

SAFETY DATA SHEET

Product Identifier: EQ™ Four Element Calibration Beads
Catalog ID number: 201078

SECTION 1 - IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Contact information

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Product identifier EQ™ Four Element Calibration Beads

Synonyms None identified

Trade names None identified

Relevant identified uses of the substance or mixture and uses advised against For research use only. Not for use in diagnostic procedures.

Note This SDS is written to address potential health and safety issues associated with the handling of the formulated product.

SECTION 2 - HAZARDS IDENTIFICATION

Classification of the substance or mixture

Globally Harmonized System [GHS] Not classified.

AU Hazard Classification (NOHSC) Hazardous Substance. Non-hazardous goods.

Label elements

GHS hazard pictogram None required

GHS signal word None required

GHS hazard statements None required

GHS precautionary statements None required

Other hazards May cause eye/skin irritation. Mixture not yet fully tested.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS #</u>	<u>EINECS/ ELINCS#</u>	<u>Amount</u>	<u>GHS Classification</u>
Cerium (III) Chloride Heptahydrate	18618-55-8	N/A	~10 ⁻⁷	Not classified
Europium (III) Chloride Hexahydrate	13759-92-7	N/A	~10 ⁻⁷	Not classified
Holmium (III) Chloride Hexahydrate	14914-84-2	N/A	~10 ⁻⁷	Not classified
Lutetium (III) Chloride Hexahydrate	15230-79-2	N/A	~10 ⁻⁷	Not classified

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Deionized Water (gradient, >18MΩ)	7732-18-5	N/A	~99.9999	Not classified
Polystyrene Beads	N/A	N/A	~10 ⁻⁴	Not classified

SECTION 4 - FIRST AID MEASURES

Description of first aid measures

Immediate Medical Attention Needed	No
Eye Contact	If easy to do, remove contact lenses, if worn. Immediately flush eyes with copious quantities of water for at least 15 minutes. If irritation occurs or persists, notify medical personnel and supervisor.
Skin Contact	Wash exposed area with soap and water and remove contaminated clothing/shoes. If irritation occurs or persists, notify medical personnel and supervisor.
Inhalation	Immediately move exposed subject to fresh air. If not breathing, give artificial respiration. If breathing is labored, administer oxygen. Immediately notify medical personnel and supervisor.
Ingestion	Do not induce vomiting unless directed by medical personnel. Do not give anything to drink unless directed by medical personnel. Never give anything by mouth to an unconscious person. Notify medical personnel and supervisor.
Protection of first aid responders	See Section 8 for Exposure Controls/Personal Protection recommendations.
Most important symptoms and effects, both acute and delayed	See Sections 2 and 11.
Indication of immediate medical attention and special treatment needed, if necessary	Medical conditions aggravated by exposure: None known or reported. Treat symptomatically and supportively.

SECTION 5 - FIREFIGHTING MEASURES

Extinguishing media	Use water spray (fog), foam, dry powder, or carbon dioxide, as appropriate for surrounding fire and materials.
Specific hazards arising from the substance or mixture	No information identified. May emit carbon monoxide, carbon dioxide, nitrogen-, chloride-, and metal-containing compounds.
Flammability/Explosivity	Not expected to be flammable or explosive.
Advice for firefighters	Wear full protective clothing and a self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode. Decontaminate all equipment after use.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	If product is released or spilled, take proper precautions to minimize exposure by using appropriate personal protective equipment (see Section 8). Area should be adequately ventilated. Do not breathe mist/vapors/spray.
Environmental precautions	Do not empty into drains. Avoid release to the environment.

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Methods and material for containment and cleaning up Dike area to contain spill. Maintain ventilation until all vapors have been eliminated. Take precautions as necessary to prevent contamination of ground and surface waters. If vials are crushed or broken, DO NOT CAUSE MATERIAL TO BECOME AIRBORNE. For small spills, soak up material with absorbent, e.g., paper towels. For large spills, cordon off spill area and minimize the spreading of spilled material. Soak up material with absorbent. Collect spilled material, absorbent, and rinse water into suitable containers for proper disposal in accordance with applicable waste disposal regulations (see Section 13). Decontaminate the area twice.

Reference to other sections See Sections 8 and 13 for more information.

SECTION 7 - HANDLING AND STORAGE

Precautions for safe handling Follow recommendations for handling pharmaceutical agents (i.e., use of engineering controls and/or other personal protective equipment if needed). Avoid breathing vapor or mist. Do not permit eating/drinking/smoking near this material. All materials used for transferring or preparing this product must be considered contaminated and disposed of properly.

Conditions for safe storage including any incompatibilities Keep from contact with clothing and other combustible materials. Store at 4°C in tightly closed container. Avoid strong oxidizers. Store in sealed containers that are appropriately labeled. Do not store in metal or glass containers. Do not store in direct sunlight. Do not store near organic substances.

Specific end use(s) No information identified.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls Use mechanical exhaust or laboratory fumehood to avoid exposure.

Respiratory protection Respiratory protection is not required. Where protection from nuisance levels of dusts or aerosols are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or ECN (EU).

Hand protection Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Skin protection Choose skin protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Eye/face protection Wear safety glasses with side shields, chemical splash goggles, or full face shield, if necessary. Base the choice of protection on the job activity and potential for contact with eyes or face. An emergency eye wash station should be available.

Environmental Exposure Controls Avoid release to the environment and operate within closed systems wherever practicable. Air and liquid emissions should be directed to appropriate pollution control devices. In case of spill, do not release to drains. Implement appropriate and effective emergency response procedures to prevent release or spread of contamination and to prevent inadvertent contact by personnel.

Other protective measures Wash hands in the event of contact with this product/mixture, especially before eating, drinking or smoking. Protective equipment is not to be worn outside the work area (e.g., in common areas or out-of-doors).

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SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Clear liquid
Color	Colorless
Odor	No information identified.
Odor threshold	No information identified.
pH	No information identified.
Melting point/freezing point	No information identified.
Initial boiling point and boiling range	No information identified.
Flash point	No information identified.
Evaporation rate	No information identified.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	No information identified.
Vapor pressure	No information identified.
Vapor density	No information identified.
Relative density	No information identified.
Water solubility	Fully soluble in water.
Solvent solubility	No information identified.
Partition coefficient (n-octanol/water)	No information identified.
Auto-ignition temperature	No information identified.
Decomposition temperature	No information identified.
Viscosity	No information identified.
Explosive properties	No information identified.
Oxidizing properties	No information identified.

Other information

Molecular weight	Not applicable (Mixture)
Molecular formula	Not applicable (Mixture)

SECTION 10 - STABILITY AND REACTIVITY

Reactivity	No data available.
Chemical stability	Stable under normal handling and storage conditions.
Possibility of hazardous reactions	No data available.
Conditions to avoid	Keep away from incompatible materials.

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Incompatible materials Strong oxidizers.
Hazardous decomposition products Hazardous decomposition products formed under fire conditions: Hydrogen Chloride gas.

SECTION 11 - TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity	No data available.
Irritation/Corrosion	No data available.
Sensitization	No data available.
STOT-single exposure	No data available.
STOT-repeated exposure/Repeat-dose toxicity	No data available.
Reproductive toxicity	No data available.
Developmental toxicity	No data available.
Genotoxicity	No data available.
Carcinogenicity	No studies identified. The ingredients in this mixture are not listed by NTP, IARC, ACGIH or OSHA as a carcinogen.
Aspiration hazard	No data available.
Human health data	See Section 2 - "Other hazards"

SECTION 12 - ECOLOGICAL INFORMATION

Toxicity	No data available.
Persistence and Degradability	No data available.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Results of PBT and vPvB assessment	Not performed.
Other adverse effects	No data identified.
Note	The environmental characteristics of this product/mixture have not been fully investigated. Releases to the environment should be avoided.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste treatment methods Dispose of wastes in accordance to prescribed federal, state, and local guidelines, e.g., appropriately permitted chemical waste incinerator. Do not send down the drain or flush down the toilet. All wastes containing the material should be properly labeled. Rinse waters resulting from spill cleanups should be discharged in an environmentally safe manner, e.g., appropriately permitted municipal or on- site wastewater treatment facility.

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SECTION 14 - TRANSPORT INFORMATION

Transport Based on the available data, this product/mixture is not regulated as a hazardous material/dangerous good under EU ADR/RID, US DOT, Canada TDG, IATA, or IMDG.

UN number None assigned.

UN proper shipping name None assigned.

Transport hazard classes and packing group None assigned

Environmental hazards Based on the available data, this product/mixture is not regulated as an environmental hazard or a marine pollutant.

Special precautions for users Avoid release to the environment.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

Hazardchem Code/HIN None assigned.

SECTION 15 - REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture This SDS complies with the requirements under US, EU and GHS (EU CLP - Regulation EC No 1272/2008) guidelines. Consult your local/regional authorities for more information.

Chemical safety assessment Not conducted.

WHMIS classification Not classified.

TSCA status Not listed on TSCA inventory.

SARA section 313 Not listed.

California proposition 65 Not listed.

State regulations: N/A

International regulations: This product contains the following components not listed on the Canadian DSL or NDSL. All other components are on the Canadian DSL list.

	CAS No.
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Europium (III) chloride hexahydrate	13759-92-7
Holmium (III) chloride hexahydrate	14914-84-2
Lutetium (III) chloride hexahydrate	15230-79-2

Additional information No other information identified.

SECTION 16 - OTHER INFORMATION

NFPA Ratings	Cerium (III) chloride heptahydrate	Health: --	Fire: --	Reactivity: --
	Europium (III) chloride hexahydrate	Health: --	Fire: --	Reactivity: --

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Holmium (III) chloride hexahydrate	Health: --	Fire: --	Reactivity: --
Lutetium (III) chloride hexahydrate	Health: --	Fire: --	Reactivity: --

Sources of data Information from published literature and internal company data.

Abbreviations ACGIH - American Conference of Governmental Industrial Hygienists; ADR/RID - European Agreement Concerning the International Carriage of Dangerous Goods by Road/Rail; AIHA - American Industrial Hygiene Association; CA - California; CAS# - Chemical Abstract Services Number; CLP - Classification, Labelling, and Packaging of Substances and Mixtures; DNEL - Derived No Effect Level; DOT - Department of Transportation; EINECS - European Inventory of New and Existing Chemical Substances; ELINCS - European List of Notified Chemical Substances; EU - European Union; GHS - Globally Harmonized System of Classification and Labeling of Chemicals; HI - Hawaii; IARC - International Agency for Research on Cancer; IDLH - Immediately Dangerous to Life or Health; IATA - International Air Transport Association; IMDG - International Maritime Dangerous Goods; LOEL - Lowest Observed Effect Level; LOAEL - Lowest Observed Adverse Effect Level; MA - Massachusetts; NIOSH - The National Institute for Occupational Safety and Health; NJ - New Jersey; NOEL - No Observed Effect Level; NOAEL - No Observed Adverse Effect Level; NTP - National Toxicology Program; OEL - Occupational Exposure Limit; OSHA - Occupational Safety and Health Administration; PA - Pennsylvania; PNEC - Predicted No Effect Concentration; SARA - Superfund Amendments and Reauthorization Act; STEL - Short Term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; US - United States; WHMIS - Workplace Hazardous Materials Information System

Issue Date May-2020

Revisions Revision 5.0; CHG-001511
 Summary of revision: Updated Fluidigm Corporate Address in section 1, Issue date and revision in footer, section 1 and 16.

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