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# Material Safety Data Sheet

PRODUCT NAME: RAM 200, RAM 201, RAM 203

## A: IDENTIFICATION AND EMERGENCY INFORMATION

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## B: COMPOSITION AND INFORMATION ON DANGEROUS INGREDIENTS

| NAME  | CAS#       | % WEIGHT | EXPOSURE LIMIT<br>TLV-TWA             | (ACGIH)<br>TLV-STEL |
|---|------------|----------|---------------------------------------|---------------------|
| <b><u>BITUMINOUS BLEND</u></b>                  |            |          |                                       |                     |
| BITUMEN   | 8052-42-7  | 30-70    | 0.5mg.m <sup>3</sup><br>Asphalt fumes | Not established     |
| Self-adhesive membranes contain:                |            |          |                                       |                     |
| Highly hydrotreated naphthenic oil <sup>1</sup> | 64742-52-5 | 10-30    | Not established                       | Not established     |
| Calcium carbonate <sup>1</sup>                  | 471-34-1   | 0-40     | 10 mg/m <sup>3</sup>                  | Not established     |
| Styrene butadiene copolymer <sup>1</sup>        | 9003-55-8  | 0-15     | 10 mg/m <sup>3</sup>                  | Not established     |
| FR Products:                                    |            |          |                                       |                     |
| Calcium borate <sup>1</sup>                     | 1318-33-8  | 7-15     | 10 mg/m <sup>3</sup>                  | Not established     |
| FR Plus products contain:                       |            |          |                                       |                     |
| Antimony trioxide <sup>1</sup>                  | 1309-64-4  | 1-5      | 0.5mg.m <sup>3</sup>                  | Not established     |
| Decabromodiphenyl oxide <sup>1</sup>            | 1163-19-5  | 1-5      | 10 mg/m <sup>3</sup>                  | Not established     |

### REINFORCEMENT

Some products may contain fiber glass, polyester or a mix of glass grid and polyester.

|   |            |      |       |                 |
|---|------------|------|-------|-----------------|
| Polyester mat <sup>1</sup>                  | N/A        | 1-7  |       | Not established |
| Contains: Fiber glass filament <sup>1</sup> | 65997-17-3 | 0.57 | 1f/cc | Not established |

### UNDERFACE AND SURFACE

Some membranes are protected by sand, talc, mineral granule, silicone paper, polyethylene or polypropylene film, aluminum, copper or stainless steel foil.

|   |            |       |                       |                 |
|---|------------|-------|-----------------------|-----------------|
| Silicone paper                            | N/A        | 6-20  | Not established       | Not established |
| Polypropylene film                        | N/A        | 2-10  | Not established       | Not established |
| Polyethylene film                         | 9002-88-4  | 2-10  | Not established       | Not established |
| Aluminum, copper or stainless steel foil  | N/A        | 4-15  | Not established       | Not established |
| Sand                                      | N/A        | 7-13  | 0.1 mg/m <sup>3</sup> | Not established |
| Contains: Crystalline silica <sup>2</sup> | 14808-60-7 | 7-13  | 0.1 mg/m <sup>3</sup> | Not established |
| Talc                                      | 14807-96-6 | 7-13  | Not established       | Not established |
| Colored granules                          | N/A        | 15-40 | Not established       | Not established |
| Contains: Crystalline silica <sup>2</sup> | 14808-60-7 | <12   | 0.1 mg/m <sup>3</sup> | Not established |

- Exposure to the product above that limits of exposure is not likely to occur considering its form (incorporated in the mixture and the provided use. The limit of exposure is given for reference only.
- A proportion of crystalline silica can be present in the sand sprinkled on the top of some membranes. The crystalline silica contained in the sand is not likely to be found in the ambient air in concentration above the limits of exposure since the sand adheres to the surface of the membrane.

**EFFECTS OF SHORT TERM (ACUTE) EXPOSURE:**

**Skin Contact** – The product can cause a mechanical irritation of the skin because of its rough surface. If the membrane is torch-applied, asphalt fumes can cause skin irritation. The asphalt fumes can cause an irritation of the skin. The contact with this product at high temperature can cause thermal burns.

**Eye Contact** – The product is not likely to cause effects to the eyes. If the membrane is torch-applied, asphalt fumes can be emitted and cause irritations, redness and conjunctivitis. The contact with this product at high temperature can cause thermal burns.

**Inhalation** - The product is not likely to cause effects to the respiratory system. If the membrane is torch-applied, asphalt fumes can be emitted and cause irritations to the nose, the throat and the respiratory tracts, tiredness, headaches, dizziness, nausea and insomnia.

**Ingestion** – Exposure is not likely to occur by this route of entry under normal use of the product.

**LONG TERM (CHRONIC) EXPOSURE:**

**Skin Contact** – The repeated or prolonged contact can cause irritation. If the membrane is torch-applied, asphalt fumes can be emitted. The long-term exposure to the asphalt fumes can cause changes of the pigmentation of the skin which can be worsened by sun exposure. (1)

**Inhalation** - If the membrane is torch-applied, asphalt fumes can be inhaled. There are no data on chronic effects of the exposure to asphalt fumes on the lungs.

**Carcinogenicity** – Due to the product form exposure to hazardous dusts or fumes is not expected to occur. Information on carcinogenicity is given for reference only. This product is not classifiable as a carcinogen.

**Asphalt** – according to the international agency for research on cancer (IARC), asphalt is not classifiable as carcinogenic for human's epidemiological studies on roofers have generally demonstrated an excess of lung cancer. However, it is unclear to what extent these cancers may be attributable to asphalt exposures during roofing operations, since in the past; roofers have been exposed to coal tar and asbestos, which are known human lung carcinogens. Trace amounts of poly-nuclear aromatic hydrocarbons (PAHs) may be present in asphalt and can be released upon excessive heating. Some of these PAHs have been identified as having the potential to induce carcinogenic and reproductive health effects. (2)

**Crystalline Silica** – Breathable crystalline silica from sand is not expected to be released because the sand is adhered to the product. According to the IARC, crystalline silica is carcinogenic for human by inhalation.

**Fiberglass Filament** – Fiberglass is not expected to be released. In October 2001, the IARC classified fiberglass as Group 3 “not classifiable as to its carcinogenicity to humans”. The 2001 decision was based on current human and animal researches that showed no association between inhalation exposure to dust from fiberglass wool and the development of respiratory disease. This is a reversal of a study of the American Conference of Governmental Industrial Hygienists (ACGIH) and the National Toxicology Program (NTP) in 1987 that classified the product in Group 2B (possibly carcinogenic to humans). Those results were based on studies in which animals were injected with large quantities of fiberglass.

**Decabromodiphenyl Oxide** – According to the IARC, decabromodiphenyl oxide is classified in the Group 3 (limited evidence for carcinogenicity in experimental animals and no human data). According to the national Toxicology Program (NTP), it is not listed as a carcinogen. (1)

**Antimony Trioxide** – According to the IARC, the antimony trioxide is listed in the Group 2B possibly carcinogenic to humans). (1)

**Teratogenicity, Embriotoxicity, Fetotoxicity** – No information available.

**Reproductive Toxicity** – No information available.

**Mutagenicity** – No information available.

**Toxicologically Synergistic Materials** – No information available.

**Potential Accumulation** - No information available.

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**D: FIRST AID MEASURES**

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**Flammability** – N/A

**Explosion Data** – N/A

**Flash Point** – N/A

**Auto-ignition Temperature** – N/A

**Flammability Limits in Air** – (% in volume) N/A.

**Fire and Explosion Hazards** – Asphalt fumes are flammable. Torch, used to weld waterproofing membranes, can produce temperatures beyond 2000°F (1100°C). Avoid all contact with materials sensitive to these temperatures, as lead or plastic materials. Never work in an enclosed area where gas can accumulate. Shield air conditioning units and other protrusions on the roof with perlite panels or similar material. Never use a torch in these situations:

- When substrate(s) have been recently covered by solvent-based products (wait until dry).
- Near any combustible materials.
- Close to containers containing flammable liquids or materials (keep open flame at least 3m [10'] away).
- Directly on combustible substrate or insulation, voids, holes or gaps in substrate or located nearby the welding zone must be protected against flame penetration. Particular precautions must be taken to keep combustible or heat sensitive insulation or other materials away from the torch flame. Wood fiber panels must be installed, use fireproof panels. At all times and especially when leaving the job site, make sure that there is no smoldering or concealed fire. In that case, strictly follow the safety measures. Job planning must allow employee presence on the roof at least one hour after torch application. At least one hour after torch application. At the end of every day, use a heat detector gun to discover any unusually hot surface. Always have one ABC fire extinguisher on hand, filled and in perfect working order near each torch.

**Combustion Products** – burning of this material will produce thick black smoke. Irritating and/or toxic gases (including hydrogen sulphide and sulphur dioxide) and traces of metallic fumes may be generated by thermal decomposition or combustion.

**Fire Fighting Instructions** – Evacuate the area. Wear self-contained breathing apparatus and appropriate protective clothing that are in accordance with standards. Approach fire from upwind and fight it from maximum distance or use unmanned hose holders or monitor nozzles. Always stay away from the containers at the time of the fire considering the high risk of explosion. Move the rolls of membrane from fire area if it can be done without risk. Cool the rolls of membrane with flooding quantities of water until well after fire is out.

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**E: ACCIDENTAL RELEASE MEASURES**

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**Release or Spill** – If hot material is spilled, allow enough time to cool completely and place it in a container for disposal. Wear appropriate breathing apparatus (if applicable) and protective clothing. Notify appropriate environmental agencies. Wash spill area with soap and water. Dispose of the material according to local environmental regulations.

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**F: HANDLING AND STORAGE**

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**Handling** – products must be applied by qualified applicators who have received an adequate training on prevention and protection (in particular for the use of the extinguishers against accidents caused by use of combustible or flammable materialism, liquefied propane gas, open flame, and equipment of instillation. The present recommendations must be imperatively transmitted to the employees before the application of products. Verify the construction and the composition of the systems of roof and walls before welding. Ensure of the cleanliness of the place.

**Precautions of the use of the torch:** Use only proper torching equipment in perfect working order (C.S.A certified). Never modify torching equipment. Use only proper hoses suited for propane gas of less than 15m (50'). Verify and tighten all the connections before use. Do not light the torch if a propane odor is present. Never seek a leak with a flame. Use a torch whose gas output is adjustable with stopping device. Follow the specifications, notices and documentations of the manufacturers.

**Storage:** Flashings must be stores in such a way to prevent any creasing, twisting, scratches and other damages of the roof. The materials must be protected adequately and stored permanently away from flames or welding sparks, protected from bad weather and any harmful substances. Self-adhesive membranes must e stored away from the sun.

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**G: EXPOSURE CONTROLS AND PERSONAL PROTECTION**

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**Hands:** Wear resistant gloves.

**Respiratory:** If the threshold limit value (TLV) for dust is exceeded and if use is performed in a poorly ventilated confined area, use an approved respirator that is in accordance with standards.

**Eyes:** Wear safety goggles that are in accordance with standards.

**Body:** Wear adequate protective clothes. Do not wear synthetic fabric. Remove clothing contaminated with solvents.

**Other:** Eye bath and safety shower.

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**H: PHYSICAL AND CHEMICAL PROPERTIES**

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**Physical State:** Solid  
**Odor Threshold:** Not available.  
**Vapor Density (air=1):** N/A.  
**Boiling Point:** N/A.  
**Specific Gravity (H<sub>2</sub>O=1):** Variable  
**Volatile Organic Compound Content (V.O.C.):** N/A  
**Viscosity:** N/A

**Odor and Appearance:** Black membrane with asphalt odor.  
**Vapor pressure (20°):** N/A.  
**Evaporation Rate:** N/A.  
**Freezing Point:** N/A.  
**Solubility in Water (20°C):** None

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**I: STABILITY AND REACTIVITY**

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**Stability:** STABLE  
**Conditions of Reactivity:** Avoid excessive heat.

**Incompatibility (Materials to Avoid):** Acid and strong basis, organic solvents, and greasy substances.  
**Hazardous Decomposition Products:** None identified. **Hazardous Polymerization:** None

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**J: TOXICOLOGICAL INFORMATION**

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**Decabromodiphenyl Oxide:** (1)  
LC50 (rat) : > 50 mg/kg  
LD50 (oral, rat): > 5,000 mg/kg  
LD50 (dermal, rat): > 2,000 mg/kg

**Antimony Trioxide:** (1) LD50 (oral, rat): > 20,000 mg/kg

**Effects of Short-Term (Acute) Exposure:** No information available.

**Effects of Long-Term (Chronic) Exposure:**

**Carcinogenicity:**

Asphalt – Data from experimental studies on animals and cultured mammalian cells indicate that laboratory-generated roofing asphalt fume condensates are genotoxic and cause skin tumors. (2)

Crystalline Silica – Several studies have shown an increased incidence of lung tumors on rats exposed to quartz by inhalation for up to 2 years. The IARC has determined that there is sufficient evidence that quartz in carcinogenic to experimental animals. (3)

Antimony Trioxide – The Environmental Protective Agencies (EPA) of The United States and California concluded that the studies done on this product are inadequate for use in quantitative cancer risk assessment. (1)

Highly Hydrotreated Naphthenic Oil – No study on the human and the animals made it possibly to classify naphthenic oils highly hydrotreated as carcinogen (IARC, 1984). (1)

**Reproductive Effects:** No information available.

**Teratogenicity, Embriotoxicity, Fetotoxicity:** No information available.

**Mutagenicity:** Crystalline Silica – No effect according to the information available.

**Synergistic Materials:** Tobacco smoke increases the effects of silica dust on respiratory system. Simultaneous exposure to known carcinogens as benzo and pyrene can increase the carcinogenicity of crystalline silica.

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**K: ECOLOGICAL INFORMATION**

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**Environmental Effects:** No date available.

**Biodegradability:** This product is not biodegradable. There is no possible bioaccumulation and unlikely bioconcentration in the food chain.

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**L: DISPOSAL CONSIDERATION**

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**Waste Disposal:** This product is not hazardous waste. Consult local, provincial, territory or state authorities to know disposal methods. This material is not listed by the EPA as hazardous waste according to the *Resource conservation and Recovery Act (RCRA)* of the United States. No EPA waste numbers are applicable for this product.

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**M: TRANSPORT INFORMATION**

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This product is not regulated by the department of transportation (DOT) and transportation dangerous Goods (TDG).

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**N: REGULATORY INFORMATION**

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**WHMIS Class:** This product is not regulated by the Workplace Hazardous materials Information System (WHMIS).

**DSL:** All constituents of this product are included in the Domestic Substances List (DLS) of Canada.

**TSCA:** All constituents of this product are listed on the Toxic Substances Control Act Inventory (TSCA) of the United States.

| <b>HMIS (USA):</b>    |   | <b>NFPA (USA):</b> |   |
|-----------------------|---|--------------------|---|
| Health:               | 0 | Health:            | 0 |
| Flammability          | 1 | Flammability:      | 1 |
| Physical hazard:      | 0 | Instability:       | 0 |
| Protective equipment: | 0 | Specific hazard:   | 0 |

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**O: OTHER INFORMATION**

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**Glossary-**

|                   |  |
|-------------------|--|
| <b>ANSI:</b>      | American National Standards Institute                    |
| <b>CAS:</b>       | Chemical Abstract services                               |
| <b>CFR:</b>       | Code of Federal Regulations                              |
| <b>HMIS:</b>      | Hazardous Material Information System                    |
| <b>LD50/CL50:</b> | Less high lethal dose and lethal concentration published |
| <b>NFPA:</b>      | National Fire Protection Association                     |
| <b>NIOSH:</b>     | National Institute for Occupational Safety and Health    |
| <b>OSHA:</b>      | Occupational safety & Health Administration              |
| <b>TLV:</b>       | Threshold Limit Value                                    |
| <b>TWA:</b>       | Time-weighted average                                    |

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**P: DISCLAIMER**

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