

## MATERIAL SAFETY DATA SHEET

Based on the ANSI's form

Prepared by Reagent & Diagnostics Department

Tokiwa Chemical Industries CO., Ltd.

### Estrogen (E1/E2/E3) ELISA kit (96 wells)

#### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer's name: Tokiwa Chemical Industries CO., Ltd.  
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Japan  
Phone No.: +81-3-3940-7768  
Fax No.: +81-3-3940-7689  
Product Name: Estrogen (E1/E2/E3) ELISA kit (96 wells)

#### 2. COMPOSITION/INFORMATION ON INGREDIENTS

| <u>LABEL/Ingredient</u>  | <u>CAS Number</u> | <u>Content (%)</u> | <u>Content (/Vial)</u> |
|--|-------------------|--------------------|------------------------|
| [1]MoAb-Coated Microplate (1 Plate/Kit)<br>Monoclonal antibodies against Estrogen                |                   |                    |                        |
| [2]17 $\beta$ -Estradiol Standard (1.5 mL/Vial $\times$ 5 Vials/Kit)<br>① Methanol               | 67-56-1           | 10                 | 0.15 mL                |
| [3]Antigen-enzyme Conjugate Powder (2 Vials/Kit)<br>Antigen conjugate to Horse Radish Peroxidase |                   |                    |                        |
| ② Maltose monohydrate  | 6363-53-7         | 97                 | 20 mg                  |
| ③ BSA  | 9048-46-8         | 3                  | 580 $\mu$ g            |
| [4]Buffer Solution (7 mL/Vial $\times$ 2/Kit)<br>Phospahte Buffered Saline                       |                   |                    |                        |
| [5]Microplate<br>Empty 96well Microplate for dilution  |                   |                    |                        |
| [6]Wash Solution (6-fold concentration) (50 mL/Vial/Kit)<br>Phospahte Buffered Saline            |                   |                    |                        |
| [7]Color Solution (15 mL/Vial/Kit)<br>Buffer   |                   |                    |                        |
| ④ Propylene Glycol   | 57-55-6           | 2                  | 0.3 mL                 |
| ⑤ Dimethyl Sulfoxide   | 67-68-5           | 1.5                | 0.2 mL                 |
| [8]Stop Solution (15 mL/Vial/Kit)<br>⑥ Sulfuric Acid   | 7664-93-9         | 2                  | 0.3 g                  |

|   | SYNONYMS                  | FORMULA   | Mw     |
|---|---------------------------|---|--------|
| ① | Methyl alcohol            | CH <sub>3</sub> OH  | 32.04  |
| ② | Maltose monohydrate       | C <sub>12</sub> H <sub>22</sub> O <sub>11</sub> ·H <sub>2</sub> O | 360.32 |
| ③ | Bovine serum albumin      | Protein (Albumin)   | —      |
| ④ | 1,2-Propanediol           | C <sub>3</sub> H <sub>8</sub> O <sub>2</sub>                      | 76.10  |
| ⑤ | Methyl sulfoxide          | C <sub>2</sub> H <sub>6</sub> OS                                  | 78.14  |
| ⑥ | Acide sulfurique (French) | H <sub>2</sub> SO <sub>4</sub>                                    | 98.08  |

|    | EINECS    | ENCS #   | ECL Serial # | TSCA         | DSL      | AICS   | RTEC #    |
|----|-----------|----------|--------------|--------------|----------|--------|-----------|
| ①  | 200-659-6 | 2-201    | KE-23193     | listed       | listed   | listed | PC1400000 |
| ②  | unlisted  | 8-64X    | Unlisted     | unlisted     | unlisted | listed | unlisted  |
| ②* | 200-716-5 | 8-64     | KE-17721     | listed       | listed   | listed | OO5250000 |
| ③  | 232-936-2 | unlisted | unlisted     | listed as XU | listed   | listed | unlisted  |
| ④  | 200-338-0 | 2-234X   | KE-29267     | listed       | listed   | listed | TY2000000 |
| ⑤  | 200-664-3 | 2-1553   | KE-32367     | listed       | listed   | listed | PV6210000 |
| ⑥  | 231-639-5 | 1-430    | KE-32570     | listed       | listed   | listed | WS5600000 |

\*anhydrous

**INDICATION OF DANGER :**

- ① EEC No.:200-659-6, Danger Symbols R: 11-23/25, S: (1/2-)7-16-24-45
- ⑥ EEC No.: 231-639-5, IDanger Symbols R: 34-35

**3. HAZARDS IDENTIFICATION**

Maybe harmful if inhaled and ingested and contacted with skin. Irritation of eyes and skin. Toxic if swallowed. May cause harm to the unborn child. [2]: Flammable , [7]: Corrosive

**4. FIRST AID MEASURES**

**GENERAL ADVICE :**

Wash off immediately with soap and plenty of water. In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit. Use personal protective equipment.

**INHALATION :**

Move victim to fresh air. If breathing is difficult, give oxygen. If irritation persists, consult a physician.

**SKIN CONTACT :**

Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. If irritation persists, consult a physician.

**EYE CONTACT :**

Remove any contact lenses at once. Flush eyes well with flooding amounts of running water for at least 15minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If irritation persists, consult a physician.

**INGESTION:**

Rinse mouth, give plenty of water to dilute the substance. Never give anything by mouth to an unconscious person. Consult a physician.

**5. FIRE FIGHTING MEASURES**

**EXTINGUISHING MEDIA :** Carbon dioxide, dry chemical powder, foam, water

**FIRE AND EXPLOSION HAZARDS:**

[1],[3]-[7]: Toxic, irritating fumes or smoke may be emitted. [2]: Flammable liquid, hazardous toxic and irritating fumes or smoke may be emitted.

**SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS :**

Firemen should wear normal protective equipment (full bunker gear) and positive-pressure self-contained breathing apparatus.

## 6. ACCIDENTAL RELEASE MEASURES

### PERSONAL PRECAUTIONS :

Remove ignition sources and ventilate area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes.

**ENVIRONMENTAL PRECAUTIONS :** Prevent spills from entering sewers, watercourses or low areas.

### METHODS FOR CLEAN UP :

Do not touch spilled material without suitable protection (See section 8). Take up spilled material with ashes or other absorbents. After material is completely picked up, wash the spill site with soap and water and ventilate the area. Put all wastes in a plastic bag for disposal and seal it tightly. Remove, clean, or dispose of contaminated clothing. Drains should be well flushed with large amount of water when discarding the reagents.

## 7. HANDLING AND STORAGE

Research use only.

### HANDLING :

Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Handle material with suitable protection away from source of heat or ignition and use non-sparking type tools.

### STORAGE :

Store away from sunlight in a cool ( 2~8°C = 35.6~46.4° F) well-ventilated dry place. Keep container tightly closed. See also the indication described on label for handling.

**INCOMPATIBLE PRODUCTS :** Water-reactive materials (alkali metals etc.), strong oxidizers, acids, heavy metals.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### ENGINEERING MEASURES :

Use exhaust ventilation to keep airborne concentrations below exposure limits. Use only with adequate ventilation.

### VENTILATION :

Local Exhaust ; Necessary, Mechanical (General) ; Necessary, Special ; Closed system is recommended.

**CONTROL PARAMETER :** ①, ③, ④, ⑤ : Not available

② OSHA PEL ; TWA 200ppm (260mg/m<sup>3</sup>) , ACGIH TLV ; TWA 200ppm (262mg/m<sup>3</sup>) , ACGIH TLV ; STEL 250ppm (328mg/m<sup>3</sup>) (skin), NIOSH REL ; TWA 200ppm (260mg/m<sup>3</sup>) (skin), STEL 250ppm (325mg/m<sup>3</sup>) (skin) Health Effects : Blindness, metabolic acidosis.

⑥ OSHA PEL: TWA 1 mg/m<sup>3</sup> , NIOSH REL: TWA 1 mg/m<sup>3</sup>

### PERSONAL PROTECTION :

Respiratory protection ; NIOSH/MSHA approved respirator / Hand protection ; Chemical resistant gloves

Eye protection ; Safety glasses (goggles) / Skin protection ; Protective clothing

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE :

[1]; 96 well microplate [2]; Colorless clear liquid in clear bottle  
[3]; White mass in clear bottle [4]; Colorless clear liquid in clear bottle  
[5]; 96 well microplate [6]; Colorless clear liquid in clear bottle  
[7]; Colorless to pale yellow liquid in brown bottle [8]; Colorless clear liquid in clear bottle

### ODOR :

[2], [7]; Characteristic odor, [1],[3],[4],[5], [6], [8]; Odorless

### pH :

[2]; pH 6-8,[4]; pH 7-7.5,[6]; pH 6.5-7.5,[7]; pH 3.5-4.5,[8]; pH 1-2

### BOILING POINT :

① 64.6°C, ④ 187.6°C, ⑤ 189°C (dec), ⑥ 280°C

### MELTING POINT :

① -98°C, ④ -59°C, ⑤ 18.45°C, ⑥ 3°C

### FLASH POINT :

① 12°C, ④ 107°C, ⑤ 95°C, ⑥ 3°C

### FLAMMABILITY :

① flammable

### EXPLOSIVE LIMITS :

① 6.0-35.6% (v/v)

### VAPOR PRESSURE :

① 16.8 kPa, ⑤ 0.46 kPa,

### SPECIFIC GRAVITY :

① 0.791, ④ 1.036, ⑤ 1.096, ⑥ 1.84

### SOLUBILITY IN WATER :

[2],[3],[4],[6],[7],[8]; Soluble

### log Po/w:

① octanol/H<sub>2</sub>O= -0.82

### DECOMPOSITION TEMPERATURE :

⑤ 189°C (dec)

## 10. STABILITY AND REACTIVITY

### CONDITION TO AVOID :

Sunlight, heat, open flames, high temperature, sparks, static electrical charges, other ignition sources.

### INCOMPATIBILITY (MATERIAL TO AVOID) :

Water-reactive materials (alkali metals etc.), strong oxidizers, acids, heavy metals.

**HAZARDOUS DECOMPOSITION PRODUCTS :**

Carbon monoxide, nitrogen oxides, sulfur oxides, phosphor oxides and sodium compounds may be formed.

**HAZARDOUS POLYMERIZATION :** will not occur

## 11. TOXICOLOGICAL INFORMATION

**General Information:** Not available as the mixture. ②, ③, ④, ⑤ Not available

- ① NIOSH Immediately Dangerous To Life or Health Concentration (IDLH): 6,000 ppm  
Potential symptoms: Eye, skin, upper respiratory irritation; headache; drowsiness, dizziness; nausea, vomiting; dilation of the pupils, visual disturbance (spotted vision, sensitivity to light), blindness; excessive sweating, dermatitis;  
INGES ACUTE: Abdominal pain; shortness of breath; vomiting; cold clammy extremities; blurring of vision, hyperemia of the optic disc; metabolic acidosis; convulsions; unconsciousness.  
Health Effects: Acute toxicity---Acidosis (HE4); Cumulative CNS Disturbances---Impaired vision, headaches, neurological damage (HE7); Narcosis (HE8); Irritation-Eye, Nose, Throat, Skin---Mild (HE16); Explosive, flammable (HE18).  
Affected organs: Eyes, skin, respiratory system, CNS, gastrointestinal tract
- ⑥ NIOSH Immediately Dangerous To Life or Health Concentration (IDLH): 15 ppm  
Potential symptoms: Eye, nose, throat irritation (cough, sore throat); shortness of breath, pulmonary edema; conjunctivitis; stomatitis; tracheobronchitis; dental erosion, skin, eye pain and burns; dermatitis, blisters.  
INGES ACUTE: abdominal pain, burning sensation; shock or collapse.  
Health Effects: : Irritation-Eye, Nose, Throat, Bronchi, Skin---Marked (HE14) Cumulative lung damage (HE10); Dental erosion (HE3)  
Affected organs: Respiratory system, eyes, skin, teeth

**ACUTE TOXICITY DATA :** Not available as the mixture. ③ Not available

- ① LD<sub>0</sub> (oral, man) 6422mg/kg, TD<sub>0</sub> (oral, man) 3429mg/kg, LD<sub>0</sub> (oral, human) 428mg/kg, LD<sub>0</sub> (oral, human) 143mg/kg, TD<sub>0</sub> (oral, woman) 4g/kg, TCL<sub>0</sub> (inhalation, human) 86000mg/m<sup>3</sup>, TCL<sub>0</sub> (inhalation, human) 300ppm
- ② (anhydrous data) LD<sub>50</sub> (ip, rat) 30600mg/kg, LD<sub>50</sub> (iv, rat) 15300mg/kg, LD<sub>50</sub> (oral, rat) 34800mg/kg, LD<sub>50</sub> (subcutaneous, mouse) 38600mg/kg
- ④ LD<sub>0</sub> (oral, child) 79g/kg, TD<sub>0</sub> (parenteral, infant) 10g/kg, LD<sub>50</sub> (oral, rat) 20g/kg
- ⑤ TDLo (skin, woman) 1800mg/kg, TDLo (intravenous, man) 606mg/kg, LD<sub>50</sub> (intraperitoneal, rat) 8200mg/kg
- ⑥ TCLo (inhalation, human) 1mg/m<sup>3</sup>, LD<sub>50</sub> (oral, rat) 2140 mg/kg

**IRRITATION DATA :** Not available as the mixture. ②, ③ Not available

- ① Skin (rabbit) 20mg/24hr (moderate) Eyes (rabbit) 40mg (moderate), Eyes (rabbit) 100mg/24hr (moderate)
- ④ Skin (human) 500mg/ 7D (mild) , Eyes (rabbit) 500mg (mild), skin (child) 30%/96H-C (moderate)
- ⑤ Skin (rabbit) 500mg/ 24H (mild) , Eyes (rabbit) 500mg /24H(mild)
- ⑥ Eyes (rabbit) 250 ug (severe) , Eyes (rabbit) 5mg /30S rinse(severe)

**MUTATION DATA :** Not available as the mixture. ②, ③ Not available

- ① DNA repair (E. coli) 20mg/well, DNA inhibitor (human, lymphocyte) 300mmol/L, DNA damage (rat, oral) 10 μmol/kg, Cytogenic analysis (mouse, oral) 1g/kg, Cytogenic analysis (mouse, ip) 75mg/kg
- ④ DNA inhibitor(mouse, subcutaneous) 8000 mg/kg, cytogenic analysis(mouse, subcutaneous) 8000 mg/kg
- ⑤ Mutation in microorganisms (E. coli) 551gm, DNA damage (mouse, intraperit oneal) 75 mmol/kg, Cytogenic analysis (mouse, lymphocyte) 93gm/L
- ⑥ Cytogenic analysis (hamster, ovary) 4mmol/L

**REPRODUCTIVE EFFECTS DATA :** Not available as the mixture. ③ Not available

- ① TD<sub>0</sub> (rat, oral, 17-19D preg) 7500mg/kg, TD<sub>0</sub> (rat, oral, 1-15D preg) 35295mg/kg, 71,1991), TD<sub>0</sub> (rat, oral, 6-15D preg) 20g/kg, TCL<sub>0</sub> (rat, inhalation, 7H, 1-22D preg) 20000ppm, TD<sub>0</sub> (rat, inhalation, 7H, 7-15D preg) 20000ppm
- ② (anhydrous data) TD<sub>0</sub> (rat, iv, 9-14D preg) 15g/kg, TD<sub>0</sub> (mouse, oral, 8-12D preg) 50g/kg, TD<sub>0</sub> (mouse, iv, 7-12D preg) 30g/kg, TD<sub>0</sub> (mouse, iv, 7-12D preg) 60g/kg, TD<sub>0</sub> (rabbit, iv, 8-16D preg) 22500mg/kg, TD<sub>0</sub> (rabbit, iv, 18-31D preg/28D post) 105mg/kg
- ④ TD<sub>0</sub> (mouse, intraperitoneal, 11D preg) 100mg/kg, TD<sub>0</sub> (mouse, intraperitoneal, 15D preg) 100mg/kg
- ⑤ TD<sub>0</sub> (rat, intraperitoneal, 6-12D preg) 56g/kg, TD<sub>0</sub> (mouse, oral, 5-9D preg) 16mg/kg
- ⑥ TCL<sub>0</sub> (rabbit, inhalation, 7H 6-18D preg) 20 g/m<sup>3</sup>

**TUMORIGENIC DATA :**Not available as the mixture. ①, ③, ④, ⑥ Not available

- ② (anhydrous data) TDL<sub>0</sub> (subcutaneous, mouse/50W-C) 1750mg/kg  
 ⑤ TDL<sub>0</sub> (subcutaneous, rat/82W-I) 220g/kg, TDL<sub>0</sub> (oral, rat/ 81W-I) 59 g/kg

## 12. ECOLOGICAL INFORMATION

*BIODEGRADABILITY, BIOACUMULATION POTENTIAL* : Not available

*AQUATIC TOXICITY* : ① TLm (96hr) >1000ppm (Goldfish)

*OTHER DATA* : Not available

## 13. DISPOSAL CONSIDERATION

Take up the material with combustible absorbents and burn in small portion in a chemical incinerator equipped with an afterburner and scrubber in accordance with all applicable regulations. Any disposal practice must be in compliance with country, local, state, and federal laws and regulations (contact country, local or state environmental agency for specific rules).

## 14. TRANSPORT INFORMATION

- ⑥ IATA:  
 PROPER SHIPPING NAME: Sulphuric acid with not more than 51%  
 CLASS or DIVISION: Corrosives.(Class 8),(P.G.II)  
 UN or ID No.: UN2796

## 15. REGULATORY INFORMATION

US REGULATIONS ; ②, ③ No regulation

- ① as methanol  
 CAA: HAP, VOC, CWA: Hazardous substance, FIFRA : PAI, PII, RCRA: LDR, SARA: TRI, CERCLA RQ=5,000lbs./2270kg, DOT: CGBHM, DOT : [UN1230] [Flammable liquid, Poison], FDA: PAFA
- ④ CAA, DOT, FDA, FIFRA, NTP, SARA, STATE, TSCA
- ⑤ CAA, FIFRA, TSCA
- ⑥ as sulfuric acid  
 CWA/311 Haz., NIOSH Recommend.Subst., CERCLA Haz.Subst., SARA III/302 Extre.Haz.Subst., DEA Essen.Chem., DOT Haz.Mat., DOT Haz.Sub.and Rep.Quant., Mass. Subst.List , New Jer.RTK Haz.Subst.List, Penn.Haz.Subst.List , Canad.WHMIS IDL 1% conc.  
 EPA: CERCLA RQ = 1000lb  
 SARA RQ= 1000lb  
 EPCRA TPQ= 1000lb  
 EPA FIFRA 1998 STATUS OF PESTICIDES  
 OSHA: TQ= Not Listed

## 16. OTHER INFORMATION

No specific notes

The above information is believed to be correct to be the best of our knowledge and information but does not purport to be all inclusive and shall be used only as a guide. This product is intended to be used by expert persons having chemical knowledge and skill at their own discretion and risk and Takeda shall not be held liable for any damage resulting from handling or from contact with the above material.

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