



WEST BENGAL CHEMICAL INDUSTRIES LIMITED

145/1, Jessore Road, Lake Town,

Kolkata – 700 089, India.

Phone: +9133 4025 1700 Fax: +9133 2574 7410

Email: webcil@wbcil.com Website: www.wbcil.com

Section 1 - Chemical Product and Company Identification

1.1 MSDS Name: Zinc Citrate

1.2 Product Code: ZCTUS31

1.3 Relevant identified uses of the substance or mixture and uses advised against Identified uses:

Laboratory chemicals, Manufacture of substances

1.4 Company Identification:

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Section 2 - Hazards Identification

2.1 Classification of the substance or mixture Classification according to Regulation (EC) No 1272/2008:

2.1.1 Hazard classification:

Eye Irrit. 2

Aquatic Acute 1

Aquatic Chronic 1

Aquatic Chronic 2

2.2 Signal:

Warning

2.3 Hazard Statements:

H319 Causes serious eye irritation

H400 Very toxic to aquatic

H410 Very toxic to aquatic life with long lasting

H411 Toxic to aquatic life with long lasting effects

2.4 Precautionary Statement Codes:

Prevention

- P264+P265: Wash hands thoroughly after handling. Avoid contact with skin, eyes, and clothing.
- P273: Avoid release to the environment.
- P280: Wear protective gloves, protective clothing, eye protection, and face protection.

Response

- P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P337+P317: If eye irritation persists: Get medical advice or attention.



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- P391: Collect spillage to prevent environmental contamination.

Disposal

- P501: Dispose of contents/container in accordance with local, regional, national, and international regulations.

2.5 Potential Acute Health Effects:

Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

2.6 Potential Chronic Health Effects:

2.6.1 Carcinogenic effects:

Not available.

2.6.2 Mutagenic effects:

Not available.

2.6.3 Teratogenic effects:

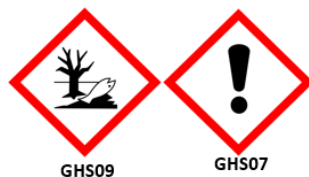
Not available.

2.6.4 Developmental toxicity:

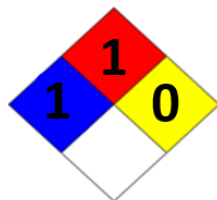
Not available.

Repeated or prolonged exposure is not known to aggravate medical condition.

2.7 Pictogram:



2.8 NFPA rating:



NFPA Scale (0-4)

2.9 HMIS rating:

Health	1
Flammability	1
Physical Hazard	0
Personal protection	E

HMIS RATINGS (0-4)



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Section 3 - Composition / Information on Ingredients

3.1 Chemical Name: Zinc Citrate Dihydrate USP

3.2 Synonym: Zinc citrate tribasic dihydrate, Citric acid zinc salt

3.3 CAS Number: 546-46-3

3.4 EC Number: 208-901-2

3.5 Molecular Formula: $C_{12}H_{10}O_{14}Zn_3$

3.6 Molecular Weight: 574.3 g/mol

3.7 Content: NLT 31.3% w/w (as Zinc) (On Dried Basis)

Section 4 - First Aid Measures

4.1 Description of first-aid measures

4.1.1 General advice:

Show this material safety data sheet to the doctor in attendance.

4.1.2 Inhalation:

Move exposed person to fresh air. If not breathing, seek immediate medical attention. If breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel and seek medical attention.

4.1.3 Ingestion:

Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Seek medical attention.

4.1.4 Skin Contact:

Remove contaminated clothing and shoes and immediately flush skin with plenty of water for at least 15 minutes. Wash clothing before reuse. Clean shoes thoroughly before reuse. If irritation persists, seek medical attention.

4.1.5 Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed:

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness.

Ingestion: There may be irritation of the throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest.

Delayed / immediate effects: Immediate effects can be expected after short-term exposure

4.3 Indication of any immediate medical attention and special treatment needed:

If eye irritation persists: Get medical advice/attention.



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Section 5 - Fire-Fighting Measures

5.1 Extinguishing media:

5.1.1 Suitable extinguishing media

Water Foam Carbon dioxide (CO₂) Dry powder

5.1.2 Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

5.2 Flammability of the Product:

May be combustible at high temperature.

5.3 Auto-Ignition Temperature:

Not available.

5.4 Flash Points:

Not available.

5.5 Flammable Limits:

Slightly flammable to flammable in presence of heat. Non-flammable in presence of shocks.

5.6 Products of Combustion:

These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...). Some metallic oxides.

5.7 Fire Hazards in Presence of Various Substances:

Slightly explosive in presence of open flames and sparks. Non-explosive in presence of shocks.

5.8 Fire Fighting Media and Instructions:

5.8.1 Small fire:

Use DRY chemical powder.

5.8.2 Large fire:

Use water spray, fog or foam. Do not use water jet.

5.9 Special Remarks on Fire Hazards:

Fire is possible at elevated temperatures.

5.10 Advice for firefighters:

Use protection for the breathing apparatus. Safety helmet and full protective suit. The spray water can be used to protect the people involved in the extinction. You may also use self-respirator, especially when working in confined and poorly ventilated area and if you use halogenated extinguishers (Halon 1211 fluobrene, Solkan 123, NAF, etc...). Keep containers cool with water spray.

5.11 Special Remarks on Explosion Hazards:

Fine dust dispersed in air in sufficient concentrations, and in the presences of an ignition source is a potential dust explosion hazard.



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Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:

6.1.1 Personal Precautions:

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

6.2 Environmental Precautions:

Should not be released into the environment. Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

6.3 Methods for Containment and Clean Up:

Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

6.3.1 Spill control and recovery:

Wear appropriate personal protective equipment as specified in Section 8. Clean up spills in a manner that does not disperse dust into the air. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container

6.3.2 Disposal:

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 7 - Handling and Storage

7.1 Handling:

Avoid contact with eyes. Avoid breathing dust. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.

7.2 Storage:

Store in accordance with local regulations. Store in original container, protected from direct sunlight. Keep container tightly closed and sealed until ready for use.

7.2.1 Storage class Storage class (TRGS 510): 11: Combustible Solids

7.3 Specific end use(s):

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

Section 8 - Exposure Controls / Personal Protection

8.1 Control parameters:



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Section 8 - Exposure Controls / Personal Protection

8.1.1 DNEL

Cutaneo DNEL dermal 3,57 mg/kg bw/day (human (worker)) (long-term exposure - systemic effects and still don) Per inalazione DNEL inhalativ 1,25 mg/m³ (human (worker)) (long-term exposure - systemic effects and still don)

8.1.2 PNEC

PNEC 7,8 µg/l (Freshwater)

2 µg/l (Marinewater)

52 µg/l (STP)

PNEC sediment

11 mg/kg (Sediment (Freshwater))

1,1 mg/kg (Sediment (Marine Water))

PNEC soil

23 mg/kg (Soil)

8.1.3 National Occupational Exposure Limits

United States

Components	CAS No.	OSHA	NIOSH	ACGIH	AIHA WHEEL
Zinc Citrate, Dihydrate	5990-32-9	None	None	None	None

Canada

Components	CAS No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Zinc Citrate, Dihydrate	5990-32-9	None	None	None	None

Australia and Mexico

Components	CAS No.	Australia	Mexico
Zinc Citrate, Dihydrate	5990-32-9	None	None

8.2 Engineering Controls:



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Section 8 - Exposure Controls / Personal Protection

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below Recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

8.3 Personal Protection:

Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

8.4 Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

8.4.1 Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

8.4.2 Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: KCL 741 Dermatril® L

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: KCL 741 Dermatril® L

8.4.3 Body Protection:

Protective clothing

8.4.4 Respiratory protection:

Required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: Filter type P2. The entrepreneur has to ensure that maintenance, cleaning and testing of



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Section 8 - Exposure Controls / Personal Protection

respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented. Control of environmental exposure Do not let product enter drains

8.5 Exposure Limits:

Not available

Section 9 - Physical and Chemical Properties

Appearance	: Crystalline Powder
Colour	: White
Odour	: No data available.
Melting point/Freezing point	: 334 °C / 633.2 °F
Boiling point/initial boiling point/boiling range	: No data available.
Flammability	: Non-flammable
Lower/Upper explosion limit	: No data available
Flash Point	: No data available.
Auto-ignition temperature	: No data available.
Decomposition temperature	: No data available.
pH	: 5.0 - 7.0
Kinematic viscosity	: No data available.
Solubility	: 3 g/L @ 20 °C
Partition coefficient n-octanol/water	: No data available.
Vapour pressure	: No data available.
Density/relative density	: No data available.
Relative vapour pressure	: No data available.
Particle characteristics	: No data available.

Section 10 - Stability and Reactivity

10.1 Reactive Hazard:

None known, based on information available

10.2 Stability:

The product is stable at normal conditions.

10.3 Instability Temperature:

Not available.

10.4 Conditions to Avoid:

Heat. Avoid dust formation. Incompatible materials.

10.5 Conditions of Instability:

Excess heat, excess dust generation, incompatible materials



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Section 10 - Stability and Reactivity

10.6 Incompatibility with various substances:

Reactive with acids.

10.7 Corrosivity:

Not available.

10.8 Special Remarks on reactivity:

Incompatible with strong mineral acids, and strong organic acids.

10.9 Hazardous decomposition products:

Carbon monoxide. Carbon dioxide. Zinc oxides.

10.10 Special Remarks on Corrosivity:

Not available.

10.11 Polymerization:

Will not occur

Section 11 - Toxicological Information

11.1 RTECS Reference:

No data available

11.2 Acute Toxicity:

Product Information

Component Information

Toxicologically Synergistic Products No information available

11.2 Delayed and immediate effects as well as chronic effects from short and long-term exposure:

Irritation No information available

Sensitization No information available

11.3 Carcinogenicity:

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Zinc citrate	5990-32-9	Not listed	Not listed	Not listed	Not listed	Not listed
1,2,3-Propanetricarboxylic acid, 2-hydroxy-, zinc salt (2:3)	546-46-3	Not listed	Not listed	Not listed	Not listed	Not listed



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Section 11 - Toxicological Information

11.4 Mutagenic Effects:

No information available

11.5 Reproductive Effects:

No information available.

11.6 Developmental Effects:

No information available.

11.7 Teratogenicity:

No information available.

11.8 STOT - single exposure:

None known

11.9 STOT - repeated exposure:

None known

11.10 Aspiration hazard:

No information available

11.11 Symptoms / effects, both acute and delayed:

No information available

11.12 Endocrine Disruptor Information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

11.13 Other Adverse Effects:

The toxicological properties have not been fully investigated.



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Section 12 - Ecological Information

12.1 Toxicity:

Toxicity to daphnia and other aquatic invertebrates

LC50, 96 h (dynamic) 0.136 mg/l (fish)

LC 50, 24 h (static) 1,535 mg/l (daphnia)

EC50, 48 h (static) 0.068 mg/l (daphnia)

LC50, 48 h (static) 440 mg/l (fish)

Toxicity to algae

EC50, 72 h 485 mg/l (bacterium) (protozoa)

NOEC, 72 h (static) 0.015 mg/l (algae) NOEC, 8 d (static) 425 mg/l (algae)

NOEC, 72 h 0,005 mg/l (Pseudokirchneriella subcapitata)

12.2 Persistence and degradability:

No data available

12.3 Bio-accumulative potential:

No data available

12.4 Mobility in soil:

No data available

12.5 Results of PBT and vPvB assessment:

This substance/mixture contains no components considered to be either persistent, bio-accumulative and toxic (PBT), or very persistent and very bio-accumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties:

Product:

Assessment:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects:

No data available

Section 13 - Disposal Considerations

13.1. Waste treatment methods:

Do not reuse empty containers. Dispose of them in accordance with the regulations in force. Any remaining product should be disposed of according to applicable regulations by addressing to authorized companies. Recover if possible. Send to authorized discharge plants or for incineration under controlled conditions. Operate according to local and national rules in force.



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Section 14 - Transport Information

14.1 UN number

ADR/RID: 3077 IMDG: 3077 IATA: 3077

14.2 UN proper shipping name:

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Trizinc dicitrate) (Trizinc dicitrate)

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Trizinc dicitrate) (Trizinc dicitrate)

IATA: Environmentally hazardous substance, solid, n.o.s. (Trizinc dicitrate) (Trizinc dicitrate)

14.3 Transport hazard class(es):

ADR/RID: 9 IMDG: 9 IATA: 9

14.4 Packaging group:

ADR/RID: III IMDG: III IATA: III

14.5 Environmental hazards:

ADR/RID: yes, IMDG Marine pollutant: yes IATA: yes

14.6 Special precautions for user Tunnel restriction code: (-)

Further information

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids. Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9.

14.7 DOT Classification:

Not a DOT controlled material

14.8 Air transport Goods:

Nonhazardous/non-dangerous as per IATA DGR.

14.9 Special Provision for Transport:

Not applicable

14.10 IATA Specification

Non-dangerous, non-hazardous

14.11 DOT AS PER IATA REGULATION SAFE FOR CARRAGE, NONHAZARDOUS AND NON-RESTRICTED. NO SPECIAL LABELLING OR TRANSPORT MEASURE HAVE BEEN IDENTIFIED. THIS IS NOT REGULATED AS PER IATA REGULATION.



Section 15 - Regulatory Information

United States of America Inventory



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Section 15 - Regulatory Information

Component	CAS No	TSCA	TSCA Inventory Notification – Active/Inactive	TSCA – EPA Regulatory Flags
Zinc citrate	5990-32-9	-	-	-
1,2,3-Propanetricarboxylic acid, 2-hydroxy-, zinc salt (2:3)	546-46-3	X	ACTIVE	-

Legend:

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X – Listed

'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures,

Under TSCA Section 6(h) (PBT)

Not applicable

TSCA 12(b) - Notices of Export

Not applicable

International Inventories

X = listed, U.S.A. (TSCA), Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP),

Australia (AICS), Korea (KECL), China (IECSC), Japan (ENCS), Philippines (PICCS),

Taiwan (TCSI), Japan (ISHL), New Zealand (NZIoC), Japan (ISHL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Zinc citrate	5990-32-9	-	-	-	-	-	-	-	-	-
1,2,3-Propanetricarboxylic acid, 2-hydroxy-, zinc salt (2:3)	546-46-3	X	-	208-901-2	X	X	X	X	X	KE-35464

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 – Threshold Values %	SARA 313 – Reporting Threshold
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Section 15 - Regulatory Information

1,2,3-Propanetricarboxylic acid, 2-hydroxy-, zinc salt (2:3)	546-46-3	0	1.00%	-
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SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classification.

CWA (Clean Water Act)

Clean Air Act: Not applicable

OSHA - Occupational Safety and Health Administration

Not applicable: **CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

California Proposition 65: This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
1,2,3-Propanetricarboxylic acid, 2-hydroxy-, zinc salt (2:3)	-	X	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): **N**

DOT Marine Pollutant **N**

DOT Severe Marine Pollutant **N**

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade

No information available

Authorization/Restrictions according to EU REACH

Not applicable



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Section 15 - Regulatory Information

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) Article 59 - Candidate List of Substances of Very High Concern (SVHC)
Zinc citrate	5990-32-9	-	-	-
1,2,3-Propanetricarboxylic acid, 2-hydroxy-, zinc salt (2:3)	546-46-3	-	-	-

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Zinc citrate	5990-32-9	Not applicable	Not applicable	Not applicable	Not applicable
1,2,3-Propanetricarboxylic acid, 2-hydroxy-, zinc salt (2:3)	546-46-3	Not applicable	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Zinc citrate	5990-32-9	Not applicable	Not applicable	Not applicable	Not applicable



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Section 15 - Regulatory Information

1,2,3- Propanetricarboxylic acid, 2-hydroxy-, zinc salt (2:3)	546-46-3	Not applicable	Not applicable	Not applicable	Annex I - Y23
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HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 1

Reactivity: 0

Protective Equipment: Gloves. Lab coat. Dust respirator. Safety glasses.

Section 16 - Other Information

Disclaimer: This material safety data sheet is provided as an information resource only. WEST BENGAL CHEMICAL INDUSTRIES LIMITED believes the information contained herein is accurate and compiled from reliable sources. It is the responsibility of the user to verify its validity. The buyer assumes all responsibility of using and handling the product in accordance with federal, state, and local regulations.

Issue Date: April, 2023

Revision Date: March, 2025

Revision No.: 03