SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product No: M0494
Product name: Q5™ Hot Start High-Fidelity 2X Master Mix
Pure substance/mixture: Mixture

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use: This product is for research and development only
Uses advised against: No information available

1.3. Details of the supplier of the safety data sheet

Supplier Address:
New England BioLabs
240 County Road
Ipswich, MA 01938
USA
For further information, please contact

Company Phone Number: 978-927-5054, 800-632-5227 (toll free)
Telefax: 978-921-1350
E-mail address: info@neb.com

1.4. Emergency telephone number

Europe: +1 978-380-2125
SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Regulation (EC) No 1272/2008
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

2.2. Label elements
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]

Hazard statements
This mixture is classified as not hazardous according to regulation (EC) 1272/2008 [CLP]
EUH210 - Safety data sheet available on request

2.3. Other hazards
No information available.

SECTION 3: Composition/information on ingredients

3.1 Substances
Not applicable

3.2 Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Weight-%</th>
<th>REACH registration number</th>
<th>EC No</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
<th>Specific concentration limit (SCL)</th>
<th>M-Factor (long-term)</th>
<th>M-Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>5 - 10</td>
<td>No data available</td>
<td>200-664-3</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>1 - 5</td>
<td>No data available</td>
<td>231-211-8</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>0.1 - 1</td>
<td>No data available</td>
<td>231-984-1</td>
<td>No data available</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Full text of H- and EUH-phrases: see section 16

Acute Toxicity Estimate
If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATEmix) for classifying a mixture based on its components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Oral LD50 mg/kg</th>
<th>Dermal LD50 mg/kg</th>
<th>Inhalation LC50 - 4 hour - dust/mist - mg/L</th>
<th>Inhalation LC50 - 4 hour - vapor - mg/L</th>
<th>Inhalation LC50 - 4 hour - gas - ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>28300</td>
<td>40000</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>2600</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>2840</td>
<td>2000</td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation Remove to fresh air.
Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
Skin contact Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.
Ingestion Rinse mouth.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Large Fire CAUTION: Use of water spray when fighting fire may be inefficient.

Unsuitable extinguishing media Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical No information available.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up
Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards
Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections
Reference to other sections
See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Advice on safe handling
Ensure adequate ventilation.

General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities
Storage Conditions
Keep container tightly closed in a dry and well-ventilated place.

7.3. Specific end use(s)
Risk management methods [RMM]
The information required is contained in this Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Exposure Limits

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>European Union</th>
<th>Austria</th>
<th>Belgium</th>
<th>Bulgaria</th>
<th>Croatia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>-</td>
<td>TWA: 50 ppm TWA: 160 mg/m³</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Cyprus</th>
<th>Czech Republic</th>
<th>Denmark</th>
<th>Estonia</th>
<th>Finland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>-</td>
<td>-</td>
<td>TWA: 50 ppm TWA: 160 mg/m³</td>
<td>TWA: 50 ppm TWA: 150 mg/m³ STEL: 150 ppm STEL: 500 mg/m³</td>
<td>TWA: 50 ppm Iho*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>France</th>
<th>Germany</th>
<th>Germany MAK</th>
<th>Greece</th>
<th>Hungary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>-</td>
<td>TWA: 50 ppm TWA: 160 mg/m³ H*</td>
<td>TWA: 50 ppm TWA: 160 mg/m³ Peak: 100 ppm Peak: 320 mg/m³</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Ireland</th>
<th>Italy</th>
<th>Italy REL</th>
<th>Latvia</th>
<th>Lithuania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>O*</td>
</tr>
</tbody>
</table>

TWA: Time Weighted Average, STEL: Short Term Exposure Limit, MAK: Maximum Admissible Concentration, REL: Recommended Exposure Limit.
Biological occupational exposure limits

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL)

No information available.

Predicted No Effect Concentration (PNEC)

No information available.

8.2. Exposure controls

Engineering controls

No information available.

Individual protection measures, such as personal protective equipment

Eye/face protection

No special protective equipment required.

Skin and body protection

No special protective equipment required.

Respiratory protection

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls

No information available.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Colorless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Mild</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Initial boiling point and boiling range  100 °C
Flammability (solid, gas)  No data available  None known
Flammability Limit in Air
  Upper flammability or explosive limits  No data available
  Lower flammability or explosive limits  No data available
Flash point  No data available  None known
Autoignition temperature  215 °C
Decomposition temperature  No data available
pH  No data available  None known
pH (as aqueous solution)  No data available  None known
Kinematic viscosity  No data available  None known
Dynamic viscosity  No data available  None known
Water solubility  No data available  None known
Solubility(ies)  No data available
Partition coefficient  No data available  None known
Vapor pressure  No data available  None known
Relative density  No data available  None known
  Bulk density  No data available
  Liquid Density  No data available
Vapor density  No data available  None known
Particle characteristics
  Particle Size  No information available
  Particle Size Distribution  No information available

9.2. Other information

9.2.1. Information with regard to physical hazard classes
Not applicable

9.2.2. Other safety characteristics
No information available

SECTION 10: Stability and reactivity

10.1. Reactivity
Reactivity  No information available.

10.2. Chemical stability
Stability  Stable under normal conditions.

Explosion data
  Sensitivity to mechanical impact  None.
  Sensitivity to static discharge  None.

10.3. Possibility of hazardous reactions
Possibility of hazardous reactions  None under normal processing.

10.4. Conditions to avoid
Conditions to avoid  None known based on information supplied.

10.5. Incompatible materials
Incompatible materials  None known based on information supplied.

10.6. Hazardous decomposition products
Hazardous decomposition products None known based on information supplied.

**SECTION 11: Toxicological information**

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

**Information on likely routes of exposure**

**Product Information**

- **Inhalation**: Specific test data for the substance or mixture is not available.
- **Eye contact**: Specific test data for the substance or mixture is not available.
- **Skin contact**: Specific test data for the substance or mixture is not available.
- **Ingestion**: Specific test data for the substance or mixture is not available.

**Symptoms related to the physical, chemical and toxicological characteristics**

- **Symptoms**: No information available.
- **Acute toxicity**

**Numerical measures of toxicity**

The following values are calculated based on chapter 3.1 of the GHS document

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>= 28300 mg/kg (Rat)</td>
<td>= 40000 mg/kg (Rat)</td>
<td>&gt; 5.33 mg/L (Rat) 4 h</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>= 2600 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>= 2840 mg/kg (Rat)</td>
<td>&gt; 2000 mg/kg (Rat)</td>
<td>-</td>
</tr>
</tbody>
</table>

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

- **Skin corrosion/irritation**: No information available.
- **Serious eye damage/eye irritation**: No information available.
- **Respiratory or skin sensitization**: No information available.
- **Germ cell mutagenicity**: No information available.
- **Carcinogenicity**: No information available.
Reproductive toxicity  No information available.

**STOT - single exposure**  No information available.

**STOT - repeated exposure**  No information available.

**Aspiration hazard**  No information available.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

**Endocrine disrupting properties**  No information available.

11.2.2. Other information

**Other adverse effects**  No information available.

**SECTION 12: Ecological information**

12.1. Toxicity

**Ecotoxicity**

**Unknown aquatic toxicity**  Contains 0 % of components with unknown hazards to the aquatic environment.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>-</td>
<td>LC50: =34000mg/L (96h, Pimephales promelas)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: =33 - 37g/L (96h, Oncorhynchus mykiss)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: &gt;40g/L (96h, Lepomis macrochirus)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: =41.7g/L (96h, Cyprinus carpio)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>EC50: =2500mg/L (72h, Desmodesmus subspicatus)</td>
<td>LC50: 1060mg/L (96h, Lepomis macrochirus)</td>
<td>-</td>
<td>EC50: =825mg/L (48h, Daphnia magna)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: 750 - 1020mg/L (96h, Pimephales promelas)</td>
<td>-</td>
<td>EC50: =83mg/L (48h, Daphnia magna)</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>-</td>
<td>LC50: 250mg/L (96h, Brachydanio rerio)</td>
<td>-</td>
<td>LC50: 14mg/L (48h, Daphnia magna)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: =480mg/L (96h, Brachydanio rerio)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: =420mg/L (96h, Brachydanio rerio)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: =18mg/L (96h, Cyprinus carpio)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: 32.2 - 41.9mg/L (96h, Oncorhynchus mykiss)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: 5.2 - 8.2mg/L (96h, Oncorhynchus mykiss)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: &gt;100mg/L (96h, Pimephales promelas)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LC50: 123 - 128mg/L</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
12.2. Persistence and degradability

**Persistence and degradability**
No information available.

12.3. Bioaccumulative potential

**Bioaccumulation**

**Component Information**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Partition coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>-1.35</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>-5.1</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

**Mobility in soil**
No information available.

12.5. Results of PBT and vPvB assessment

**PBT and vPvB assessment**

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>PBT and vPvB assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>The substance is not PBT / vPvB PBT assessment does not apply</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>The substance is not PBT / vPvB PBT assessment does not apply</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>The substance is not PBT / vPvB PBT assessment does not apply</td>
</tr>
</tbody>
</table>

12.6. Other adverse effects

**Endocrine disrupting properties**
No information available.

12.7. Other adverse effects
No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

**Waste from residues/unused products**
Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

**Contaminated packaging**
Do not reuse empty containers.

SECTION 14: Transport information

**IATA**

14.1 UN number or ID number  Not regulated
14.2
14.3 Transport hazard class(es)  Not regulated
14.4 Packing group  Not regulated
14.5 Environmental hazard  Not applicable
14.6 Special precautions for user
   Special Provisions: None

IMDG
14.1 UN number or ID number: Not regulated
14.2
14.3 Transport hazard class(es): Not regulated
14.4 Packing group: Not regulated
14.5 Environmental hazard: Not applicable
14.6 Special precautions for user
   Special Provisions: None
14.7 Maritime transport in bulk according to IMO instruments: No information available

RID
14.1 UN/ID No: Not regulated
14.2
14.3 Transport hazard class(es): Not regulated
14.4 Packing group: Not regulated
14.5 Environmental hazard: Not applicable
14.6 Special precautions for user
   Special Provisions: None

ADR
14.1 UN number or ID number: Not regulated
14.2
14.3 Transport hazard class(es): Not regulated
14.4 Packing group: Not regulated
14.5 Environmental hazard: Not applicable
14.6 Special precautions for user
   Special Provisions: None

SECTION 15: Regulatory information

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

National regulations

France
Occupational Illnesses (R-463-3, France)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>French RG number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>RG 84</td>
</tr>
<tr>
<td></td>
<td>RG 5,RG 14,RG 15,RG 15bis,RG 20bis</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>RG 67</td>
</tr>
</tbody>
</table>

European Union
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

Authorizations and/or restrictions on use:
This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Restricted substance per REACH Annex XVII</th>
<th>Substance subject to authorization per REACH Annex XIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Secret</td>
<td>75.</td>
<td>-</td>
</tr>
<tr>
<td>Trade Secret</td>
<td>65.</td>
<td>-</td>
</tr>
</tbody>
</table>
Persistent Organic Pollutants  
Not applicable

Ozone-depleting substances (ODS) regulation (EC) 1005/2009  
Not applicable

International Inventories

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
<tr>
<td>DSL/NDSL</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
<tr>
<td>EINECS/ELINCS</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
<tr>
<td>ENCS</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
<tr>
<td>IECSC</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
<tr>
<td>KECL</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
<tr>
<td>PICCS</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
<tr>
<td>AIIC</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
<tr>
<td>NZIoC</td>
<td>Contact supplier for inventory compliance status</td>
</tr>
</tbody>
</table>

Legend:
- TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
- DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
- EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
- ENCS - Japan Existing and New Chemical Substances
- IECSC - China Inventory of Existing Chemical Substances
- KECL - Korean Existing and Evaluated Chemical Substances
- PICCS - Philippines Inventory of Chemicals and Chemical Substances
- AIIC - Australian Inventory of Chemical Substances
- NZIoC - New Zealand Inventory of Chemicals

15.2. Chemical safety assessment

Chemical Safety Report

No information available

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend

SVHC: Substances of Very High Concern for Authorization:

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA</td>
<td>TWA (time-weighted average)</td>
</tr>
<tr>
<td>Ceiling</td>
<td>Maximum limit value</td>
</tr>
<tr>
<td>+</td>
<td>Sensitizers</td>
</tr>
<tr>
<td></td>
<td>STEL (Short Term Exposure Limit)</td>
</tr>
<tr>
<td></td>
<td>Skin designation</td>
</tr>
</tbody>
</table>

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
European Chemicals Agency (ECHA) (ECHA_API)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEG(L))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
End of Safety Data Sheet