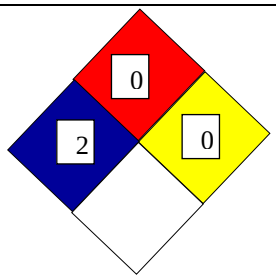
Safety Data Sheet

Revision date: 26.01.2016 Date of issue: 26.01.2016

Sr. No.	Title of the section	Information required in this section
1.	**Identification of the mixture & of the company**	
1.1	Identification of the substance or preparation	1.1.1 Trade Name : Hexy 2E 1.1.2 Product Registration No.: 83529-28
1.2	Use of the substance/ preparation	1.2.1 Recommended uses: ✓ Herbicide 1.2.2 Restricted uses: Not known as on date
1.3	Company/ under - taking identification	1.3.1 Company name: Sharda USA LLC 1.3.2 Contact Person : Sharon Gunning, Director, Supply Chain and Administrative Operations 1.3.3 Contact address: 7460 Lancaster Pike, Suite 9; Hockessin, DE 19707 1.3.4 Telephone number: 1-302-234-2780 1.3.5 Fax number : 1-302-234-7570 1.3.6 E-mail : shardain@vsnl.com ; WEBSITE: http://www.shardausa.com
1.4	Emergency telephone	1.4.1 Emergency telephone number : 1(800) 222-1222 CHEMTREC PHONE: 1(800) 424-9300 National Poison Information Center : (800)-222-1222 1.4.2 Telephone number of USA importer: (610) 350-6930 1.4.3 Opening hours: 24 hrs
2.	**Hazard Identification**	
2.1	Classification of the substance according to Regulation 1910.1200 [GHS]	**Classification:** Aspiration toxicity – 1, Aquatic Acute 1, Aquatic Chronic 1 **Hazard statement :** • H400: Very toxic to aquatic life • H410: Very toxic to aquatic life with long lasting effects • H304 – May be fatal if swallowed and enters airways **Signal Word :** Danger **Hazard pictograms** :  GHS08 GHS09 **Precautionary statements** : P301 + P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. P331 – Do NOT induce vomiting P273 – Avoid release to the environment. P391 – Collect spillage. P405 – Store locked up P501 – Dispose of contents/ container in accordance with local/ regional/national/international regulation
2.2	Other Information	**Hazard Ratings : NFPA** Health: 2 Flammability: 0 Reactivity: 0 **Hazard Ratings : HMIS** Health: 2 Flammability: 0 Reactivity: 0  

<table>
<tr><td>3.</td><td colspan="2">Composition /Information on Ingredients</td></tr>
<tr><td>3.1</td><td>Composition</td><td>List of raw materials in the mixture with hazardous/ non-hazardous additional
<table>
<tr><th>% Conc.</th><th>CAS no.</th><th>Substance name</th></tr>
<tr><td>24.9</td><td>78587-05-0</td><td>trans-5-(4-chlorophenyl)-N-cyclohexyl-4-methyl-2-oxo-3-thiazolidine-carboxamide</td></tr>
<tr><td>3.8</td><td>NA</td><td>Toximul 3455F</td></tr>
<tr><td>1.3</td><td>NA</td><td>Toximul 3454F</td></tr>
<tr><td>70</td><td>64742-94-5</td><td>Aromatic 200</td></tr>
</table></td></tr>
<tr><td>3.2.</td><td>Common name and synonyms</td><td>Details not known</td></tr>
<tr><td>4.</td><td colspan="2">First Aid Measures</td></tr>
<tr><td>4.1</td><td>Description of first aid measures</td><td>- Inhalation: Remove source of contamination or move victim to fresh air. Keep victim warm and at rest. Treat symptomatically and supportively. Obtain medical advice if necessary.
- Skin contact: Remove contaminated clothing, shoes and leather goods. Wash skin gently and thoroughly with water and non-abrasive soap. Persons who become sensitized may require specialised medical management with anti-inflammatory agents.
- Eye contact: Immediately flush the eyes with gently flowing lukewarm water or saline solution for 20 minutes, occasionally lifting the upper and lower lids. Specialised ophthalmologic treatment might be required.
- Oral: Do not induce emesis. Seek medical advice</td></tr>
<tr><td>4.2</td><td>Important symptoms & effects</td><td>Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident is recommended.</td></tr>
<tr><td>4.3</td><td>Immediate medical attention</td><td>Notes for the doctor: No relevant information or antidote available

For 24-hour medical emergency assistance (human or animal) call 1-800-222-1222. For chemical emergency assistance (spill, leak, fire, or accident) call ChemTrec at 1-800-424-9300.</td></tr>
<tr><td>5.</td><td colspan="2">Fire Fighting Measures</td></tr>
<tr><td>5.1</td><td>suitable extinguishing media</td><td>Carbon dioxide, extinguishing powder or water spray can be used for cooling of unaffected stock. In case of larger fires, water spray or alcohol resistant foam to be used.</td></tr>
<tr><td>5.2</td><td>Special hazard arising from the chemical</td><td>Toxic carbon and nitrogen oxides</td></tr>
<tr><td>5.3</td><td>Special protective equipment and precautions for firefighters</td><td>As in any fire, wear full protective clothing and self-contained breathing apparatus with full face piece operated in pressure-demand or other positive pressure mode.</td></tr>
<tr><td>6.</td><td colspan="2">Accidental Release Measures</td></tr>
<tr><td>6.1</td><td>Personal precautions, protective equipment and emergency procedures</td><td>6.1.1 For non-emergency personnel
➢ <u>Personal precautions:</u> Avoid contact with skin and eyes. Do not breathe in fumes. Ventilate area of spill or leak, especially confined areas. Shut off/remove any ignition sources. For personal protection see Section 8.
➢ <u>Environmental precautions:</u> Do not allow to enter drains or water courses. When the product contaminates public waters, inform appropriate authorities immediately in accordance with local regulations.

6.1.2 For emergency responders: Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Do not touch the spilled material. Avoid the spread of the spillage by using adsorbents, if this can be done without risks. Ground all equipment containing material.</td></tr>
<tr><td>6.2</td><td>Methods and material for containment and cleaning up</td><td>Sweep up with dustpan and brush off inert material. The waste should be held in suitable labeled container.</td></tr>
</table>

6.3	**Reference to other section**	If appropriate section 8 and 13 shall be referred to
7.	**Handling and Storage**	
7.1.	**Precautions for safe handling**	**7.1.1. Recommendations shall be specified to:** Remove sources of naked flame or sparks. Avoid contact with eyes, prolonged contact with skin, and inhalation of fumes and spray particles. Use with adequate ventilation. Do not apply directly to areas where surface water is present. Water used to clean equipment must be disposed of correctly to avoid contamination. **7.1.2. Advice on general occupational hygiene**: (a) not to eat, drink and smoke in work areas (b) to wash hands after use; and (c) To remove contaminated clothing and protective equipment before entering eating areas
7.2	**Conditions for safe storage, including any incompatibilities**	**(a) How to manage risks associated with storage :** No special storage condition indicated **(b) Other advice including:** Do not contaminate water, food, or feed by storage or disposal. Store in cool place. Keep container tightly closed in a dry and well-ventilated place.
8.	**Exposure Controls / Personal Protection**	
8.1.	**Control parameters**	**Components with limit values that require monitoring at the workplace** 78587-05-0 — VLA-ED: Contains Kaolin (>50% w/w): 2 mg/m3 (breathing fraction) 64742-94-5 — TLV : Not known
8.2.	**Exposure controls**	
8.2.1.	**Appropriate engineering controls**	The description of appropriate exposure control measures shall relate to the identified use(s) of the substance or mixture as referred to in subsection 1.2. This information shall be sufficient to enable the employer to carry out an assessment of risk to the safety and health of workers arising from the presence of the substance.
8.2.2.	**Individual protection measures**	**(a) Eye / face protection:** Wear appropriate protective eyeglasses, splash goggles or chemical safety goggles and face shield.  **(b) Skin protection:** Wear appropriate protective clothing like impervious lab coat, apron or coveralls. (i) Hand protection: Use compatible chemical / solvent resistant protective gloves made of suitable materials like rubber, plastic, etc,  (ii) Other: Wear appropriate boots and other footwear. **(c) Respiratory protection:** In case of brief exposure or low pollution, use respiratory filter device. In case of intensive or longer exposure, use self-contained respiratory protective device. Short term filter device: Filter AX. In case of emergency spills, use a NIOSH approved respirator with any N, R, P, or HE filter. **(d) General protective and hygienic measures:** • Keep away from foodstuffs, beverages and feed. • Immediately remove all soiled and contaminated clothing. • Wash hands before breaks and at the end of work. • Store protective clothing separately.

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<tr><td>9.</td><td colspan="2">Physical & Chemical Properties</td></tr>
<tr><td>9.1.</td><td>Information on basic physical and chemical properties</td><td>(a) Appearance: Liquid
(b) Odour: Characteristic
(c) Initial boiling point and boiling range: > 100^{0}C
(d) Flash point: > 200^{0}F
(e) Vapour pressure : 23 hPa (17 mm Hg) (Active Ingredient)
(f) Bulk Density : 1.04 g/mL
(g) pH value: 4.7 (1% dilution) (Active Ingredient)
(h) Solubility(ies): in water: 0.5mg/L (Active Ingredient)
(i) Explosive properties: None
(j) Oxidising properties: Not available</td></tr>
<tr><td>9.2.</td><td>Other information</td><td>NA</td></tr>
<tr><td>10.</td><td colspan="2">Stability and Reactivity</td></tr>
<tr><td>10.1</td><td>Reactivity</td><td>Not known</td></tr>
<tr><td>10.2</td><td>Chemical stability</td><td>Stable at normal temperature and pressure</td></tr>
<tr><td>10.3</td><td>Possibility of hazardous reactions</td><td>No information known</td></tr>
<tr><td>10.4</td><td>Conditions to avoid</td><td>Avoid temperatures above 150^{0}F and below 20^0 F. High temperature, sunlight, frost</td></tr>
<tr><td>10.5</td><td>Incompatible materials</td><td>Strong oxidizing agents</td></tr>
<tr><td>10.6</td><td>Hazardous decomposition products</td><td>In case of fire - Cl_2, NO_x. Thermal decomposition may produce toxic carbon and nitrogen oxides, and hydrogen chloride.</td></tr>
<tr><td>11.</td><td colspan="2">Toxico-logical Information</td></tr>
<tr><td>11.1</td><td>Information on toxicological effects</td><td>(a) acute toxicity: Not toxic
(b) skin corrosion/irritation: Not irritating
(c) serious eye damage/irritation: Not irritating
(d) respiratory or skin sensitization: Not sensitizing
(e) Carcinogenicity: no known evidence
(g) reproductive toxicity: no known evidence
(h) STOT-single exposure: no known evidence
(i) STOT-repeated exposure: no known evidence
(j) Aspiration toxicity – category 1</td></tr>
<tr><td>11.2</td><td>Numerical measures of toxicity (such as acute toxicity estimates)</td><td>
<table>
<tr><th>CAS no.</th><th>Toxicity details</th></tr>
<tr><td>78587-05-0</td><td>Acute toxicity :
LD50 (oral-rat): > 2000 mg/Kg; LD50 = > 5000 mg/kg
LD50 (dermal-rabbit): > 2000 mg/Kg
LC50 (inhalation-rat): > 5 mg/l (4h)
Mutagenicity: Hexythiazox resulted not mutagenic in the Ames assay.
ADI Hexythiazox: 0.03 mg/Kg
ADME: Hexythiazox is readily absorbed by mammals, and the majority of the residue is largely excreted in the feces and urine by 24 hours.</td></tr>
<tr><td>64742-94-5</td><td>Acute toxicity :
LD50 (oral-rat): > 5000 mg/Kg; LD50 = > 20,000 mg/kg bw
LC50 (inhalation-rat): > 5.28 mg/l analytical (4h); LC50 > 6.03 mg/L air
LD50 (dermal-rabbit): > 2000 mg/Kg
Mutagenicity: Solvent naphtha resulted in negative Genotoxicity in mouse lymphoma L5178Y cells, with and without metabolic activation.
Reproductive toxicity: The reproduction NOAEL was 3000 and 1500 mg/kg/day in male and female Sprague Dawley rats respectively</td></tr>
</table>
</td></tr>
<tr><td>11.3</td><td>Chemical if, listed in NTP or IARC or by OSHA as Carcinogens</td><td>The chemical is not a listed carcinogen</td></tr>
</table>

11.4	Additional information	Product shows following danger according to internally approved calculation methods for preparation ▪ Harmful

12. Ecological Information

12.1. Eco – Toxicity

CAS no.	Aquatic toxicity values
78587-05-0	**Toxicity for birds:** LD50 Oral acute in Japanese Quail: > 5000 mg/Kg LD50 Oral acute in Mallard Ducks: > 2510 mg/Kg **Toxicity for fish and aquatic fauna:** • LC50, 96h, in Lepomis Macrochirus: 11.6 mg/l • EC50, 48h, in Daphnia Magna: 0.4 mg/l • Fish - Chronic 21 day NOEC (mg l-1) = 0.04 mg/l • invertebrates - Acute 48 hour EC50 (mg l-1) = > 0.47 • invertebrates - Chronic 21 day NOEC (mg l-1) = 0.0061 mg/l
64742-94-5	**Toxicity for fish and aquatic fauna** The 24, 48, 72, and 96 hour LL50 values for O. mykiss were calculated to be in the ranges of 5 to 17, 2 to 5, 2 to 5, and 2 to 5 mg/L, respectively. The NOEL was 2.0 mg/L. **Invertebrate:** The 48-hour EL50 was calculated to be 1.4 mg/L with a 95% confidence interval of 1.0 to 2.0 mg/L. **Algae:** The 24, 48, and 72 hour EL50 values (those loading rates resulting in a 50% reduction in growth rate after 24, 48, and 72 hours exposure) were all in the range of 1 to 3 mg/L

12.2. Persistence and degradability

CAS no.	Persistence and degradability
78587-05-0	Its photolytic degradation goes slow, being its life average of 116 days. At pH 9 and 22ºC it is hydrolyzed very slowly with a life average of 416 days.
64742-94-5	Manometric Respirometry Test) guidelines, with the closed bottle test. It was performed in 1000 mL Biological Oxygen Demand (BOD) bottles. Kerosine Mid-Blend (purity unknown) was added to an aqueous solution of mineral salts and exposed to relatively low numbers of micro-organisms (density 1E+4) under aerobic conditions for a period of 28 days. Activated sludge was obtained from the Medford Municipal Wastewater Treatment Plant in that was added as 10 mL to the BOD bottles. The test was conducted at 22 degrees centigrade. **Conclusion: After 28 days, there was a 58.6% degradation of the test substance.**

12.3. Bio accumulative potential

CAS no.	BCF
78587-05-0	BCF = 1100 (Interpretation - Threshold for concern) Bioaccumulation potential = calculated as low Measured BCF values of 1000-1600 in whole fish and 300-510 in fish muscle suggests bioconcentration in aquatic organisms is high to very high. Hexythiazox has a reported half-life of 16.7 days in aqueous solution exposed to sunlight. Hexythiazox is reported to be stable in acidic and alkaline media, therefore it is not expected to undergo aqueous hydrolysis in the environment.
64742-94-5	Equation Used to Make BCF estimate: Log BCF = 0.6598 log Kow - 0.333 + Correction Correction(s): Value No Applicable Correction Factors Estimated Log BCF = 1.844 (BCF = 69.88 L/kg wet-wt)

12.4. Mobility in soil

CAS no.	Soil Mobility
78587-05-0	In soil, it is degraded mainly by oxidation to produce hydroxy and carbonyl compounds. Soil degradation (days) (aerobic):- DT50 (typical) = 30 which indicates that the chemical is moderately persistent. Particulate-phase hexythiazox will be removed from the atmosphere by wet or dry deposition. Hexythiazox has a reported half-life of 16.7 days in aqueous solution exposed to sunlight and therefore may be susceptible to direct photolysis by sunlight. If released to soil, hexythiazox is expected to have no mobility based upon a measured Koc of 6200.

		64742-94-5 | Soil Adsorption Coefficient (KOCWIN v2.00): Koc : 1544 L/kg (MCI method); Log Koc: 3.189 (MCI method) Koc : 730.6 L/kg (Kow method); Log Koc: 2.864 (Kow method) Experimental Log Koc: 2.96 (database)
12.5.	**General information**	Water hazard class : 2 (self-assessment) – hazardous to water Do not allow the product to reach through ground water, water course or sewage system. Danger to drinking water if even small quantity leaks into the ground system. The mixture is not persistent, bio accumulative or toxic (Not PBT)
13.	**Disposal Considerations**	
13.1	**Waste treatment methods**	**(a) Waste treatment containers and methods:** Waste treatment containers and methods shall be specified including the appropriate methods of waste treatment of both the substance or mixture and any contaminated packaging (for example, incineration, recycling, land filling) **(b) Physical/chemical properties:** Physical/chemical properties that may affect waste treatment options shall be specified **(c) Sewage disposal:** Sewage disposal shall be discouraged **(d) Special precautions:** Where appropriate, any special precautions for any recommended waste treatment option shall be identified.
13.2	**Additional information:**	Any relevant Community provisions relating to waste shall be referred to. In their absence any relevant national or regional provisions in force shall be referred to.
14.	**Transport Information**	
	Information includes RID, ADR, AND, DOT, ICAO, IMDG, IATA-DGR	14.1. UN number : 3082 14.2. UN proper shipping name : ✓ ADR: 3082 Environmentally Hazardous Substance, Liquid, n.o.s. (Hexythiazox) ✓ DOT - Environmentally hazardous substance, Liquid, n.o.s. (Hexythiazox) ✓ IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Hexythiazox) MARINE POLLUTANT ✓ IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Hexythiazox) 14.3. Transport hazard class(es): 9  14.4. Packing group : III 14.5. Environmental hazards (e.g., Marine pollutant (Yes/No)) : Yes 14.6. Special precautions for user : Warning ✓ Danger Code : 90; ✓ EMS Number : F-A,S-F 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code : Not applicable 14.8. Additional information : ADR/ IMDG ✓ Limited quantities (LQ) – 5L; Excepted Quantities (EQ) – E1 ✓ Maximum net quantity per inner packaging : 30 ml ✓ Maximum net quantity per outer packaging : 1000 ml
15.	**Regulatory Information**	
15.1	**Safety, health and environmental regulations/other legislations**	• Product related hazard information : The product has been classified and marked in accordance with directives on hazardous materials • Hazard statements: ✓ Harmful if swallowed, inhaled or absorbed through skin. • Signal word – CAUTION • Precautionary statements : ✓ Avoid breathing vapor or spray mist. ✓ Avoid contact with skin, eyes, or clothing. ✓ Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. ✓ Remove contaminated clothing and wash clothing before reuse. • Other regulations: Listed /not listed within the following regulation ✓ Sara - section 355 (extremely hazardous substance): none of the ingredients are listed.

		✓ Sara – section 313 (specific toxic chemical listing) : N-methyl-2-pyrrolidone (CAS No.: 872-50-4) ✓ TSCA: CAS NO.; 64742-94-5; 872-50-4; 7732-18-5 – all 3 listed ✓ Proposition 65 (chemical known to cause cancer) : none of the ingredients are listed ✓ Proposition 65 (chemical known to cause reproductive toxicity for females/ males) : none of the ingredients are listed ✓ Carcinogenic categories (EPA) : none of the ingredients are listed ✓ TLV : N-methyl-2-pyrrolidone ✓ NIOSH – Ca (National Institute of Occupational Health and Safety) : none of the ingredients are listed ✓ OSHA – Ca (Occupational Health and Safety Administration) : none of the ingredients are listed
16.	**Other Information**	
16.1	**Indication of changes**	Section 1: Identification of the substance/mixture and of the company/undertaking Section 2: Hazard Identification - Changes in Classification and Labelling. Section 3: Composition /Information on Ingredients Section 5: Fire-fighting measures Section 6: Accidental Release measures Section 7: Handling and storage. Section 8: Exposure Controls/Personal protection. Section 9: Physical and Chemical properties. Section 10: Stability and Reactivity. Section 11: Toxicological Information. Section 12: Ecological Information. Section 14: Transport labeling Section 15: Regulatory Information
16.2	**Abbreviations and acronyms**	• OSHA: Occupational Safety and Health Administration • GHS: Globally harmonized system on classification and labelling • TWA: Time Weighted Average • STEL: Short Term Exposure Limit • PEL: Permissible Exposure Limits • ACGIH: American Conference of Governmental Industrial Hygienists • NIOSH: National Institute for Occupational Safety and Health • TLV: Threshold Limit Value • MARPOL: Marine pollution • IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk • IARC: International Agency for Research on Cancer • NTP: National Toxicology Program • CAS: Chemical Abstracts Service (division of the American Chemical Society) • LC50: Lethal concentration, 50 percent • LD50: Lethal dose, 50 percent • IMDG: International Maritime Code for Dangerous Goods IATA: International Air Transport Association • IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA) ICAO: International Civil Aviation Organization • ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" • Sara : Superfund Amendments and Reauthorization Act • WEEL: Workplace Environmental Exposure Level
16.3	**Key literature references and sources for data**	• http://echa.europa.eu/search-chemicals;jsessionid=02A932957C1BA2098DAB8E49132CEFCB.live2 • http://www.pesticideinfo.org/Detail_Chemical.jsp?Rec_Id=PC35477#Toxicity • http://www.american-chemicals.com/productshow/704032.html • http://www.chemicalbook.com/ChemicalProductProperty_US_CB1936559.aspx • EPI Suite • https://www.exxonmobilchemical.com/Chem-English/Files/Resources/aromatic-150-product-safety-summary.pdf • http://www.totalpetrochemicalsusa.com/documents/ProductStewardship/Atosols%20Product%20Summary%20-%20TPRI.pdf • http://iaspub.epa.gov/sor_internet/registry/substreg/searchandretrieve/advancedsearch/externalSearch.do?p_type=CASNO&p_value=64742-94-5 • http://exxonmobilchemical.ides.com/en-

		US/ds243894/ExxonMobil%E2%84%A2%20Aromatic%20200.aspx?I=22455&U=0 • http://megaloid.ca/MSDS/Aromatic%20200.pdf • http://www.chemnet.com/cas/en/78587-05-0/Hexythiazox.html • http://www.sigmaaldrich.com/MSDS/MSDS/PleaseWaitMSDSPage.do?language=&country=IN&brand=SIAL&productNumber=33365&PageToGoToURL=http%3A%2F%2Fwww.sigmaaldrich.com%2Fcatalog%2Fsearch%3Fterm%3D78587-05-0%26interface%3DCAS%2520No.%26N%3D0%26mode%3Dmatch%2520partialmax%26lang%3Den%26region%3DIN%26focus%3Dproduct

Disclaimer: This product is a registered agricultural chemical and must therefore be used in accordance with the container label directions. The information above is believed to be accurate and represents the best information currently available to us. No representation, guarantee or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. This SDS shall be used as a guide only. Users should make their own investigations to determine the suitability of the information for their particular purposes. Consult Sharda USA LLC for further information.