

# MATERIAL SAFETY DATA SHEET

| SECTION 1—PRODUCT IDENTIFICATION AND USE   |   |   |  |  |
|--|---|---|--|--|
| PRODUCT IDENTIFIER > <b>OXIDASE REAGENT</b>  |   |   | CATALOGUE NUMBER: <b>R095</b>                                    |  |
| MANUFACTURER'S NAME<br><b>Dalynn Biologicals Inc.</b>  |   | SUPPLIER'S NAME<br><b>Dalynn Biologicals Inc.</b>   |  |  |
| STREET ADDRESS<br><b>3253 – 34 Avenue N.E.</b>   |   | STREET ADDRESS<br><b>3253 – 34 Avenue N.E.</b>  |  |  |
| CITY<br><b>Calgary</b>   | PROVINCE<br><b>Alberta</b>  | CITY<br><b>Calgary</b>  | PROVINCE<br><b>Alberta</b>                                       |  |
| POSTAL CODE<br><b>T1Y 6X2</b>  | CHEMICAL EMERGENCY ONLY:<br><b>1-613-996-6666</b>                       | POSTAL CODE<br><b>T1Y 6X2</b>   | CHEMICAL EMERGENCY ONLY:<br><b>1-613-996-6666</b>                |  |
| SECTION 2—HAZARDOUS INGREDIENTS  |   |   |  |  |
| HAZARDOUS INGREDIENTS  | %   | CAS NUMBER  | LD <sub>50</sub> OF INGREDIENT<br>(SPECIFY SPECIES AND ROUTE)    | LC <sub>50</sub> OF INGREDIENT<br>(SPECIFY INGREDIENT) |
| <b>p-Phenylenediamine</b>  | <b>0.6</b>  | <b>637-01-4</b>   | <b>Not available</b>   | <b>Not available</b>                                   |
| <b>Dimethyl sulfoxide (DMSO)</b>   | <b>99.4</b>   | <b>67-68-5</b>  | <b>Oral – Rat 14,500 mg/kg</b><br><b>Skin – Rat 40,000 mg/kg</b> | <b>Inh – Rat 1,600 mg/kg</b>                           |
| SECTION 3—PHYSICAL DATA  |   |   |  |  |
| PHYSICAL STATE<br><b>Liquid</b>  | ODOUR AND APPEARANCE<br><b>Floral odor, clear, lilac-colored liquid</b> |   |  | ODOUR THRESHOLD (ppm)<br><b>Not available</b>          |
| VAPOUR PRESSURE (mmHg)<br><b>Not available</b>   | VAPOUR DENSITY (AIR=1)<br><b>Not available</b>                          | EVAPORATION RATE<br><b>Not available</b>  | BOILING POINT (°C)<br><b>Not available</b>                       | FREEZING POINT (°C)<br><b>Not available</b>            |
| pH<br><b>Not available</b>   | SPECIFIC GRAVITY<br><b>Not available</b>                                | COEFF. WATER/OIL DIST.<br><b>Not available</b>  |  |  |
| SECTION 4—FIRE AND EXPLOSION DATA  |   |   |  |  |
| FLAMMABLE<br>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> IF YES, UNDER WHICH CONDITIONS? > <b>Exposure to sparks or open flame</b>   |   |   |  |  |
| MEANS OF EXTINCTION<br><b>Water spray, carbon dioxide, dry chemical powder or appropriate foam</b>   |   |   |  |  |
| FLASHPOINT (°F) AND METHOD<br><b>188.6</b>   |   | UPPER FLAMMABLE LIMIT (% BY VOLUME)<br><b>42</b>  | LOWER FLAMMABLE LIMIT (% BY VOLUME)<br><b>3.5</b>                |  |
| AUTOIGNITION TEMPERATURE (°C)<br><b>301</b>  |   | HAZARDOUS COMBUSTION PRODUCTS<br><b>Carbon dioxide, carbon monoxide, formaldehyde, sulfur dioxide</b> |  |  |
| EXPLOSION DATA > SENSITIVITY TO IMPACT<br><b>No</b>  |   |   | SENSITIVITY TO STATIC DISCHARGE<br><b>No</b>                     |  |
| SECTION 5—REACTIVITY DATA  |   |   |  |  |
| CHEMICAL STABILITY<br>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> IF NO, UNDER WHICH CONDITIONS? >   |   |   |  |  |
| INCOMPATIBILITY WITH OTHER SUBSTANCES<br>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> IF SO, WHICH ONES? > <b>Strong oxidizing agents, strong reducing agents, strong acids, acid chlorides, phosphorus halides</b>               |   |   |  |  |
| REACTIVITY, AND UNDER WHAT CONDITIONS<br><b>Undergoes a violent exothermic reaction on mixing with copper wool and trichloroacetic acid.</b><br><b>Explosive if mixed with potassium permanganate. Please note other incompatibilities listed above.</b> |   |   |  |  |
| HAZARDOUS DECOMPOSITION PRODUCTS<br><b>Formaldehyde, methyl mercaptan, and sulfur dioxide.</b>   |   |   |  |  |

|  |                       |                          |                      |
|--|-----------------------|--------------------------|----------------------|
| PRODUCT  |                       | <b>OXIDASE REAGENT</b>   |                      |
| IDENTIFIER >   |                       |                          |                      |
| <b>SECTION 6—TOXICOLOGICAL PROPERTIES</b>  |                       |                          |                      |
| ROUTE OF ENTRY   |                       |                          |                      |
| SKIN CONTACT   | [X]                   | SKIN ABSORPTION          | [X]                  |
| EYE CONTACT  | [X]                   | INHALATION               | [X]                  |
|  |                       | INGESTION                | [X]                  |
| EFFECTS OF ACUTE EXPOSURE TO PRODUCT   |                       |                          |                      |
| <p><b>Eyes: Irritating to eyes and skin on contact. Symptoms include burning sensation and redness.</b></p> <p><b>Skin: DMSO readily penetrates skin and may significantly enhance the absorption of numerous chemicals. Increased absorption of these other chemicals could lead to their increased toxicity. Non-immunological whealing and flaring have been observed in animals and humans following short-term contact. Skin absorption of DMSO may result in a garlic-like breath and body odor, and CNS effects such as headache, nausea and dizziness.</b></p> <p><b>Ingestion or inhalation: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause central nervous system effects. May cause garlic smell on the breath and body.</b></p> |                       |                          |                      |
| EFFECTS OF CHRONIC EXPOSURE TO PRODUCT   |                       |                          |                      |
| <p><b>Some negative effects on fertility and embryo development in animals have been reported.</b></p> <p><b>DMSO has shown to be mutagenic and carcinogenic in animals.</b></p> <p><b>To our knowledge the chronic toxicological effects of exposure to this product have not been thoroughly investigated.</b></p>   |                       |                          |                      |
| EXPOSURE LIMITS  | IRRITANCY OF PRODUCT  | SENSITISATION TO PRODUCT | CARCINOGENICITY      |
| Not available  | Yes                   | Not available            | Possible             |
| TERATOGENICITY   | REPRODUCTIVE TOXICITY | MUTAGENICITY             | SYNERGISTIC PRODUCTS |
| Possible   | Possible              | Possible                 | Not available        |
| <b>SECTION 7—PREVENTIVE MEASURES</b>   |                       |                          |                      |
| PERSONAL PROTECTIVE EQUIPMENT:   |                       |                          |                      |
| <p><b>Wear appropriate protective clothing: Appropriate gloves, safety goggles, lab coat or appropriate clothing.</b></p> <p><b>Wear NIOSH/MSHA-approved respirator if available.</b></p>  |                       |                          |                      |
| ENGINEERING CONTROLS (SPECIFY, EG, VENTILATION, ENCLOSED PROCESS)  |                       |                          |                      |
| <b>Use in area with adequate ventilation or in chemical fume hood.</b>   |                       |                          |                      |
| LEAK AND SPILL PROCEDURE   |                       |                          |                      |
| <b>Wear self-contained breathing apparatus, rubber boots and gloves. Absorb with sand or vermiculate and place in closed container for disposal. Ventilate area and wash spill site after material pickup is complete.</b>   |                       |                          |                      |
| WASTE DISPOSAL   |                       |                          |                      |
| <b>According to local, provincial and federal regulations</b>  |                       |                          |                      |
| HANDLING PROCEDURES AND EQUIPMENT  |                       |                          |                      |
| <b>Avoid direct contact. Wash thoroughly after handling.</b>   |                       |                          |                      |
| STORAGE REQUIREMENTS   |                       |                          |                      |
| <b>Keep at room temperature in a cool, dry environment and protect from light where possible.</b>  |                       |                          |                      |
| SPECIAL SHIPPING INFORMATION   |                       |                          |                      |
| <b>Double pack in isolated container.</b>  |                       |                          |                      |
| <b>SECTION 8—FIRST AID MEASURES</b>  |                       |                          |                      |
| <p><b>In case of contact with eyes, rinse with copious amounts of water for at least 15 minutes.</b></p> <p><b>In case of contact with skin, wash with copious amounts of water for at least 15 minutes.</b></p> <p><b>If swallowed, wash mouth out with water provided person is conscious. Do not induce vomiting and seek medical attention.</b></p> <p><b>If inhaled remove patient to fresh air and administer approved oxygen supply if breathing is difficult.</b></p> <p><b>Seek medical attention.</b></p>  |                       |                          |                      |
| <b>SECTION 9—PREPARATION OF MSDS</b>   |                       |                          |                      |
| PREPARED BY (GROUP, DEPT, ETC.)  | PHONE NUMBER          | DATE                     |                      |
| Technical Department<br>Dalynn Biologicals Inc.  | (403) 291-0067        | 2014 January             |                      |