

SAFETY DATA SHEET

Product Identifier: EQ™ Six Element Calibration Beads
 Catalog ID numbers: Cat# 201245

SDS ID: SDS-00024 Rev 01

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

Contact information

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Product identifier EQ™ Six Element Calibration Beads

Synonyms None identified

Trade names None identified

Chemical family Mixture – contains polystyrene beads and metal isotopes.

Relevant identified uses of the substance or mixture and uses advised against *For Research Use Only.*

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

SECTION 2 - HAZARDS IDENTIFICATION

Classification of the substance or mixture The classification and labeling listed below is for bulk formulation.

Globally Harmonized System [GHS] Not classified

Label elements

GHS hazard pictogram None required

GHS signal word None required

GHS hazard statements None required

GHS precautionary statements None required

Other hazards The potential health hazards associated with exposure/handling of this mixture are unknown; no data specific for the mixture were identified.

Note This mixture does not meet criteria for classification under GHS as implemented by Regulation EC No 1272/2008 (EU CLP), WHMIS 2015 (Health Canada), and Hazard Communication Standard No. 1910.1200 (US OSHA).

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS #</u>	<u>EINECS/ ELINCS#</u>	<u>Amount</u>	<u>GHS Classification</u>
Polystyrene Beads	N/A	N/A	<0.1%	Not classified
Cerium (III) chloride heptahydrate	8618-55-8	N/A	<0.01%	Not classified

SAFETY DATA SHEET

Product Identifier: EQ™ Six Element Calibration Beads
 Catalog ID numbers: Cat# 201245

SDS ID: SDS-00024 Rev 01

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS ...continued

Lutetium (III) chloride hexahydrate	15230-79-2	N/A	<0.01%	Not classified
Yttrium (III) chloride hexahydrate	10025-94-2	N/A	<0.01%	Not classified
Indium (III) chloride hydrate	10025-82-8	N/A	<0.01%	Not classified
Terbium (III) chloride hexahydrate	13798-24-8	N/A	<0.01%	Not classified
Bismuth (III) nitrate pentahydrate	10035-06-0	N/A	<0.01%	Not classified

Note The primary ingredient of this mixture is sterile water (~99%). The substances listed above are not classified but are listed because these are vital components and their toxicologic properties have not yet been fully characterized.

Amounts are listed as ranges; the exact percentage of composition is withheld as a trade secret. See Section 16 for full text of GHS classifications.

SECTION 4 - FIRST AID MEASURES

Description of first aid measures

Immediate Medical Attention Needed	No. If exposed or concerned: Get medical advice/attention.
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	No explosivity data identified. As product is an aqueous solution, it is not expected to be flammable.
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.

SAFETY DATA SHEET

Product Identifier: EQ™ Six Element Calibration Beads
 Catalog ID numbers: Cat# 201245

SDS ID: SDS-00024 Rev 01

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 vapors/mist/spray.
Environmental precautions	Do not empty into drains. Avoid release to the environment.
Methods and material for containment and cleaning up	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 with an appropriate solvent (see Section 9).
Reference to other sections	See Sections 8 and 13 for more information.

SECTION 7 - HANDLING AND STORAGE

Precautions for safe handling	Avoid contact with eyes, skin and other mucous membranes. Wash thoroughly after handling. Avoid breathing vapor/mist/spray.
Conditions for safe storage including any incompatibilities	Store at 2-8°C
Specific end use(s)	No information identified.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Note Wash hands, face and other potentially exposed areas immediately in the event of physical contact.

Control Parameters/Occupational Exposure Limit Values

<u>Compound</u>	<u>Issuer</u>	<u>Type</u>	<u>OEL</u>
Polystyrene Beads	--	--	--
Cerium (III) chloride heptahydrate	--	--	--
Lutetium (III) chloride hexahydrate	--	--	--
Yttrium (III) chloride hexahydrate	--	--	--
Indium (III) chloride hydrate	--	--	--
Terbium (III) chloride hexahydrate	--	--	--
Bismuth (III) nitrate pentahydrate	--	--	--

Exposure/Engineering controls None required for normal handling of packaged product. If handling bulk product: Selection and use of containment devices and personal protective equipment should be based on a risk assessment of exposure potential. If vials are crushed or broken, or if handling bulk formulation: Utilize closed and sealed systems whenever possible. Solutions used for procedures where aerosolization may occur (e.g., pipetting, spraying, pumping, open transfers,) must be handled using a control device such as a ventilated enclosure. Control the potential for spills and leaks by securing all connections. Use clean-in-place systems.

Respiratory protection None required for normal handling of packaged product. If handling bulk formulation: Choice of respiratory protection should be appropriate to the task and the level of existing engineering controls.

SAFETY DATA SHEET

Product Identifier: EQ™ Six Element Calibration Beads
 Catalog ID numbers: Cat# 201245

SDS ID: SDS-00024 Rev 01

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION ...continued

Hand protection	None required for normal handling of packaged product. If handling bulk formulation: Wear disposable nitrile or other impervious gloves. Double gloves should be worn for direct handling of solutions. When the material is diluted in an organic solvent, wear gloves that provide protection against the solvent.
Skin protection	None required for normal handling of packaged product. If handling bulk formulation: Wear disposable outer garment appropriate to the task, booties, two pairs of gloves and safety glasses with side shields. Employees must be trained in proper gowning and degowning practices. An anteroom or transition area is recommended for gowning and degowning.
Eye/face protection	None required for normal handling of packaged product. If handling bulk formulation: 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 product, 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).

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Liquid
Color	No information identified.
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)	No information identified.
Upper/lower flammability or explosive limits	No information identified.
Vapor pressure	No information identified.
Vapor density	Not applicable.
Relative density	No information identified.
Water solubility	Soluble.
Solvent solubility	No information identified.
Partition coefficient (n-octanol/water)	No information identified.

SAFETY DATA SHEET

Product Identifier: EQ™ Six Element Calibration Beads
 Catalog ID numbers: Cat# 201245

SDS ID: SDS-00024 Rev 01

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ...continued

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

SECTION 10 - STABILITY AND REACTIVITY

Reactivity	No information identified.
Chemical stability	Stable under normal handling and storage conditions.
Possibility of hazardous reactions	No information identified.
Conditions to avoid	Keep away from incompatible materials.
Incompatible materials	Strong oxidizers.
Hazardous decomposition products	Hazardous decomposition products formed under fire conditions: Hydrogen Chloride gas.

SECTION 11 - TOXICOLOGICAL INFORMATION

Note No data for this product/mixture were identified.

Information on toxicological effects

Route of entry May be absorbed by inhalation, skin contact and ingestion.

Acute toxicity

<u>Compound</u>	<u>Type</u>	<u>Route</u>	<u>Species</u>	<u>Dose</u>
Polystyrene Beads	--	--	--	--
Cerium (III) chloride heptahydrate	--	--	--	--
Lutetium (III) chloride hexahydrate	--	--	--	--
Yttrium (III) chloride hexahydrate	--	--	--	--
Indium (III) chloride hydrate	--	--	--	--
Terbium (III) chloride hexahydrate	--	--	--	--
Bismuth (III) nitrate pentahydrate	--	--	--	--

Irritation/Corrosion No studies identified.

Sensitization No studies identified.

STOT-single exposure No studies identified.

STOT-repeated exposure/Repeat-dose toxicity No studies identified.

Reproductive toxicity No studies identified.

Developmental toxicity No studies identified.

SAFETY DATA SHEET

Product Identifier: EQ™ Six Element Calibration Beads
 Catalog ID numbers: Cat# 201245

SDS ID: SDS-00024 Rev 01

SECTION 11 - TOXICOLOGICAL INFORMATION ...continued

Genotoxicity	No studies identified.
Carcinogenicity	No studies identified. None of the components of this mixture present at levels greater than or equal to 0.1% are 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

<u>Compound</u>	<u>Type</u>	<u>Species</u>	<u>Concentration</u>
Polystyrene Beads	--	--	--
Cerium (III) chloride heptahydrate	--	--	--
Lutetium (III) chloride hexahydrate	--	--	--
Yttrium (III) chloride hexahydrate	--	--	--
Indium (III) chloride hydrate	--	--	--
Terbium (III) chloride hexahydrate	--	--	--
Bismuth (III) nitrate pentahydrate	--	--	--

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 available.

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.

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 This product/mixture is not regulated as an environmental hazard or a marine pollutant.

Special precautions for users Avoid release to the environment.

SAFETY DATA SHEET

Product Identifier: EQ™ Six Element Calibration Beads
 Catalog ID numbers: Cat# 201245

SDS ID: SDS-00024 Rev 01

SECTION 14 - TRANSPORT INFORMATION ...continued

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

SECTION 15 - REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture This SDS generally complies with the requirements listed under current guidelines in the US, EU and Canada. Consult your local or regional authorities for more information.

Chemical safety assessment Not conducted.

TSCA status Not listed.

SARA section 313 Not listed.

California proposition 65 Not listed.

International regulations This product contains the following components not listed on the Canadian DSL or NDSL.

	CAS No.
Cerium (III) chloride heptahydrate	8618-55-8
Lutetium (III) chloride hexahydrate	15230-79-2
Yttrium (III) chloride hexahydrate	10025-94-2
Indium (III) chloride hydrate	10025-82-8
Terbium (III) chloride hexahydrate	13798-24-8
Bismuth (III) nitrate pentahydrate	10035-06-0

Additional information No other information identified.

SECTION 16 - OTHER INFORMATION

Full text of H phrases and GHS classifications Not applicable.

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; CAS# - Chemical Abstract Services Number; CLP - Classification, Labelling, and Packaging of Substances and Mixtures; 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; IARC - International Agency for Research on Cancer; IDLH - Immediately Dangerous to Life or Health; IATA - International Air Transport Association; IMDG - International Maritime Dangerous Goods; NIOSH - The National Institute for Occupational Safety and Health; NTP - National Toxicology Program; OEL - Occupational Exposure Limit; OSHA - Occupational Safety and Health Administration; PBT - Persistent, Bioaccumulative, and Toxic; SARA - Superfund Amendments and Reauthorization Act; STOT - Specific Target Organ Toxicity; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Issue Date March 2021

Revisions This is the first version of this SDS.

SAFETY DATA SHEET

Product Identifier: EQ™ Six Element Calibration Beads
Catalog ID numbers: Cat# 201245

SDS ID: SDS-00024 Rev 01

SECTION 16 - OTHER INFORMATION ...continued

Disclaimer

The information and recommendations in this safety data sheet are, to the best of Supplier's knowledge, accurate as of the date of issue. Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights. Read the Safety Data Sheet before handling product. For Research Use Only. Not for use in diagnostic procedures.