED

中怡企業發展有限公司

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Asphalt Laboratory Report

ISO9000 : 2000 #FS81129

Report Number : 2007/07/#012
Client : South East Asia
Job Location : South East Asia
Material Type : RejuvaSeal / RJSeal – Asphalt Rejuvenator
Test Date : 1 July 2007

| Test Methods | Description | Test Result | Conformance Production Tolerances |
|--------------|--|-------------------------|--------------------------------------|
| ASTM D70 | Specific Gravity of Semi-Solid Bituminous Materials (25/25 ° C) (g/cm ³) | 1.062 | Min 1.04 |
| ASTM2170 | Kinematics Viscosity (Equiv Engler specific viscosity @ 50 ° C, to ASTM D1665) | 4.62 | 8.0 max |
| ASTM D95 | Water, % by volume | 1.63 | 2.0 max |
| ASTM D20 | Distillation, % by weight of total material at: 170 ° C 270 ° C 300 ° C | 18.26 41.11 56.46 | Max 20.0 20.0 to 50.0 Max 60.0 |
| ASTM D36 | Softening point on residue from distillation, ° C | 46.2 | Max 65 |

Remarks: RJSeal is a trade mark designated for China Market whilst RejuvaSeal for S.E Asia.

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MATERIAL SAFETY DATA SHEET

SECTION 01: **CHEMICAL PRODUCT**

Product Name RejuvaSeal / RJSeal™ Asphalt Pavement Rejuvenator
Sealer
Chemical Family Not Applicable
Chemical Formula Complex Hydrocarbon Mixture

SECTION 02: **COMPOSITION/INFORMATION ON INGREDIENTS**

| HAZARDOUS INGREDIENTS | % | EXPOSURE LEVELS | CHEMICAL ABSTRACTS SERVICE # (C. A. S. #) | LETHAL DOSE / 5D,ROUTE, SPECIES | LC / 5D, ROUTE, SPECIES |
|--------------------------|-------------|-------------------------|--|--|-------------------------------|
| Aromatic Solvent | 32%~4 2% | 300 ppm | 64742-95-6 | RAT / ORAL 4700 mg / kg. RAT / DERMAL > 4.0 mg / kg. RAT / INH > 3670 ppm 4 hr. | |
| Coal Tar Pitch | 35%~5 0% | 0.2 mg / m ³ | 65996-93-2 | | |
| Aromatic Oils | 15%~4 0% | 0.2 mg / m ³ | 65996-91-0 | | |

SECTION 03: **HAZARDS IDENTIFICATION**

Potential Health Effects

Route of Entry See Effects of Acute Exposure
Effects of Acute Exposure
 Eye Contact Can cause severe irritation and swelling of eye tissues
 (Conjunctivitis) and corneal burns. May cause permanent
 eye damage if contact not eliminated immediately.



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| | |
|-----------------|---|
| Ingestion | May cause irritation of the gastrointestinal tract. |
| Inhalation | May cause moderate irritation to the respiratory tract. May affect the central nervous system. |
| Skin Absorption | Not absorbed through skin. |
| Skin Contact | May cause drying, cracking, or inflammation of the skin. Prolonged or repeated contact may cause irritation and/or dermatitis. |

Effects of Chronic Exposure None Known

SECTION 04: FIRST AID MEASURES

| | |
|------------------------|---|
| Skin Contact | Remove from skin by washing thoroughly with soap and water. Baby oil is helpful in removing residual material. Burns - DO NOT attempt to remove asphaltic material. Seek medical attention immediately. |
| Inhalation | Remove victim to fresh air. If breathing has stopped properly trained personnel should begin artificial respiration. Get medical attention immediately. |
| Ingestion | If ingested, consult a physician |
| Eye Contact | In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult physician if irritation continues. |
| Note to Physicians | N/A |
| Additional Information | Not Available |

SECTION 05: FIRE FIGHTING MEASURES

| | |
|----------------------------------|---|
| Flash Point (C), Method | > 72° C |
| Auto Ignition Temperature (° C) | Not Available |
| Upper Flammable Limit (% VOL) | 7.0 |
| Lower Flammable Limit (% VOL) | 1.0 |
| Extinguishing Media | Carbon Dioxide, Foam, Dry Chemical, Water Fog |
| Hazardous Combustion Products | Carbon Dioxide, Carbon Monoxide, Sulphur Dioxide. |
| Sensitivity to Mechanical Impact | Not Available |
| Sensitivity to Static Discharge | Not Available |



SECTION 06: ACCIDENTAL RELEASE MEASURES

| | |
|--------------|--|
| Leak / Spill | Contain the spill. Eliminate all sources of ignition, absorb residual material with sand, and/or other absorbent material, or recover using electrically grounded explosion proof pumps. |
|--------------|--|

SECTION 07: HANDLING AND STORAGE

| | |
|---------------------|--|
| Handling Procedures | Avoid skin and eye contact. Equipment must be grounded. |
| Storage Needs | Keep containers closed when not in use. Store containers in a cool area. Containers must be grounded. Store away from oxidizing materials and all sources of ignition. |

SECTION 08: EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment

| | |
|--------------------------|---|
| Eye / Type | Splash proof chemical goggles or 8" face shield. |
| Respiratory / Type | Not required under normal conditions. In closed areas, wear approved air purifying respirator for dust/fumes/mist and organic vapours or supplied air respirator. |
| Gloves / Type | Do not wear natural rubber or polyvinyl chloride gloves. |
| Clothing / Type | Long sleeve, loose fitting clothing, closed at the neck and tight fitting at the wrist. Have contaminated clothing washed before reuse. |
| Footwear / Type | Safety boots per local regulations. |
| Other Type | NA |
| Ventilation Requirements | Mechanical ventilation recommended in enclosed areas. |

**SECTION 09:****PHYSICAL AND CHEMICAL PROPERTIES**

| | |
|-----------------------------------|-------------------|
| Appearance | |
| Physical State | Liquid |
| Odour | Hydrocarbon Odour |
| Odour Threshold | Not Available |
| Specific Gravity | > 1.03 |
| Vapour Pressure (mm Hg) | Not Available |
| Vapour Density (AIR = 1) | > 1 |
| Evaporation Rate | Not Available |
| Boiling Point (° C) | > 133° C |
| ph | Not Available |
| Solubility in Water (%W / W) | Negligible |
| Coefficient of Water \ Oil | Not Available |
| Distribution Freezing Point (° C) | Not Available |
| Melting Point (° C) | Not Available |
| Molecular Weight | Not Available |

SECTION 10:**STABILITY AND REACTIVITY**

| | |
|-------------------------------------|--|
| Hazardous Polymerisation | Not Applicable |
| Stability | Keep away from heat, sparks, open flames. |
| Incompatibility | Incompatible with strong acids, strong bases, strong oxidizing agents. |
| Reactivity Conditions | May ignite if over heated or in the presence of strong oxidizers. |
| Hazardous Products of Decomposition | Carbon Monoxide, Carbon dioxide, sulphur dioxide |

SECTION 11:**TOXICOLOGICAL INFORMATION**

| | |
|------------------------------------|---|
| Irritancy of material | Refer to route of entry. |
| Sensitising Capability of Material | None known |
| Carcinogenicity of Material | Petroleum fraction includes many naturally occurring polycyclic aromatic hydrocarbons (PAH's). Certain species of PAH's have been implicated in the incidence of skin cancer in test animals. |



| | |
|-----------------------|------------|
| Teratogenicity | None known |
| Mutagenicity | None known |
| Reproductive Effects | None known |
| Synergistic Materials | None known |

SECTION 12: ECOLOGICAL INFORMATION

| | |
|-------------------------------|---------------|
| Environmental | Not Available |
| Ectotoxicological Information | Not Available |
| Biodegradability | Not Available |

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal

Dispose with absorbent material in accordance with regulatory laws. Waste management priorities (depending on volumes and concentration of waste) are;

1. Recycle (reprocess),
2. Energy Recovery (cement kilns, thermal power generation),
3. Incineration,
4. Disposal at licensed waste facility.

Do not attempt to combust waste on-site. Incinerate at a licensed waste disposal site with approval of environmental authority.

SECTION 14: TRANSPORT INFORMATION

| | |
|--|-------|
| U.N. | #1999 |
| Transport Dangerous Goods Classification | 3.2 |



SECTION 15: REGULATORY INFORMATION

| | |
|---|--|
| U.S. Federal Regulations | Hazardous Material Identification System Classification |
| | Health - 2, Flammability - 2, Reactivity - 0. |
| International Regulations | Not regulated |
| State Regulations | Not regulated |
| Workplace Hazardous Materials Information System Classification | B3, D2A |
| Cardiopulmonary Resuscitation Compliance | This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR. |

SECTION 16: OTHER INFORMATION

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind expressed or implied is made to the information contained herein.

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General Standard of Rejuvenator and Seal or Rejuvenator or Sealer

(as of July 2007)

| Property | Test Method | Requirement | | | | |
|---|---------------------------|-------------------|------------|------------------|---------------------------------|----------------|
| | | FAA Eng. Brief 44 | DNT Canada | RejuvaSeal (USA) | RejuvaSeal (Export) 1 July 2007 | RJSeal (China) |
| Specific Gravity 25/25°C | ASTM D70 | 1.04 min. | 1.04 min. | 1.06 min | 1.062 | 1.04 min |
| Kinematics Viscosity @ 50C, cSt | ASTM D2170 | | | | | |
| (Engler Viscosity @ 50° C | ASTM D1665 | 8.0 max. | 4.5 max. | 8.0 max | 4.62 | 8.0 max |
| Water, % by Volume | ASTM D95 | 2.0 max. | 2.0 max. | 2.0 max | 1.63 | 2.0 max |
| Distillation, % by Weight of Total Material off at: | | | | | | |
| 170°C | ASTM D20 | 20 max. | 30 max. | < 20 | 18.26 | <30 |
| 270°C | | 20 to 50 | 25 to 45 | 20 to 50 | 41.11 | 20 to 50. |
| 300°C | | 60 max. | 30 to 55 | 40 to 60 | 56.46 | 40 to 60 |
| Softening Point on Residue From Distillation, | ASTM D36 | 65 max. | 40 to 55 | 40 to 55 max | 46 | 65 max |
| Flash Point (°C) | ASTM D3143-98 at 72°C | | | | | |
| Penetration (dmm) | ASTM D5 at 25 | | | | | |
| Absolute Viscosity | ASTM D2171, at 60°C | | | | | |
| Ductility (cm) | ASTM D113 at 25° C | | | | | |
| Softening Point (°C) | ASTM D36 at 40°C-55°C max | | | | | |



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|--|------------------------------------|-------------------|------------|------------------|---------------------------------|----------------|
| | | FAA Eng. Brief 44 | DNT Canada | RejuvaSeal (USA) | RejuvaSeal (Export) 1 July 2007 | RJSeal (China) |
| Asphalt Binder Content | ASTM D2172 | | | | | |
| Bituminous Materials For Coal-Tar Rejuvenator/Sealer | | | | | | |
| Refined Coal Tar Pitch | ASTM D490RT12, min. 35 to max. 50% | | | | | |
| Maltenous Type Petroleum Distillate | 32-42% | | | | | |
| Refined Coal Tar Oils | 15-40% | | | | | |

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