## Kit Components

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3771</td>
<td>BCIP/NBT Color Development Substrate</td>
</tr>
</tbody>
</table>

**Components:**

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S381</td>
<td>BCIP</td>
</tr>
<tr>
<td>S380</td>
<td>Nitro-Blue Tetrazolium (NBT)</td>
</tr>
</tbody>
</table>
1 Identification

**Product identifier**

Trade name: BCIP

**Article number:** S381

**Application of the substance / the mixture** For Laboratory Use

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:**

Promega Corporation  
2800 Woods Hollow Road  
Madison, WI 53711  
U.S.A.  
1-800-356-9526 or (608)-274-4330

**Information department:**

SDS author: ChemicalRegulatory@promega.com  
Promega Corporation  
2800 Woods Hollow Road  
Madison, WI 53711  
U.S.A.  
1-800-356-9526 or (608)-274-4330

**Emergency telephone number:**

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night  
Within USA and Canada: 1-800-424-9300  
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

2 Hazard(s) identification

**Classification of the substance or mixture**

![GHS02 Flame]

Flam. Liq. 3 H226 Flammable liquid and vapor.

![GHS08 Health hazard]

Carc. 1B H350 May cause cancer.

Repr. 1B H360 May damage fertility or the unborn child.

![GHS07]

Acute Tox. 4 H312 Harmful in contact with skin.

Acute Tox. 4 H332 Harmful if inhaled.

(Contd. on page 2)
Trade name: BCIP

Eye Irrit. 2A H319 Causes serious eye irritation.

Label elements
GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

![](GHS02)
![](GHS07)
![](GHS08)

Signal word Danger

Hazard-determining components of labeling:
N,N-dimethylformamide

Hazard statements
Flammable liquid and vapor.
Harmful in contact with skin or if inhaled.
Causes serious eye irritation.
May cause cancer.
May damage fertility or the unborn child.

Precautionary statements
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
Call a poison center/doctor if you feel unwell.
Take off contaminated clothing and wash it before reuse.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use for extinction: CO2, powder or water spray.
Store in a well-ventilated place. Keep cool.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)
Health = 2
Fire = 3
Reactivity = 0

HMIS-ratings (scale 0 - 4)
Health  = *2
Fire = 3
Reactivity = 0

(Contd. on page 1)
Trade name: BCIP

OSHA Hazard Overview (Criteria according to 29CFR1910.1200):

Irritant
Combustible
Reproductive Hazard

Primary route(s) of entry:
Dermal
Inhalation

Target Organ(s):
May cause Liver damage (Hepatotoxin)
May affect Reproductive System (Mutagen, Teratogen)
May cause Kidney damage (Nephrotoxin)

Other hazards

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Mixtures
Description:
The product is made up of a mixture of non-hazardous components. The exact concentration percentages and components name may be withheld as a Promega Corp. trade secret.

Dangerous components:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>68-12-2 N,N-dimethylformamide</td>
<td>75-100%</td>
</tr>
<tr>
<td>6578-06-9 5-Bromo-4-chloro-3-indolyl phosphate p-toluidine salt</td>
<td>1-5%</td>
</tr>
</tbody>
</table>

Additional information: For the wording of the listed risk phrases refer to section 15.

4 First-aid measures

Description of first aid measures

General information:
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

After inhalation:
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
Seek medical treatment in case of complaints.

After skin contact: Immediately wash with water and soap and rinse thoroughly.

After eye contact:
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

After swallowing: If the patient feels unwell or is concerned, obtain medical advice.

Information for doctor:

Most important symptoms and effects, both acute and delayed
None

Indication of any immediate medical attention and special treatment needed
No further relevant information available.
5 Fire-fighting measures

**Extinguishing media**

**Suitable extinguishing agents:** Use fire fighting measures that suit the environment.

**Special hazards arising from the substance or mixture**

None known

No further relevant information available.

**Advice for firefighters** In the case of fire, wear respiratory protective equipment and chemical protective suit.

**Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

Remove persons from danger area.

Wear protective clothing.

**Environmental precautions:**

Dilute with plenty of water.

Do not allow to enter sewers/surface or ground water.

**Methods and material for containment and cleaning up:**

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to Section 13.

Ensure adequate ventilation.

**Reference to other sections**

See Section 7 for information on safe handling.

See Section 13 for disposal information.

7 Handling and storage

**Handling:**

**Precautions for safe handling**

Keep receptacles tightly sealed.

Ensure good ventilation/exhaustion at the workplace.

Open and handle receptacle with care.

Prevent formation of aerosols.

**Information about protection against explosions and fires:** Keep respiratory protective device available.

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

**Storage:**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** Keep receptacle tightly sealed.

**Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

**Control parameters**

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

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

At this time, the remaining constituent has no known exposure limits.
**Trade name:** BCIP

### Chemical Name and CAS Number: 68-12-2 N,N-dimethylformamide

<table>
<thead>
<tr>
<th>PEL</th>
<th>Long-term value: 30 mg/m³, 10 ppm</th>
<th>Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL</td>
<td>Long-term value: 30 mg/m³, 10 ppm</td>
<td>Skin</td>
</tr>
<tr>
<td>TLV</td>
<td>Long-term value: 15 mg/m³, 5 ppm</td>
<td>Skin; BEI</td>
</tr>
</tbody>
</table>

### Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>68-12-2 N,N-dimethylformamide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BEI</strong></td>
</tr>
<tr>
<td>Medium: urine</td>
</tr>
<tr>
<td>Time: end of shift</td>
</tr>
<tr>
<td>Parameter: N-Methylformamide</td>
</tr>
<tr>
<td>40 mg/L</td>
</tr>
<tr>
<td>Medium: urine</td>
</tr>
<tr>
<td>Time: prior to last shift of workweek</td>
</tr>
<tr>
<td>Parameter: N-Acetyl-S-(N-methylcarbamoyl) cysteine (semi-quantitative)</td>
</tr>
</tbody>
</table>

### Additional information:

The lists that were valid during the creation were used as basis.

### Exposure controls

**Personal protective equipment:**

**General protective and hygienic measures:**

Ensure that washing facilities are available at the work place.  
Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing.  
Wash hands before breaks and at the end of work.  
Store protective clothing separately.  
Avoid contact with the eyes.  
Avoid contact with the eyes and skin.  
Pregnant women should strictly avoid inhalation or skin contact.  
Do not eat or drink while working.  
Clean skin thoroughly immediately after handling the product.

**Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

**Protection of hands:**

Protective gloves  
Select the glove material considering penetration time, rate of diffusion and degradation time.  
It is recommended that the selected protective gloves be tested and approved under NIOSH or EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Eye protection:**

Safety glasses  
Use equipment for eye protection tested and approved under government NIOSH standards.
### 9 Physical and chemical properties

#### Information on basic physical and chemical properties

#### General Information

**Appearance:** Fluid

**Form:** Fluid

**Color:** Colorless

**Odor:** Not determined

**Odor threshold:** Not determined

#### Change in condition

**Melting point/Melting range:** -61 °C (-77.8 °F)

**Boiling point/Boiling range:** 152 °C (305.6 °F)

**Flash point:** 23 - 60 °C (73.4 - 140 °F)

#### Flammability (solid, gaseous):

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

**Ignition temperature:** 440 °C (824 °F)

**Decomposition temperature:** Not determined

**Auto igniting:** Product is not selfigniting.

#### Danger of explosion:

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

Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

**Explosion limits:**

**Lower:** 2.2 Vol %

**Upper:** 16 Vol %

**Vapor pressure at 20 °C (68 °F):** 3.5 hPa (2.6 mm Hg)

#### Density at 20 °C (68 °F):

**Density at 20 °C (68 °F):** 0.95 g/cm³ (7.92775 lbs/gal)

**Relative density** Not determined.

**Vapor density** Not determined.

**Evaporation rate** Not determined.

#### Solubility in / Miscibility with

**Solubility in / Miscibility with Water:** Fully miscible.

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

**Viscosity:**

**Dynamic:** Not determined.

**Kinematic:** Not determined.

**Organic solvents:** 95.0 %

**VOC content:** 0.00 %

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

### 10 Stability and reactivity

**Reactivity** No further relevant information available.

**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:** Oxidizing agents

**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:**

<table>
<thead>
<tr>
<th>68-12-2 N,N-dimethylformamide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50</td>
</tr>
<tr>
<td>Dermal LD50</td>
</tr>
<tr>
<td>Inhalative LC50/4 h</td>
</tr>
</tbody>
</table>

**Primary irritant effect:**

- **on the skin:** No data available.
- **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:

- **Harmful**
- **Irritant**

**Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**
  
- **NTP (National Toxicology Program)**
  
- **OSHA-Ca (Occupational Safety & Health Administration)**


**12 Ecological information**

**Toxicity**

**Aquatic toxicity:**

- Not available

**Persistence and degradability**

- Not available

**Bioaccumulative potential**

- Not known

**Mobility in soil**

- Not further relevant information available

**Ecotoxicological effects:**

- Not further relevant information available.

**Remark:**

- Not available

**Additional ecological information:**

- **General notes:** No data available.

**Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

**Other adverse effects**

- No further relevant information available.

(Contd. on page 8)
13 Disposal considerations

Waste treatment methods
Recommendation:
Disposal should be in accordance with applicable regional, national and local laws and regulations.
Refer to Section 7: Handling and Storage and Section 8: Exposure Control/Personal Protection for additional handling information and protection of employees.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, ADR, IMDG, IATA</th>
<th>UN2265</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>DOT</td>
<td>N,N-Dimethylformamide solution</td>
</tr>
<tr>
<td>ADR</td>
<td>2265 N,N-DIMETHYLFORMAMIDE solution</td>
<td></td>
</tr>
<tr>
<td>IMDG, IATA</td>
<td>N,N-DIMETHYLFORMAMIDE solution</td>
<td></td>
</tr>
</tbody>
</table>

Transport hazard class(es)

<table>
<thead>
<tr>
<th>DOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td>Label</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
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<tr>
<td>Label</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td>Label</td>
</tr>
</tbody>
</table>

Packing group
DOT, ADR, IMDG, IATA
III

Environmental hazards:
Marine pollutant: No
Trade name: BCIP

Special precautions for user

Warning: Flammable liquids

Hazard identification number (Kemler code): 30

EMS Number: F-E,S-D

Stowage Category: A

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

Transport/Additional information:

ADR
Excepted quantities (EQ) Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

IMDG
Limited quantities (LQ) 5L
Excepted quantities (EQ) Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

UN "Model Regulation": UN 2265 N,N-DIMETHYLFORMAMIDE SOLUTION, 3, III

15 Regulatory information

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

Sara

Section 355 (extremely hazardous substances):
None of the ingredients are listed.

Section 313 (Specific toxic chemical listings):
68-12-2 N,N-dimethylformamide

TSCA (Toxic Substances Control Act) Inventory:
All ingredients are listed.

Hazardous Air Pollutants
68-12-2 N,N-dimethylformamide

Proposition 65

Chemicals known to cause cancer:
68-12-2 N,N-dimethylformamide

Chemicals known to cause reproductive toxicity for females:
None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males:
None of the ingredients are listed.

Chemicals known to cause developmental toxicity:
None of the ingredients are listed.

Cancerogenity categories

EPA (Environmental Protection Agency)
None of the ingredients are listed.
Trade name: BCIP

TLV (Threshold Limit Value established by ACGIH)
68-12-2 N,N-dimethylformamide

NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients are listed.

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).
Signal word Danger

Hazard-determining components of labeling:
N,N-dimethylformamide

Hazard statements
Flammable liquid and vapor.
Harmful in contact with skin or if inhaled.
Causes serious eye irritation.
May cause cancer.
May damage fertility or the unborn child.

Precautionary statements
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
Call a poison center/doctor if you feel unwell.
Take off contaminated clothing and wash it before reuse.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use for extinction: CO2, powder or water spray.
Store in a well-ventilated place. Keep cool.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international 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
This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS:
Promega Corporation
Chemical Regulatory Department
2800 Woods Hollow Road
Madison, WI
Ph: (608) 274-4330
Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: Internation Civil Aviation Organization
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Flam. Liq. 3: Flammable liquids – Category 3
Acute Tox. 4: Acute toxicity – Category 4
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Carc. 1B: Carcinogenicity – Category 1B
Repr. 1B: Reproductive toxicity – Category 1B

* Data compared to the previous version altered.