

PERFORMANCE DATA

Life Protected Sorbent

| PRODUCT CODE | PRODUCT DESCRIPTION            | SHELF LIFE | PRESENT IN                               |
|--------------|--------------------------------|------------|--|
| LPS350       | 350ml sachet of sorbent powder | 5 years    | All-in-one Biohazard Spill Pack (MJZ005) |

| RECCOMENDED USE   |
|---|
| A component used in emergency decontamination systems for environmental surfaces. Used for sorption of hazardous liquid chemical and biological spills to immobilise in a solid format to easily and safely collect and dispose. Can be used on organic and inorganic liquids which can be hydrophilic, hydrophobic and omniphobic (excluding Hydrofluoric acid <sup>1</sup> ). |

| PROPERTY  | VALUE                | UNIT                           |
|---|----------------------|--------------------------------|
| Water sorbance capacity <sup>2</sup>                  | 400                  | ml H <sub>2</sub> O            |
|   | 4.76                 | ml H <sub>2</sub> O/g (powder) |
| Monoprotic acid neutralisation capacity <sup>2</sup>  | 8.9x10 <sup>-4</sup> | moles                          |
| Cation exchange capacity (CEC) <sup>3</sup>           | 0.23 - 0.29          | meq/g                          |
| Monovalent cation sequestration capacity <sup>2</sup> | 18.9 – 23.9          | mmol                           |
| Divalent cation sequestration capacity <sup>2,4</sup> | 46.9 – 49.5          | mmol                           |

- LPS350 should never be used for the sorption of Hydrofluoric acid (HF, CAS No. 7664-39-3) because it contains natural silicate minerals, which react with Hydrofluoric acid to create Silicone tetrafluoride (SiF<sub>4</sub>, CAS No. 7783-61-1) which is a toxic gas. For Hydrofluoric acid spill decontamination, please follow local policies and/or regulations.*
- 1

-

Based on nominal powder weight of 84g
- 2

-

Based on measured values of the zeolite component using the ammonium acetate method, involving a 1M ammonium acetate solution and quantification with ICP-AES (Inductively coupled plasma optical emission spectroscopy). The unit of measurement (meq/g) stands for milliequivalents per gram, equivalent to millimoles of monovalent cations exchanged per gram of powder.
- 3

-

Based on contributions from cation exchange with the zeolite component and precipitation with the bicarbonate component.
- 4

-





## Substances proven to undergo sorption by LPS350<sup>5</sup>

| SUBSTANCE IDENTITY  | CAS NO.    | TYPE                    |
|---|------------|-------------------------|
| 0.1M Acetic acid solution (in deionised water)  | 64-19-7    | Organic acid solution   |
| 0.1M HCl solution (in deionised water) - equivalent to pH of human vomit                                  | 7647-01-0  | Inorganic acid solution |
| 10% Calcium chloride solution (10% CaCl <sub>2</sub> .2H <sub>2</sub> O in deionised water)               |            | Aqueous mixture         |
| 10,000PPM active chlorine solution in tap water (created with SoChlor TAB 1.7g)                           | N/A        | Aqueous mixture         |
| 1-Butanol   | 71-36-3    | Alcohol                 |
| 1-Octanol   | 111-87-5   | Alcohol                 |
| 25% Ammonia solution  | 1336-21-6  | Ammonia                 |
| 2-Propanol (Isopropanol)  | 67-63-0    | Alcohol                 |
| 70% 2-Propanol (Isopropanol) solution (in deionised water)  | 67-63-0    | Aqueous mixture         |
| Acetone   | 67-64-1    | Ketone                  |
| Artificial blood <sup>6</sup>   | N/A        | Aqueous mixture         |
| Artificial urine <sup>6</sup>   | N/A        | Aqueous mixture         |
| Concentrated cleaning solution (Decon 90)   |            | Aqueous mixture         |
| Deionised water   | 7732-18-5  | Water                   |
| Dimethyl sulfoxide (DMSO)   | 200-664-3  | Sulfoxide               |
| Dipropylene glycol  | 25265-71-8 | Glycol ether            |
| Ethanol   | 64-17-5    | Alcohol                 |
| Ethylene glycol mono-butyl ether (EGMBE, Butyl glycol)  | 8049-98-7  | Glycol ether            |
| Glycerol (Glycerine)  | 56-81-5    | Alcohol                 |
| Half saline/Hypotonic saline solution (0.45% NaCl in deionised water)                                     |            | Aqueous mixture         |
| Hexane  | 110-54-3   | Hydrocarbon             |
| Hypertonic saline solution (3% NaCl in deionised water)   |            | Aqueous mixture         |
| Isotonic saline solution (0.9% NaCl in deionised water)   |            | Aqueous mixture         |
| Methylated spirits (ethanol, propan-2-ol, butanone)   |            | Non-aqueous mixture     |
| Milk (cow's milk, semi-skinned)   | 8049-98-7  | Aqueous mixture         |
| Mineral Oil   | 8042-47-5  | Hydrocarbon             |
| Monoethylene glycol   | 107-21-1   | Glycol                  |
| N,N-Dimethylformamide (DMF)   | 68-12-2    | Amide                   |
| Oleic acid  | 112-80-1   | Acid                    |
| pH 10 buffer solution   |            | Aqueous mixture         |
| pH 4 buffer solution  |            | Aqueous mixture         |
| pH 7 buffer solution  |            | Aqueous mixture         |
| Polyethylene glycol 400   | 25322-68-3 | Polyether               |
| Propylene carbonate   | 108-32-7   | Alkylene carbonate      |
| Propylene glycol  | 57-55-6    | Glycol                  |
| Rapeseed oil  | 8002-13-9  | Fatty acid triglyceride |
| Ringers solution (0.017% CaCl <sub>2</sub> .2H <sub>2</sub> O, 0.72% w/v & 0.037% KCl in deionised water) |            | Aqueous mixture         |
| Silicone Oil  | 63148-62-9 | Silicone                |
| Sodium hypochlorite solution (6-14% active chlorine)  | 7681-52-9  | Oxidising agent         |
| Sodium silicate solution (30% w/w)  | 67-64-1    | Silicate                |
| Tap water   | 7732-18-5  | Water                   |
| Triethanolamine   | 102-71-6   | Amine                   |
| White spirit (Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 100%)               |            | Non-aqueous mixture     |

- 5 - All sorption tests performed with 1g of LPS350 and 2g of liquid. Process only deemed successful is liquid undergoes complete sorption into the powder with the resultant material retaining the liquid in a solid state.
- 6 - Refer to the relevant table in the appendix at the end of this document for compositional information.





## APPENDIX

| ARTIFICIAL BLOOD FORMULATION |            |
|------------------------------|------------|
| COMPONENT                    | CONC (w/v) |
| Deionised water              | 42.101     |
| Xanthan                      | 0.075      |
| Glycerol                     | 50         |
| Acid Red 1                   | 0.05       |
| Lactalbumin                  | 7          |
| Sodium chloride              | 0.72       |
| Potassium chloride           | 0.037      |
| Calcium chloride             | 0.017      |

- table 1 -

| ARTIFICIAL URINE FORMULATION         |            |
|--------------------------------------|------------|
| COMPONENT                            | CONC (w/v) |
| Urea                                 | 1.20       |
| Uric acid                            | 0.02       |
| Creatinine                           | 0.05       |
| Sodium citrate tribasic dihydrate    | 0.15       |
| Sodium chloride                      | 0.32       |
| Potassium chloride                   | 0.22       |
| Ammonium chloride                    | 0.08       |
| Calcium chloride dihydrate           | 0.04       |
| Magnesium sulphate heptahydrate      | 0.05       |
| Sodium bicarbonate                   | 0.02       |
| Sodium oxalate                       | 0.00       |
| Sodium sulphate                      | 0.13       |
| Sodium phosphate monobasic dihydrate | 0.06       |
| Sodium phosphate dibasic             | 0.01       |
| Tartrazine                           | 0.01       |
| Deionised water                      | 97.66      |

- table 2 -

Approved by:

For and on behalf of GV Health Ltd., Duncan Holdsworth, Head of Technical

This information is, to the best of the company's knowledge, accurate as of the date indicated but makes no representations, guarantees, or warranties, either explicitly or implicitly regarding its accuracy or suitability for particular applications. It relates only to the specific material designated and become invalidated if used in combination with other materials. It's based on laboratory work with small-scale equipment and does not necessarily indicate end-product performance or reproducibility. It's the user's responsibility to determine the suitability of this information for their intended use. Full-scale testing and end-product performance are the responsibility of the user. The customer assumes all risk and liability for any testing, use or handling of any material. GV Health Ltd. doesn't assume any obligation or liability arising from the information given, the recommendations made or the use of their respective products. For products sold outside of the UK, the local distributor assumes full responsibility.

