# MATERIAL SAFETY DATA SHEET

TIANNENG

## VALVE-REGULATED LEAD ACID BATTERIES
## MAINTENANCE-FREE NON-SPILLABLE

**Series No**: 9990920250101-002

**ACCORDING TO ISO 11014-2009 FORMAT**

**Version**: 1.0

**Period of validity: Jan 1, 2026 ~ December 31, 2026**

## SECTION 1- CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name: Sealed Lead Acid Battery, Valve Regulated Lead Acid Battery GEL Battery , BATTERIES, WET, NONSPILLABLE,electric storage, TN, TNL, TNF, TNS, TNX, TNG, TNFG, TNC,TNFC, OPZV, DZF,DMF,EVF,DF,FM,TNE, TNEP, AGM Series**

**Product model:**

TN2-500,TN2-1000,TN6-4.0,TN6-7.0,TN12-4.5,TN12-5.5,TN12-6.5,TN12-7.0,TN12-7.2,TN12-9.0,TN12-12, TN12-18, TN12-20, TN12-24, TN12-33, TN12-38,TN12-45,TN12-50,TN12-55,TN12-65,TN12-75,TN12-100, TN12-150, TN12-200, TN12-250, TNG12-20, TNG12-65, TNG12-75, TNG12-80, TNG12-100,TNG12-150, TNG12-200, TNG12-250B, TNX12-21W, TNX12-28W, TNX12-34W, TNX12-690W,TNL12-90L, TNL12-100, TNL12-180, TNL12-200, TNF12-100, TNF12-150, TNF12-190, TNF12-200, TNC2-500, TNC2-1000, TNC2-1200, TNC12-65P, TNC12-80P, TNC12-170P, TNC12-200P, 6-DZF-12, 6-DZF-12.3, 6-DZF-12.5, 6-DZF-12.6, 6-DZF-13, 6-DZF-13.6、6-DZF-14, 6-DZF-14L, 6-DZF-16, 6-DZF-18、6-DZF-20, 6-DZF-20.3, 6-DZF-20.5, 6-DZF-21, 6-DZF-21.6, 6-DZF-21.8,6-DZF-13.2,6-DZF-22, 6-DZF-22.3, 6-DZF-23, 6-EVF-40.6, 3-EVF-150、3-EVF-200、3-EVF-200T、3-EVF-220、4-EVF-150、4-EVF-150T、4-EVF-155、4-EVF-180, 6-EVF-35, 6-EVF-35.5, 6-DZF-12III, 6-DZF-23L,6-EVF-36L,6-EVF-36, 6-EVF-32.5,6-EVF-38,6-EVF-38.3,6-EVF-38.5,6-EVF-32, 6-EVF-32.3, 6-EVF-32.6,6-EVF-33,6-EVF-45, 6-EVF-45.3, 6-EVF-50, 6-EVF-52, 6-EVF-52.3, 6-EVF-58,6-EVF-52.5, 6-EVF-52.6, 6-EVF-58.5, 6-EVF-58.6, 6-DMF-21, 6-DMF-22, 6-DMF-23, 6-DMF-25, 6-DMF-26, 6-DMF-38, 6-DF-35,6-DF-35.5,6-DF-36,6-DF-38,6-DF-48,6-DF-48.5,6-DF-49,6-DF-53,6-DF-62,6-DF-63,6-DF-64,6-DF-66,6-EVF-58.3,6-EVF-60A,6-EVF-62,6-EVF-73H,6-EVF-83H,6-EVF-100,6-EVF-120H,,6-EVF-77,6-EVF-93,6-EVF-108,6-EVF-120,6-EVF-61A,4-EVF-153,6-EVF-103A,3-EVF-203,6-EVF-100D,6-EVF-120D, 6-EVF-150D, 6-EVF-160B, 6-EVF-100A, 3-DF-240, 3-DF-280, 3-DF-320,3-DF-380,6-DF-200,6-DF-80,6-EVF-103H, 6-EVF-20B, 6-EVF-127,6-EVF-157,6-EVF-63,6-EVF-103E,,6-EVF-107,6-EVF-140,6-DF-50H,6-GFM-66,6-DF-55H, 6-DF-60H,6-GFM-76,6-DF-65H,6-GFM-86,6-DF-70H,,3-DF-200,6-EVF-135,6-EVF-150,6-EVF-160B,6-EVF-180,6-FM-7,6-FM-8,6-FM-10,6-FM-12,6-FM-15,TNE12-52,TNE12-58, TNEP12-28,TNE12-15, TNE12-25, 6-FM-39, 6-FM-52, 6-FM-59, 6-FM-65

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## SECTION 2- HAZARDS IDENTIFICATION

**Hazards identification**：

The battery has passed the vibration test, pressure differential test and leakage test at 55 ℃ according to Recommendations on the TRANSPORT OF DANGEROUS GOODS Model SPECIAL PROVISION 238. It is not restricted to IATA DGR according to special provision A67 and is not restricted to IMDG CODE according to special provision 238.

**Lead/Lead oxides:** Under normal conditions of use, lead dust, vapors, and fumes are not generated. Hazardous exposure may occur when product is overheated, oxidized or otherwise processed ordamaged to create dust, vapor or fumes.

**Inhalation:** Lead dust or fumes may cause irritation of upper respiratory tract or lungs.

**Skin Contact:** Lead Compounds are not readily absorbed through the skin.

**Eye Contact:** Lead Compounds may cause eye irritation

**Sulfuric acid:** Under normal conditions of use, it will not be affected. When the battery is opened and leaks, dangerous contact may occur.

**Inhalation:** Acid mist may irritate the upper respiratory tract or lungs.

**Skin contact:** Sulfuric acid can corrode the skin.

**Eye contact:** Sulfuric acid can cause eye irritation.

## SECTION 3- COMPOSITION / INFORMATION ON INGREDIENTS

| Substance/Mixture | Percent | CAS No. |
|---|---|---|
| Lead/Lead oxides | 68% | 7439-92-1 |
| Sulfuric Acid | 25% | 7664-93-9 |
| Separator | 2% | 65997-17-3 |
| ABS Container | 5% | 9003-56-9 |

## SECTION 4 - FIRST AID MEASURES

**Inhalation**

Sulfuric Acid: Remove to fresh air immediately. Give oxygen or artificial respiration if needed. Get immediate medical attention.

Lead/Lead oxides: Remove from exposure, gargle, wash nose and lips, consult physician

**Eyes contact**

Sulfuric Acid: Flush with plenty of water for at least 15 minutes, hold eyelids open. Get immediate medical attention..

Lead/Lead oxides: Flush immediately with water for 15 minutes, consult a physician

**Skin contact**

Sulfuric Acid: Flush with large amounts of water for at least 15 minutes, remove any contaminated clothing. If irritation develops seek medical attention.

Lead/Lead oxides: Wash with soap and water.

**Ingestion**

Sulfuric Acid: Ingestion: Do not induce vomiting. Dilute by giving large quantities of water. If available give several glasses of milk. Do not give anything by mouth to an unconscious person. Give CPR if breathing has stopped. Get immediate medical attention.

Lead/Lead oxides: Consult a physician immediately

## SECTION 5 - FIRE FIGHTING MEASURES

**Flash Point:** Not Applicable

**Extinguishing Media**:

Use water, foam or dry powder, as appropriate to extinguish fire.

**Fire Fighting Procedures:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full-face piece operated in the pressure demand or other positive pressure mode. Fight fire from the maximumdistance. Evacuate area.

**Specific Hazards**:

When involved in a fire, the battery may decompose and produce irritating fumes containing metal oxides. And plastic may create toxic vapors, gases or fumes under fire conditions.

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

**Personal Precautions:**

Wear appropriate personal protective equipment as specified in Section 8.

**Environmental Precautions:**

This material may be non-hazardous in ordinary use and may be discarded in accordance with applicable governmental regulations and take order with the demands of the environmental protection section.

**Methods of Clean up**:

Spill and leaks are unlikely because cells are contained in a sealed case. In the event of a battery rupture, prevent skin contact and collect all released material in a plastic lined metal container to prevent spill from entering drinking water supplies or streams. Any product recovery or disposal must comply with local, state, federal, international or country Specific regulations.

## SECTION 7 - HANDLING AND STORAGE

**Handling:** It can be used normally under the temperature of -20~40℃. All connections should be connected accurately to avoid the possibility of a short circuit. Do not let oil and water or other contamination drop on the top of battery while working. Use only in the well-ventilated areas. Keep away from heat, sparks and open flames. Make available in the work area emergency shower and eyes wash. Avoid contact with skin and eyes. Use of full- length sleeves and pants; boots or work shoes are recommended for manufacturing operations.

**Storage**: Store in cool, dry, well-ventilated area and away from combustible materials, sources of ignition, excessive heat and direct sunlight. Do not store in sealed areas.

**Warning:** Not for use on children under 5 years old.

## SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Engineering control:** use ventilation equipment, safety showers and eye baths

**Personal protective equipment:**

**Respiratory:** Wear government approved air purifying respirator if necessary.

**Eyes:** Chemical safety glasses.

**Clothing:** Wear appropriate protective clothing.

**Hands:** Wear acid-proof gloves.

**Other protective measures:** smoking, drinking and eating are strictly prohibited in the workplace.Wash thoroughly after washing your hands.

## SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

**General Physical Form:** The battery is solid.

**Odor:** The battery is odorless.

**Solubility in Water:** Lead, lead oxide and lead sulfate are insoluble in water.

## SECTION 10 - STABILITY AND REACTIVITY

**Stability:** Stable under normal conditions.

**Conditions to Avoid:** Direct sunlight, overheat, sparks and other sources of ignition.

**Incompatibility**: Incompatible with strong oxidizing agents, potassium, sodium.

**Hazardous Polymerization**: Hazardous polymerization will not occur.

## SECTION 11 - TOXICOLOGICAL INFORMATION

**Lead/Lead Oxides:** Toxic by ingestion or inhalation. Chronic poison.

**Sulfuric Acid:**Contact may cause severe irritation to eyes and skin, causes burns.

Potential Chronic Health Effects:

Be slightly hazardous in case of skin contact (permeate).

Carcinogenic effects: Lead/Lead Oxides:Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. Sulfuric Acid:G1 by IARC. Mutagenic effects：Not available.

Teratogenic effects: Not available. Developmental toxicity: Not available.

Lead may be toxic to blood, kidneys, central nervous system (CNS).

Repeated or prolonged exposure to the substance can produce target organs damage.

## SECTION 12 - ECOLOGICAL INFORMATION

**Lead/Lead Oxides:**

Eco-toxicity: Not available. BOD5 and COD: tNo available.

Products of Biodegradation: Possibly hazardous short-term degradation products are not likely. However, long-term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

**Sulfuric Acid:**

Harmful to the environment, can cause pollution to water bodies and soil. Biodegradability and Non-biodegradability：No available.

## SECTION13 - DISPOSAL CONSIDERATIONS

**Waste Disposal Method:**

Spent batteries must be treated as hazardous waste and disposed of according to local state, and federal regulations. A copy of this material safety data must be supplied to any scrap dealer or secondary smelter withbattery. Put into dustbin, otherwise incineration, otherwise licensed landfill, or safe disposal as required by local, state, federal, international or country specific regulations.

**Empty Container Warnings:**

Empty containers may contain product residue, follow MSDS and label warnings even after they have been

emptied.

## SECTION 14 - TRANSPORT INFORMATION

**GROUND-US DOT:**

Our non-spillable lead acid batteries meet all of the following requirements found at DOT 49 CFR 173.159(d)

- When offered for transport, the batteries are protected against short circuits and securely packaged as required by DOT 49 CFR 173.159(d) (1);
- The batteries and outer packaging are marked with the words "NONSPILLABLE" or " NONSPILLABLE BATTER" as required by DOT 49 CFR173.159(d) (2);
- The batteries comply with the vibration and pressure differential tests found in DOT 49 CFR 173.159(d) (3).

**AIRCRAFT-ICAO-IATA:**

Our non - spillable lead acid batteries also are excepted from the international hazardous materials (also known as dangerous goods ) regulations since they comply with the following requirements:

- According to the requirements of Packing Instruction 806 in IATA (International Air Transport Association ) and ICAO ( International Civil Aviation Organization ), there should not be any electrolyte leakage after the vibration and pressure differential tests .
- And, Special Provision A67 states Non-spillable batteries are not subject to these Instructions ( Packing Instruction 806 ) if at the temperature of 55℃ (131° F), the electrolyte will not flow from a ruptured or cracked case and there is no free liquid flow and if, when packaged for transport the batteries are protected from short circuit and unintentional activation .

**VESSEL IMO-IMDG:**

Our non-spillable batteries are excepted from the international hazardous materials (also known as dangerous goods) regulations since they conform to the requirements of IMDG Code Special Provision 238, that is the batteries have passed the vibration and pressure differential performance tests, and at a temperature of 55℃, the electrolyte will not flow from a ruptured or cracked case and there is no free liquid flow and if, when package for transport, the terminal are protected from short circuit.

## SECTION 15 - REGULATORY INFORMATION

**EU regulation:**According to regulation (EU)2023/1542, VRLA batteries should carry a crossed wheeled bin symbol with an ISO recycling symbol.




## SECTION 16 - OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. RJS Standard Testing & Certification Center shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. License granted to make unlimited paper copies for internal use only.