



# ION Potassium Green-2 TMA<sup>+</sup> Salt

3013C | 3013F

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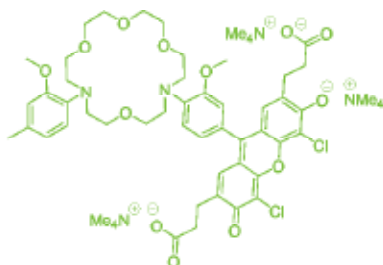
# ION Potassium Green-2 TMA<sup>+</sup> Salt

CAT (VOL): 3013C (500 µg) | 3013F (10 x 50 µg)



## Product Specifications

A non-ratiometric green emission potassium indicator



<b>Molecular Weight</b>	1131 g/mol
<b>Solubility</b>	H <sub>2</sub> O
<b>K<sub>d</sub></b>	18 nm
<b>Odor</b>	None
<b>Fire and Explosion Hazards</b>	None
<b>Toxicology Data</b>	Not known
<b>Handling and Storage</b>	Store at -200C; protect from light and moisture
<b>Shelf Life</b>	Valid for one year after delivery, if stored properly

### TLC on Reverse-Phase Plate

<b>Solvent</b>	65% Acetonitrile / 35% Brine
<b>R<sub>f</sub></b>	0.5

### <sup>1</sup>H NMR

All relevant peaks present

### HPLC

<b>Column</b>	C <sub>18</sub>
<b>Detector Settings</b>	254 nm and 525 nm
<b>Purity</b>	> 85%

### Absorbance Spectrum

<b>Solvent</b>	Methanol
<b>Absorbance max</b>	524 ± 3 nm
<b>ε</b>	85,000 M <sup>-1</sup> cm <sup>-1</sup>

### Fluorescence Spectrum

<b>Solvent</b>	Methanol
<b>Emission max</b>	546
<b>Excitation max</b>	526

## Background

The importance of the potassium ion (K<sup>+</sup>) being coupled to the sodium ion (Na<sup>+</sup>) is because the cell expends a major part of its metabolic energy maintaining the concentrations of Na<sup>+</sup> and K<sup>+</sup> within the cell. Intracellular concentration ranges are 10-40 mM for Na<sup>+</sup> and 120-400 mM for K<sup>+</sup>. Extracellular concentration ranges are 4-40 mM for K<sup>+</sup> and 120-400 mM for Na<sup>+</sup>.

In the absence of a K<sup>+</sup> indicator, efforts have been directed to using indirect techniques to measure or detect K<sup>+</sup>, including

- ◀ Analogs like thallium or cesium to monitor K<sup>+</sup> fluxes
- ◀ The pH indicator BCECF AM\* and the ionophore nigericin in flow cytometry studies
- ◀ Combinations of ion selective carriers
- ◀ Ion-channel mediated K<sup>+</sup> fluxes with membrane potential changes registered by voltage sensitive dyes
- ◀ Fiber-optic sensors for K<sup>+</sup> with pH sensitive dyes

These alternate techniques were necessary because the previously reported fluorescent potassium indicator PBF1 requires UV excitation and suffers from poor loading and poor brightness. ION Potassium Green 1 and 2 (IPG-1 and IPG-2) successfully address these problems.

\*Products only available via special request.

## Results

Figure 1 ION Potassium Green-2 Emission Titration

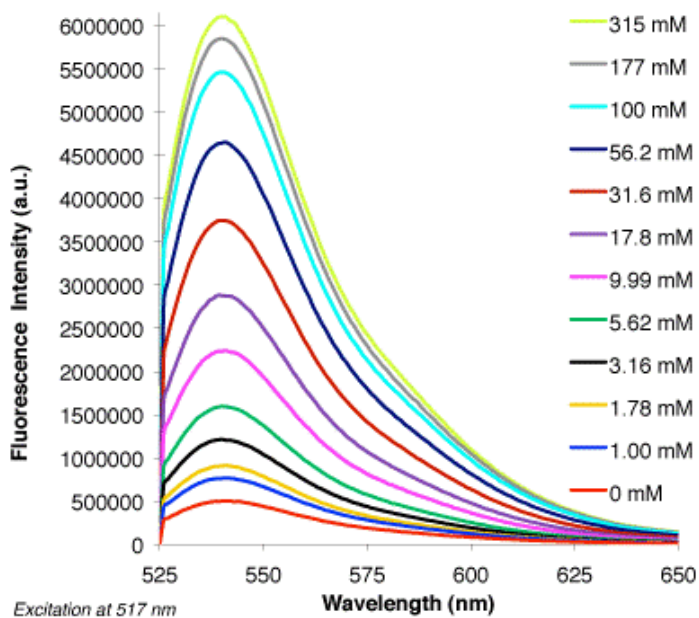
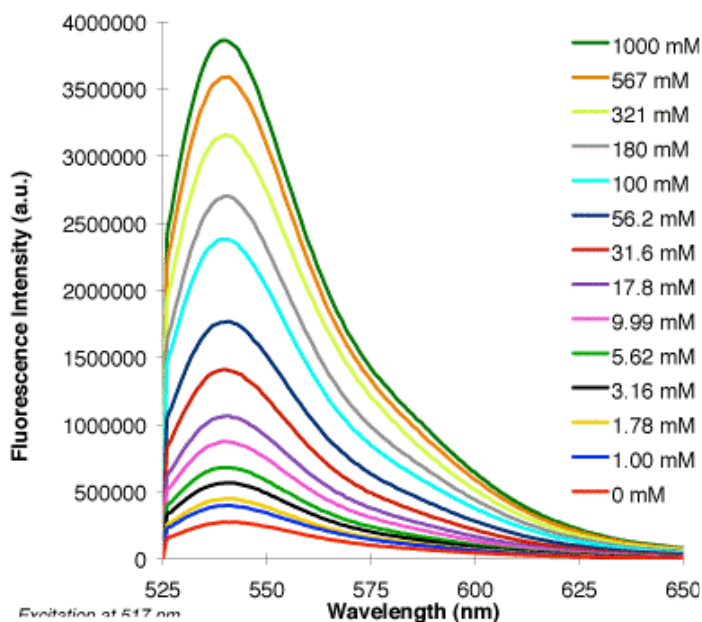


Figure 2 ION Potassium Green-1 Emission Titration



# ION Potassium Green-2 TMA<sup>+</sup> Salt

CAT (VOL): 3013C (500 µg) | 3013F (10 x 50 µg)



## Comparison

### ION Potassium Green and PBF1

	PBF1	IPG-1/IPG-2
<b>K<sub>d</sub></b>	5nM	54nM/18nM
<b>Excitation</b>	340 and 390 nm	488-517 nm
<b>Emission</b>	500 nm	540 nm
<b>Brightness</b>	Dim	Very Bright
<b>Dynamic Range</b> (F <sub>max</sub> /F <sub>min</sub> )	<3	12
<b>Photo-bleaching</b>	Sensitive	Very Stable
<b>AM ester loading</b>	Difficult	Easy

# Safety Data Sheet

## ION Potassium Green-2 TMA<sup>+</sup> Salt



### SECTION 1: Identification of the Substances and the Company/Undertaking

#### Identification of the Substance or Mixture

**Catlog Numbers:** 3013C | 3013F

**Product Name:** ION Potassium Green-2 TAM<sup>+</sup> Salt

#### Company/Undertaking Identification

Ion Biosciences  
3055 Hunter Road, Box 3  
San Marcos, TX 78666  
+1 512.957.9123

#### 24 hour Emergency Response

866-536-0631  
301-431-8585  
+1-301-431-8585 (Outside of the U.S.)

For Research Use Only. Not for use in diagnostic procedures.

### Section 2: Hazards Identification

#### GHS - Classification

**Signal word:** None

**Health hazards:** Not classified

**Hazard statements:** Not applicable

#### Precautionary Statements

**Prevention:** Not applicable

**Response:** Not applicable

**Storage:** Not applicable

**Disposal:** Not applicable

#### Principle Routes of Exposure

#### Potential Health Effects

**Eyes:** May cause eye irritation with susceptible persons.

**Skin:** May cause skin irritation in susceptible persons.

**Inhalation:** May be harmful by inhalation.

**Ingestion:** May be harmful if swallowed.

#### Specific Effects

**Carcinogenic effects:** No information available.

**Mutagenic effects:** No information available.

**Reproductive toxicity:** No information available.

**Sensitization:** No information available.

**Target organ effects:** No known effects under normal use conditions.

#### HMIS

Health	0
Flammability	0
Reactivity	0

### Section 3: Composition/Information on Ingredients

The product contains no substances which at their given concentration, are considered to be hazardous to health.

### Section 4: First Aid Measures

**Skin contact:** Rinse cautiously with water for several minutes. Immediate medical attention is not required.

**Eye contact:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

**Ingestion:** Not expected to present a significant ingestion hazard under anticipated conditions of normal use. If you feel unwell, seek

medical advice. inhalation Not expected to be an inhalation hazard under anticipated conditions of normal use of this material. Consult a physician if necessary.

**Most important symptoms and effects, both acute and delayed:**  
Not applicable

**Notes to physician:** Treat symptomatically.

## Section 5: Firefighting Measures

### Extinguishing Media

**Suitable extinguishing media:** Water spray. Carbon dioxide (CO<sub>2</sub>). Foam. Dry chemical.

**Unsuitable extinguishing media:** Not Known

**Specific hazards arising from the chemical:** Not known

**Advice for firefighters:** Standard procedure for chemical fires.

## Section 6: Accidental Release Measures

### Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Always wear recommended Personal Protective Equipment. Use personal protection equipment. See Section 8 for more detail.

**Environmental precautions:** Avoid discharge into drains and waterways whenever possible.

**Methods and material for containment and cleaning up:** Take up mechanically, placing in appropriate containers for disposal.

**Reference to other sections:** See section 8 and 12 for more information.

## Section 7: Handling and Storage

**Handling:** Always wear recommended Personal Protective Equipment. No special handling advices are necessary.

**Conditions for safe storage, including any incompatibilities:**

Store at -20°C. Protect from light and moisture.

**Specific end use(s):** For research use only.

## Section 8: Exposure Controls/Personal Protection

### Control Parameters

**Exposure limits:** We are not aware of any national exposure limit.

**Engineering measures:** Ensure adequate ventilation, especially in confined areas.

### Exposure Controls

**Personal Protective Equipment:** Personal Protective Equipment requirements are dependent on the user institution's risk assessment and are specific to the risk assessment for each laboratory where this material may be used.

**Respiratory protection:** In case of insufficient ventilation, wear suitable respiratory equipment.

**Hand protection:** Impervious gloves.

**Eye protection:** Wear safety glasses with side shields (or goggles).

**Skin and body protection:** Lightweight protective clothing.

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls:** Prevent product from entering drains or waterways whenever possible.

## Section 9: Physical and Chemical Properties

Information on basic physical and chemical properties.

**Form:** Solid

**Appearance:** No data available

**Odor:** No data available

**Odor threshold:** No data available

**Boiling point/boiling range:** °C No data available; °F No data available

**Flash point:** °C No data available; °F No data available

**Melting point/melting range:** °C No data available; °F No data available

**Autoignition temperature:** °C No data available; °F No data available

**Evaporation rate:** No data available

**Flammability (solid, gas):** No data available

**Oxidizing properties:** No data available

**Water solubility:** No data available

**Upper explosion limit:** No data available

**Lower explosion limit:** No data available

**Partition coefficient:** No data available  
n-octanol/water

**Vapor pressure:** No data available

**Vapor density:** No data available

**Viscosity:** No data available

**pH value:** No data available

## Section 10: Stability and Reactivity

**Reactivity:** None known.

**Stability:** Stable under normal conditions.

**Materials to avoid:** No dangerous reaction known under conditions of normal use.

**Possibility of hazardous reactions:** Hazardous reaction has not been reported

**Hazardous decomposition products:** None under normal use conditions.

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

**Conditions to avoid:** None under normal processing.

**Hazardous decomposition products:** Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Nitrogen oxides (NO<sub>x</sub>). Hydrogen chloride.

## Section 11: Toxicological Information

**Acute Toxicity:** To the best of our knowledge, the chemical, physical, biological, and toxicological properties of this product have not been thoroughly investigated.

Principle Routes of Exposure

Potential Health Effects

**Eyes:** May cause eye irritation with susceptible persons.

**Skin:** May cause skin irritation in susceptible persons.

**Inhalation:** May be harmful by inhalation.

**Ingestion:** May be harmful if swallowed.

**Carcinogenic effects:** No information available.

**Mutagenic effects:** No information available.

**Reproductive toxicity:** No information available.

**Sensitization:** No information available.

## Section 12: Ecological Information

**Ecotoxicity:** The environmental impact of this product has not been fully investigated.

**Mobility:** No information available.

**Biodegradation:** No information available.

**Bioaccumulation:** No information available.

## Section 13: Disposal Considerations

**Waste treatment methods:** The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in according to approved disposal technique.

Disposal of this product, its solutions or of any by-products, shall comply with the requirements of all applicable local, regional or national/federal regulations

## Section 14: Transport information

**IATA/ADR/DOT-US/IMDG:** Not Classified as dangerous in the meaning of transport regulations.

**Proper shipping name:** No dangerous good in sense of these transport regulations

**Hazard class:** None

**Subsidiary class:** None

**Packing group:** None

**UN-No:** None

**Environmental hazards:** None



## Section 15: Regulatory Information

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### US Federal Regulations

**SARA 313:** This product is not regulated by SARA.

**Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61):** This product does not contain HAPs.

### US State Regulations

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

**WHMIS Hazard Class:** Non-controlled

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

## Section 16: Other Information

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For Research Use Only. Not for use in diagnostic procedures.

"The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may present unknown hazards and should be used with caution. Since the Company cannot control the actual methods, volumes, or conditions of use, the Company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein.

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