

02/15/2012

### Kit Components

Product code	Description
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<b>550880</b>	<b>DAB Substrate Kit</b>
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Components:

550880a	DAB Buffer (51-7548KC)
550880b	DAB Chromogen (Component of DAB substrate kit)(51-7549KC)

**1 Identification of the substance/mixture and of the company/undertaking**

- **Product identifier**
- **Product name:** DAB Buffer (51-7548KC)
- **Catalog number:** 550880a
- **Relevant identified uses of the substance or mixture and uses advised against**
- **Sector of Use** SU24 Scientific research and development
- **Product category** PC21 Laboratory chemicals
- **Process category** PROC1 Use in closed process, no likelihood of exposure
- **Environmental release category** ERC7 Industrial use of substances in closed systems
  
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
BD Biosciences, Pharmingen  
10975 Torreyana Road  
San Diego, CA 92121-1106  
Tel. (877)232-8995
- **Information department:** Technical Services
- **Emergency telephone number:**  
In case of a chemical emergency, spill, fire, exposure, or accident please call ChemTrec at (800)424-9300 or 911

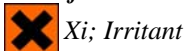
**2 Hazards identification**

- **Classification of the substance or mixture**



H319 Causes serious eye irritation.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



R36: Irritating to eyes.



R8: Contact with combustible material may cause fire.

- **Classification system:**

The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

- **Label elements**

- **Labelling according to EU guidelines:**

This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR), and the MSDS contains all of the information required by the CPR.

- **Code letter and hazard designation of product:**

Xi Irritant

O Oxidizing

- **Risk phrases:**

8 Contact with combustible material may cause fire.

36 Irritating to eyes.

- **Safety phrases:**

17 Keep away from combustible material.

23 Do not breathe gas/fumes/vapour/spray.

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

28 After contact with skin, wash immediately with plenty of water

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36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
 60 This material and its container must be disposed of as hazardous waste.

- **Classification system**
- **HMIS ratings (scale 0-4)**

HEALTH	1	Health = 1
FIRE	3	Fire = 3
REACTIVITY	0	Reactivity = 0




- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.
- **Dangerous components:**

CAS NO.	Description	%
7722-84-1	hydrogen peroxide solution	5.0%

 C R34  Xn R20/22  O R8	H271 H314 H302; H332
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### 4 First aid measures

- **Description of first aid measures**
- **General information**  
 Symptoms of poisoning may even occur after several hours; therefore provide medical observation for at least 48 hours after the accident.
- **After skin contact** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact** Rinse opened eye for several minutes under running water.
- **After swallowing** Seek immediate medical advice.
- **Information for doctor**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**  
 No further relevant information available.

### 5 Firefighting measures

- **Extinguishing media**
- **Suitable extinguishing agents**  
 CO<sub>2</sub>, ABC multipurpose dry chemical or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available.

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**Product name: DAB Buffer (51-7548KC)**

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- **Advice for firefighters**
- **Protective equipment:** No special measures required.

## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions:** Wipe up with damp sponge or mop.
- **Methods and material for containment and cleaning up:**  
 Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders).  
 Ensure adequate ventilation.
- **Reference to other sections**  
 See Section 7 for information on safe handling.  
 See Section 8 for information on personal protection equipment.  
 See Section 13 for disposal information.

## 7 Handling and storage

- **Handling**
- **Precautions for safe handling**  
 Ensure good ventilation/exhaustion at the workplace.  
 Prevent formation of aerosols.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** 2-8 C
- **Information about storage in one common storage facility:** Store away from oxidizing agents.
- **Further information about storage conditions:** Store in cool, dry conditions in well sealed containers.
- **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

### 7722-84-1 hydrogen peroxide solution

EL (Canada (English))	1 ppm
EV (Canada (English))	1.4 mg/m <sup>3</sup> , 1 ppm
PEL (USA)	1.4 mg/m <sup>3</sup> , 1 ppm
REL (USA)	1.4 mg/m <sup>3</sup> , 1 ppm
TLV (USA)	1.4 mg/m <sup>3</sup> , 1 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal Protective Equipment**
- **General protective and hygienic measures**  
 Keep away from foodstuffs, beverages and feed.  
 Immediately remove all soiled and contaminated clothing.  
 Wash hands before breaks and at the end of work.  
 Avoid contact with the eyes.

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**Product name: DAB Buffer (51-7548KC)**

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- Avoid contact with the eyes and skin.
- **Breathing equipment:** Not required.
- **Protection of hands:**



Chemical resistant gloves (i.e. nitrile, or equivalent).

- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing (lab coat).

## 9 Physical and chemical properties

### · Information on basic physical and chemical properties

#### · General Information

#### · Appearance:

· <b>Form:</b>	Liquid
· <b>Color:</b>	Clear
· <b>Odor:</b>	Odorless
· <b>Odour threshold:</b>	Not determined.

· <b>pH-value at 20°C:</b>	7.2
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#### · Change in condition

· <b>Melting point/Melting range:</b>	Not determined
· <b>Boiling point/Boiling range:</b>	100°C

· <b>Flash point:</b>	Not applicable
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· <b>Flammability (solid, gaseous)</b>	Not applicable.
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#### · Ignition temperature:

· <b>Decomposition temperature:</b>	Not determined.
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· <b>Auto igniting:</b>	Product is not self igniting.
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· <b>Danger of explosion:</b>	Not determined.
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#### · Explosion limits:

· <b>Lower:</b>	Not determined.
· <b>Upper:</b>	Not determined.

· <b>Vapor pressure at 20°C:</b>	23 hPa
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· <b>Density at 20°C:</b>	1.02792 g/cm <sup>3</sup>
· <b>Relative density</b>	Not determined.
· <b>Vapour density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.

#### · Solubility in / Miscibility with

· <b>Water:</b>	Soluble
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· <b>Segregation coefficient (n-octanol/water):</b>	Not determined.
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#### · Viscosity:

· <b>dynamic:</b>	Not determined.
· <b>kinematic:</b>	Not determined.

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**Product name: DAB Buffer (51-7548KC)**

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<b>· Solvent content:</b>	
<b>Organic solvents:</b>	0.0 %
<b>Water:</b>	94.0 %
<b>· Solids content:</b>	
<b>Solids content:</b>	1.0 %
<b>· Other information</b>	
No further relevant information available.	

## 10 Stability and reactivity

- **Reactivity**
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** No irritating effect.
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
The product shows the following dangers according to internally approved calculation methods for preparations:  
Irritant

## 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:** Water hazard class 1 (Self-assessment): slightly hazardous for water.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

CA

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**Product name: DAB Buffer (51-7548KC)**

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### 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation**  
 Must adhere to official regulations.  
 Must not be disposed of with solid waste.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to state and federal regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

### 14 Transport information

· <b>UN-Number</b>	void
· <b>UN proper shipping name</b>	Void
· <b>Transport hazard class(es)</b>	Void
· <b>Packing group</b>	Void
· <b>Environmental hazards:</b>	
· <b>Marine pollutant:</b>	No
· <b>Special precautions for user</b>	Not applicable.
· <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.

### 15 Regulatory information

· <b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	
· <b>SARA Section 355 (extremely hazardous substances)</b>	
7722-84-1	hydrogen peroxide solution
· <b>SARA Section 313 (specific toxic chemical listings)</b>	
None of the ingredients is listed.	
· <b>TSCA (Toxic Substances Control Act)</b>	
All ingredients are listed.	
· <b>Chemicals known to cause reproductive toxicity for females:</b>	
None of the ingredients is listed.	
· <b>Chemicals known to cause reproductive toxicity for males:</b>	
None of the ingredients is listed.	
· <b>Chemicals known to cause developmental toxicity:</b>	
None of the ingredients is listed.	
· <b>Carcinogenic categories</b>	
· <b>IARC (International Agency for Research on Cancer)</b>	
7722-84-1	hydrogen peroxide solution
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**Product name: DAB Buffer (51-7548KC)**

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**· NTP (National Toxicology Program)**

None of the ingredients is listed.

**· TLV (Threshold Limit Value established by ACGIH)**

7722-84-1 hydrogen peroxide solution

A3

**· Product related hazard information:**

This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR), and the MSDS contains all of the information required by the CPR.

**· Hazard symbols:**

Xi Irritant

O Oxidizing

**· Risk phrases:**

8 Contact with combustible material may cause fire.

36 Irritating to eyes.

**· Safety phrases:**

17 Keep away from combustible material.

23 Do not breathe gas/fumes/vapour/spray.

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

28 After contact with skin, wash immediately with plenty of water

36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

60 This material and its container must be disposed of as hazardous waste.

**· National regulations****· Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.**· Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**16 Other information**

To the best of our knowledge, the information contained herein is accurate. However, neither Becton, Dickinson and Company or any of its subsidiaries assumes any liabilities whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**· Department issuing MSDS:** Safety and Environment Department**· Contact:** Technical Service Representative**· Abbreviations and acronyms:**

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)



**1 Identification of the substance/mixture and of the company/undertaking**

- **Product identifier**
- **Product name:** DAB Chromogen (Component of DAB substrate kit)(51-7549KC)
- **Catalog number:** 550880b
- **Relevant identified uses of the substance or mixture and uses advised against**
- **Sector of Use** SU24 Scientific research and development
- **Product category** PC21 Laboratory chemicals
- **Process category** PROC1 Use in closed process, no likelihood of exposure
- **Environmental release category** ERC7 Industrial use of substances in closed systems
  
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
BD Biosciences, Pharmingen  
10975 Torreyana Road  
San Diego, CA 92121-1106  
Tel. (877)232-8995
- **Information department:** Technical Services
- **Emergency telephone number:**  
In case of a chemical emergency, spill, fire, exposure, or accident please call ChemTrec at (800)424-9300 or 911

**2 Hazards identification**

- **Classification of the substance or mixture**



GHS08 Health hazard

H351 Suspected of causing cancer.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



Xn; Harmful

R40: Limited evidence of a carcinogenic effect.

- **Classification system:**

The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

- **Label elements**

- **Labelling according to EU guidelines:**

This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR), and the MSDS contains all of the information required by the CPR.

- **Code letter and hazard designation of product:**

Xn Harmful

- **Hazard-determining components of labelling:**

3,3 diaminobenzidine

- **Risk phrases:**

40 Limited evidence of a carcinogenic effect.

- **Safety phrases:**

23 Do not breathe gas/fumes/vapour/spray.

36/37 Wear suitable protective clothing and gloves.

60 This material and its container must be disposed of as hazardous waste.

**Product name: DAB Chromogen (Component of DAB substrate kit)(51-7549KC)**

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- **Classification system**
- **HMIS ratings (scale 0-4)**

HEALTH	0	Health = *0
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0





- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.
- **Dangerous components:**

CAS NO.	Description	%
91-95-2	3,3 diaminobenzidine	1.74%

	Xn R20/21/22-40	
	H311	
	H351	
	H302; H332	

### 4 First aid measures

- **Description of first aid measures**
- **General information**  
Symptoms of poisoning may even occur after several hours; therefore provide medical observation for at least 48 hours after the accident.
- **After skin contact** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact** Rinse opened eye for several minutes under running water.
- **After swallowing** Seek immediate medical advice.
- **Information for doctor**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### 5 Firefighting measures

- **Extinguishing media**
- **Suitable extinguishing agents**  
CO<sub>2</sub>, ABC multipurpose dry chemical or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** No special measures required.

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**Product name: DAB Chromogen (Component of DAB substrate kit)(51-7549KC)**

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## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions:** Wipe up with damp sponge or mop.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders).  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

## 7 Handling and storage

- **Handling**
- **Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** 2-8 C
- **Information about storage in one common storage facility:** Store away from oxidizing agents.
- **Further information about storage conditions:** Store in cool, dry conditions in well sealed containers.
- **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**  
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal Protective Equipment**
- **General protective and hygienic measures**  
Keep away from foodstuffs, beverages and feed.  
Wash hands before breaks and at the end of work.
- **Breathing equipment:** Not required.
- **Protection of hands:**



Chemical resistant gloves (i.e. nitrile, or equivalent).

- **Eye protection:** Safety glasses

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**Product name: DAB Chromogen (Component of DAB substrate kit)(51-7549KC)**

(Contd. of page 3)

 · **Body protection:** Protective work clothing (lab coat).

## 9 Physical and chemical properties

 · **Information on basic physical and chemical properties**

 · **General Information**

 · **Appearance:**

· <b>Form:</b>	Liquid
· <b>Color:</b>	Clear
· <b>Odor:</b>	Odorless
· <b>Odour threshold:</b>	Not determined.

 · **pH-value at 20°C:** 7.2

 · **Change in condition**

· <b>Melting point/Melting range:</b>	Not determined
· <b>Boiling point/Boiling range:</b>	100°C

 · **Flash point:** Not applicable

 · **Flammability (solid, gaseous)** Not applicable.

 · **Ignition temperature:**

 · **Decomposition temperature:** Not determined.

 · **Auto igniting:** Product is not self igniting.

 · **Danger of explosion:** Product does not present an explosion hazard.

 · **Explosion limits:**

· <b>Lower:</b>	Not determined.
· <b>Upper:</b>	Not determined.

 · **Vapor pressure at 20°C:** 23 hPa

· <b>Density:</b>	Not determined
· <b>Relative density</b>	Not determined.
· <b>Vapour density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.

 · **Solubility in / Miscibility with**

 · **Water:** Soluble

 · **Segregation coefficient (n-octanol/water):** Not determined.

 · **Viscosity:**

· <b>dynamic:</b>	Not determined.
· <b>kinematic:</b>	Not determined.

 · **Solvent content:**

· <b>Organic solvents:</b>	0.0 %
· <b>Water:</b>	98.3 %

 · **Solids content:** 1.7 %

 · **Other information** No further relevant information available.

**Product name: DAB Chromogen (Component of DAB substrate kit)(51-7549KC)**

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**10 Stability and reactivity**

- **Reactivity**
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

**11 Toxicological information**

- **Information on toxicological effects**
- **Acute toxicity:**

**LD/LC50 values that are relevant for classification:****91-95-2 3,3 diaminobenzidine**

Oral LD50 1834 mg/kg (mus)

- **Primary irritant effect:**
- **on the skin:** No irritating effect.
- **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

**12 Ecological information**

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

**13 Disposal considerations**

- **Waste treatment methods**
- **Recommendation**  
Must adhere to official regulations.  
Must not be disposed of with solid waste.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to state and federal regulations.

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**Product name: DAB Chromogen (Component of DAB substrate kit)(51-7549KC)**

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 · **Recommended cleansing agent:** Water, if necessary with cleansing agents.

### 14 Transport information

· <b>UN-Number</b>	
· <b>DOT, TDG, ADN, IMDG, IATA</b>	Void
· <b>UN proper shipping name</b>	
· <b>DOT, TDG, ADN, IMDG, IATA</b>	Void
· <b>Transport hazard class(es)</b>	
· <b>DOT, TDG, ADN, IMDG, IATA</b>	
· <b>Class</b>	Void
· <b>Packing group</b>	
· <b>DOT, TDG, IMDG, IATA</b>	Void
· <b>Environmental hazards:</b>	
· <b>Marine pollutant:</b>	No
· <b>Special precautions for user</b>	Not applicable.
· <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
· <b>UN "Model Regulation":</b>	-

### 15 Regulatory information

· <b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>
· <b>SARA Section 355 (extremely hazardous substances)</b>
None of the ingredients is listed.
· <b>SARA Section 313 (specific toxic chemical listings)</b>
None of the ingredients is listed.
· <b>TSCA (Toxic Substances Control Act)</b>
All ingredients are listed.
· <b>Chemicals known to cause reproductive toxicity for females:</b>
None of the ingredients is listed.
· <b>Chemicals known to cause reproductive toxicity for males:</b>
None of the ingredients is listed.
· <b>Chemicals known to cause developmental toxicity:</b>
None of the ingredients is listed.
· <b>Carcinogenic categories</b>
· <b>IARC (International Agency for Research on Cancer)</b>
None of the ingredients is listed.
· <b>NTP (National Toxicology Program)</b>
None of the ingredients is listed.

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**Product name: DAB Chromogen (Component of DAB substrate kit)(51-7549KC)**

(Contd. of page 6)

**· TLV (Threshold Limit Value established by ACGIH)***None of the ingredients is listed.***· Product related hazard information:***This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR), and the MSDS contains all of the information required by the CPR.***· Hazard symbols:***Xn Harmful***· Hazard-determining components of labeling:***3,3 diaminobenzidine***· Risk phrases:***40 Limited evidence of a carcinogenic effect.***· Safety phrases:***23 Do not breathe gas/fumes/vapour/spray.**36/37 Wear suitable protective clothing and gloves.**60 This material and its container must be disposed of as hazardous waste.***· Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.***16 Other information**

*To the best of our knowledge, the information contained herein is accurate. However, neither Becton, Dickinson and Company or any of its subsidiaries assumes any liabilities whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.*

**· Department issuing MSDS:** *Safety and Environment Department***· Contact:** *Technical Service Representative***· Abbreviations and acronyms:***IMDG: International Maritime Code for Dangerous Goods**IATA: International Air Transport Association**ICAO: International Civil Aviation Organization**ACGIH: American Conference of Governmental Industrial Hygienists**CAS: Chemical Abstracts Service (division of the American Chemical Society)**HMIS: Hazardous Materials Identification System (USA)**LC50: Lethal concentration, 50 percent**LD50: Lethal dose, 50 percent*