

SAFETY DATA SHEET



QuikChange HT Mutagenesis Reagents, Part Number 5190-7455

Section 1. Identification

Product identifier	: <input checked="" type="checkbox"/> QuikChange HT Mutagenesis Reagents, Part Number 5190-7455		
Part No. (Chemical Kit)	: 5190-7455		
Part No.	<input checked="" type="checkbox"/> QuikChange Solution		5190-7470
	2× PfuUltra II HS Master Mix AD		5190-7458
	10x QuikChange Lightning Buffer		5190-7459
	QuikChange Lightning Enzyme		5190-7462
	40 mM dNTP		5190-7460
	Positive Control Plasmid pWS4.5		5190-7463
	10× Positive Control Primer Mix		5190-7464
	1.1 kb Gel Standard		5190-7465
	Dpn I Enzyme		5190-7466

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

Analytical chemistry.

<input checked="" type="checkbox"/> QuikChange Solution	0.018 ml
2× PfuUltra II HS Master Mix AD	1.1 ml
10x QuikChange Lightning Buffer	0.11 ml
QuikChange Lightning Enzyme	0.034 ml
40 mM dNTP	0.034 ml
Positive Control Plasmid pWS4.5	0.004 ml
10× Positive Control Primer Mix	0.02 ml
1.1 kb Gel Standard	0.2 ml
Dpn I Enzyme	0.024 ml

Supplier/Manufacturer : Agilent Technologies Australia Pty Ltd
679 Springvale Road
Mulgrave
Victoria 3170, Australia
1800 802 402

Emergency telephone number (with hours of operation) : CHEMTREC®: (61)-290372994

Section 2. Hazard(s) identification

Classification of the substance or mixture

<input checked="" type="checkbox"/> QuikChange Solution H227	FLAMMABLE LIQUIDS - Category 4
<input checked="" type="checkbox"/> QuikChange Solution	Not applicable.
2× PfuUltra II HS Master Mix AD	Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 1.4%
10x QuikChange Lightning Buffer	Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 3.2%
QuikChange Lightning Enzyme	Not applicable.
40 mM dNTP	Not applicable.
Positive Control Plasmid pWS4.5	Not applicable.
10× Positive Control Primer Mix	Not applicable.
1.1 kb Gel Standard	Not applicable.
Dpn I Enzyme	Not applicable.

Section 2. Hazard(s) identification

QuikChange Solution	Not applicable.
2x PfuUltra II HS Master Mix	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 1.4%
AD	
10x QuikChange Lightning	Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 5.2%
Buffer	
QuikChange Lightning	Not applicable.
Enzyme	
40 mM dNTP	Not applicable.
Positive Control Plasmid	Not applicable.
pWS4.5	
10x Positive Control Primer	Not applicable.
Mix	
1.1 kb Gel Standard	Not applicable.
Dpn I Enzyme	Not applicable.

GHS label elements

Signal word

QuikChange Solution	WARNING
2x PfuUltra II HS Master Mix	No signal word.
AD	
10x QuikChange Lightning	No signal word.
Buffer	
QuikChange Lightning	No signal word.
Enzyme	
40 mM dNTP	No signal word.
Positive Control Plasmid	No signal word.
pWS4.5	
10x Positive Control Primer	No signal word.
Mix	
1.1 kb Gel Standard	No signal word.
Dpn I Enzyme	No signal word.

Hazard statements

QuikChange Solution	H227 - Combustible liquid.
2x PfuUltra II HS Master Mix	No known significant effects or critical hazards.
AD	
10x QuikChange Lightning	No known significant effects or critical hazards.
Buffer	
QuikChange Lightning	No known significant effects or critical hazards.
Enzyme	
40 mM dNTP	No known significant effects or critical hazards.
Positive Control Plasmid	No known significant effects or critical hazards.
pWS4.5	
10x Positive Control Primer	No known significant effects or critical hazards.
Mix	
1.1 kb Gel Standard	No known significant effects or critical hazards.
Dpn I Enzyme	No known significant effects or critical hazards.

Precautionary statements

Prevention

QuikChange Solution	P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from flames and hot surfaces. - No smoking.
2x PfuUltra II HS Master Mix	Not applicable.
AD	
10x QuikChange Lightning	Not applicable.
Buffer	
QuikChange Lightning	Not applicable.
Enzyme	
40 mM dNTP	Not applicable.
Positive Control Plasmid	Not applicable.
pWS4.5	
10x Positive Control Primer	Not applicable.
Mix	
1.1 kb Gel Standard	Not applicable.
Dpn I Enzyme	Not applicable.

Section 2. Hazard(s) identification

Response	: <input checked="" type="checkbox"/> QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Storage	: <input checked="" type="checkbox"/> QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	P403 - Store in a well-ventilated place. P235 - Keep cool. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Disposal	: <input checked="" type="checkbox"/> QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Supplemental label elements	: <input checked="" type="checkbox"/> QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.

Section 2. Hazard(s) identification

Other hazards which do not result in classification :

QuikChange Solution	None known.
2x PfuUltra II HS Master Mix	None known.
AD	
10x QuikChange Lightning	None known.
Buffer	
QuikChange Lightning	None known.
Enzyme	
40 mM dNTP	None known.
Positive Control Plasmid	None known.
pWS4.5	
10x Positive Control Primer	None known.
Mix	
1.1 kb Gel Standard	None known.
Dpn I Enzyme	None known.

Section 3. Composition and ingredient information

Substance/mixture :

QuikChange Solution	Substance
2x PfuUltra II HS Master Mix	Mixture
AD	
10x QuikChange Lightning	Mixture
Buffer	
QuikChange Lightning	Mixture
Enzyme	
40 mM dNTP	Mixture
Positive Control Plasmid	Mixture
pWS4.5	
10x Positive Control Primer	Mixture
Mix	
1.1 kb Gel Standard	Mixture
Dpn I Enzyme	Mixture

CAS number/other identifiers

Ingredient name	% (w/w)	CAS number
QuikChange Solution Dimethyl sulfoxide	100	67-68-5
QuikChange Lightning Enzyme Glycerol	≥30 - ≤60	56-81-5
Dpn I Enzyme Glycerol	≥30 - ≤60	56-81-5

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact :

QuikChange Solution	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
2x PfuUltra II HS Master Mix	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
AD	
10x QuikChange Lightning	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get
Buffer	

Section 4. First aid measures

	QuikChange Lightning Enzyme	medical attention if irritation occurs. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	40 mM dNTP	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	Positive Control Plasmid pWS4.5	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	10× Positive Control Primer Mix	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	1.1 kb Gel Standard	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	Dpn I Enzyme	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
Inhalation	: QuikChange Solution	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	2× PfuUltra II HS Master Mix AD	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	10x QuikChange Lightning Buffer	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	QuikChange Lightning Enzyme	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	40 mM dNTP	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	Positive Control Plasmid pWS4.5	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	10× Positive Control Primer Mix	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	1.1 kb Gel Standard	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Section 4. First aid measures

	Dpn I Enzyme	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Skin contact	: QuikChange Solution	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	2× PfuUltra II HS Master Mix AD	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10x QuikChange Lightning Buffer	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	QuikChange Lightning Enzyme	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	40 mM dNTP	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Positive Control Plasmid pWS4.5	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	10× Positive Control Primer Mix	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	1.1 kb Gel Standard	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Dpn I Enzyme	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	Ingestion	: QuikChange Solution
2× PfuUltra II HS Master Mix AD		Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
10x QuikChange Lightning Buffer		Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
QuikChange Lightning Enzyme		Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for

Section 4. First aid measures

	breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
40 mM dNTP	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
Positive Control Plasmid pWS4.5	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
10× Positive Control Primer Mix	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
1.1 kb Gel Standard	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
Dpn I Enzyme	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	:	QuikChange Solution	No known significant effects or critical hazards.
		2× PfuUltra II HS Master Mix	No known significant effects or critical hazards.
		AD	
		10x QuikChange Lightning Buffer	No known significant effects or critical hazards.
		QuikChange Lightning Enzyme	No known significant effects or critical hazards.
		40 mM dNTP	No known significant effects or critical hazards.
		Positive Control Plasmid pWS4.5	No known significant effects or critical hazards.
		10× Positive Control Primer Mix	No known significant effects or critical hazards.
		1.1 kb Gel Standard	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.

Section 4. First aid measures

Inhalation	: <input checked="" type="checkbox"/> QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: <input checked="" type="checkbox"/> QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: <input checked="" type="checkbox"/> QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: <input checked="" type="checkbox"/> QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
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Inhalation	: QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
Skin contact	: QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
Ingestion	: QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
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	pWS4.5	specialist immediately if large quantities have been ingested or inhaled.
	10× Positive Control Primer Mix	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	1.1 kb Gel Standard	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Dpn I Enzyme	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: QuikChange Solution	No specific treatment.
	2× PfuUltra II HS Master Mix AD	No specific treatment.
	10x QuikChange Lightning Buffer	No specific treatment.
	QuikChange Lightning Enzyme	No specific treatment.
	40 mM dNTP	No specific treatment.
	Positive Control Plasmid pWS4.5	No specific treatment.
	10× Positive Control Primer Mix	No specific treatment.
	1.1 kb Gel Standard	No specific treatment.
	Dpn I Enzyme	No specific treatment.
Protection of first-aiders	: QuikChange Solution	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	2× PfuUltra II HS Master Mix AD	No action shall be taken involving any personal risk or without suitable training.
	10x QuikChange Lightning Buffer	No action shall be taken involving any personal risk or without suitable training.
	QuikChange Lightning Enzyme	No action shall be taken involving any personal risk or without suitable training.
	40 mM dNTP	No action shall be taken involving any personal risk or without suitable training.
	Positive Control Plasmid pWS4.5	No action shall be taken involving any personal risk or without suitable training.
	10× Positive Control Primer Mix	No action shall be taken involving any personal risk or without suitable training.
	1.1 kb Gel Standard	No action shall be taken involving any personal risk or without suitable training.
	Dpn I Enzyme	No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Firefighting measures

Extinguishing media

Suitable extinguishing media	: QuikChange Solution	Use dry chemical, CO ₂ , water spray (fog) or foam.
	2× PfuUltra II HS Master Mix AD	Use an extinguishing agent suitable for the surrounding fire.
	10x QuikChange Lightning Buffer	Use an extinguishing agent suitable for the surrounding fire.
	QuikChange Lightning Enzyme	Use an extinguishing agent suitable for the surrounding fire.
	40 mM dNTP	Use an extinguishing agent suitable for the surrounding fire.
	Positive Control Plasmid pWS4.5	Use an extinguishing agent suitable for the surrounding fire.

Section 5. Firefighting measures

	10× Positive Control Primer Mix	Use an extinguishing agent suitable for the surrounding fire.	
	1.1 kb Gel Standard	Use an extinguishing agent suitable for the surrounding fire.	
	Dpn I Enzyme	Use an extinguishing agent suitable for the surrounding fire.	
Unsuitable extinguishing media	QuikChange Solution	Do not use water jet.	
	2× PfuUltra II HS Master Mix AD	None known.	
	10x QuikChange Lightning Buffer	None known.	
	QuikChange Lightning Enzyme	None known.	
	40 mM dNTP	None known.	
	Positive Control Plasmid pWS4.5	None known.	
	10× Positive Control Primer Mix	None known.	
	1.1 kb Gel Standard	None known.	
	Dpn I Enzyme	None known.	
	Specific hazards arising from the chemical	QuikChange Solution	Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
2× PfuUltra II HS Master Mix AD		In a fire or if heated, a pressure increase will occur and the container may burst.	
10x QuikChange Lightning Buffer		In a fire or if heated, a pressure increase will occur and the container may burst.	
QuikChange Lightning Enzyme		In a fire or if heated, a pressure increase will occur and the container may burst.	
40 mM dNTP		In a fire or if heated, a pressure increase will occur and the container may burst.	
Positive Control Plasmid pWS4.5		In a fire or if heated, a pressure increase will occur and the container may burst.	
10× Positive Control Primer Mix		In a fire or if heated, a pressure increase will occur and the container may burst.	
1.1 kb Gel Standard		In a fire or if heated, a pressure increase will occur and the container may burst.	
Dpn I Enzyme		In a fire or if heated, a pressure increase will occur and the container may burst.	
Hazardous thermal decomposition products		QuikChange Solution	Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides
		2× PfuUltra II HS Master Mix AD	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides
		10x QuikChange Lightning Buffer	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides halogenated compounds

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<p>QuikChange Lightning Enzyme</p>	<p>metal oxide/oxides Decomposition products may include the following materials: carbon dioxide carbon monoxide</p>
<p>40 mM dNTP</p>	<p>No specific data.</p>
<p>Positive Control Plasmid pWS4.5</p>	<p>No specific data.</p>
<p>10× Positive Control Primer Mix</p>	<p>No specific data.</p>
<p>1.1 kb Gel Standard</p>	<p>No specific data.</p>
<p>Dpn I Enzyme</p>	<p>Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds metal oxide/oxides</p>

Special protective actions for fire-fighters

<p>QuikChange Solution</p>	<p>Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.</p>
<p>2× PfuUltra II HS Master Mix AD</p>	<p>Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.</p>
<p>10x QuikChange Lightning Buffer</p>	<p>Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.</p>
<p>QuikChange Lightning Enzyme</p>	<p>Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.</p>
<p>40 mM dNTP</p>	<p>Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.</p>
<p>Positive Control Plasmid pWS4.5</p>	<p>Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.</p>
<p>10× Positive Control Primer Mix</p>	<p>Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.</p>
<p>1.1 kb Gel Standard</p>	<p>Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.</p>
<p>Dpn I Enzyme</p>	<p>Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.</p>

Section 5. Firefighting measures

Special protective equipment for fire-fighters	: QuikChange Solution	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	2× PfuUltra II HS Master Mix AD	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	10x QuikChange Lightning Buffer	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	QuikChange Lightning Enzyme	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	40 mM dNTP	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Positive Control Plasmid pWS4.5	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	10× Positive Control Primer Mix	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	1.1 kb Gel Standard	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Dpn I Enzyme	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: QuikChange Solution	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	2× PfuUltra II HS Master Mix AD	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	10x QuikChange Lightning Buffer	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	QuikChange Lightning Enzyme	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding

Section 6. Accidental release measures

40 mM dNTP	areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
Positive Control Plasmid pWS4.5	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
10× Positive Control Primer Mix	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
1.1 kb Gel Standard	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
Dpn I Enzyme	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

For emergency responders : QuikChange Solution

2× PfuUltra II HS Master Mix AD	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
10x QuikChange Lightning Buffer	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
QuikChange Lightning Enzyme	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
40 mM dNTP	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Positive Control Plasmid pWS4.5	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
10× Positive Control Primer Mix	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
1.1 kb Gel Standard	If specialised clothing is required to deal with the

Section 6. Accidental release measures

Dpn I Enzyme

spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : QuikChange Solution

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

2x PfuUltra II HS Master Mix AD

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

10x QuikChange Lightning Buffer

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

QuikChange Lightning Enzyme

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

40 mM dNTP

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Positive Control Plasmid pWS4.5

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

10x Positive Control Primer Mix

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

1.1 kb Gel Standard

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Dpn I Enzyme

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Methods for cleaning up : QuikChange Solution

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

2x PfuUltra II HS Master Mix AD	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
10x QuikChange Lightning Buffer	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
QuikChange Lightning Enzyme	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
40 mM dNTP	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Positive Control Plasmid pWS4.5	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
10x Positive Control Primer Mix	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
1.1 kb Gel Standard	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Dpn I Enzyme	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures :  QuikChange Solution

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-

Section 7. Handling and storage

proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not reuse container.

2× PfuUltra II HS Master Mix AD	Put on appropriate personal protective equipment (see Section 8).
10x QuikChange Lightning Buffer	Put on appropriate personal protective equipment (see Section 8).
QuikChange Lightning Enzyme	Put on appropriate personal protective equipment (see Section 8).
40 mM dNTP	Put on appropriate personal protective equipment (see Section 8).
Positive Control Plasmid pWS4.5	Put on appropriate personal protective equipment (see Section 8).
10× Positive Control Primer Mix	Put on appropriate personal protective equipment (see Section 8).
1.1 kb Gel Standard	Put on appropriate personal protective equipment (see Section 8).
Dpn I Enzyme	Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene

: QuikChange Solution	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
2× PfuUltra II HS Master Mix AD	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
10x QuikChange Lightning Buffer	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
QuikChange Lightning Enzyme	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
40 mM dNTP	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Positive Control Plasmid pWS4.5	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
10× Positive Control Primer	Eating, drinking and smoking should be prohibited in

Section 7. Handling and storage

Mix	areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
1.1 kb Gel Standard	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Dpn I Enzyme	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
2x PfuUltra II HS Master Mix AD	Storage temperature: -20°C (-4°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
10x QuikChange Lightning Buffer	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
QuikChange Lightning Enzyme	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid

Conditions for safe storage, including any incompatibilities : QuikChange Solution

Section 7. Handling and storage

40 mM dNTP	environmental contamination. Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
Positive Control Plasmid pWS4.5	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
10× Positive Control Primer Mix	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
1.1 kb Gel Standard	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
Dpn I Enzyme	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls and personal protection

[Control parameters](#)

[Occupational exposure limits](#)

Section 8. Exposure controls and personal protection

Ingredient name	Exposure limits
QuikChange Lightning Enzyme Glycerol	Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours.
Dpn I Enzyme Glycerol	Safe Work Australia (Australia, 1/2014). TWA: 10 mg/m ³ 8 hours.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

- Physical state** :
- | | |
|---------------------------------|------------------|
| QuikChange Solution | Liquid. [Clear.] |
| 2x PfuUltra II HS Master Mix | Liquid. |
| AD | |
| 10x QuikChange Lightning Buffer | Liquid. |
| QuikChange Lightning Enzyme | Liquid. |
| 40 mM dNTP | Liquid. |
| Positive Control Plasmid pWS4.5 | Liquid. |
| 10x Positive Control Primer Mix | Liquid. |
| 1.1 kb Gel Standard | Liquid. |

Section 9. Physical and chemical properties

		Dpn I Enzyme	Liquid.
Colour	:	QuikChange Solution	Colourless.
		2x PfuUltra II HS Master Mix AD	Not available.
		10x QuikChange Lightning Buffer	Not available.
		QuikChange Lightning Enzyme	Not available.
		40 mM dNTP	Not available.
		Positive Control Plasmid pWS4.5	Not available.
		10x Positive Control Primer Mix	Not available.
		1.1 kb Gel Standard	Not available.
		Dpn I Enzyme	Not available.
Odour	:	QuikChange Solution	Odourless. [Slight]
		2x PfuUltra II HS Master Mix AD	Not available.
		10x QuikChange Lightning Buffer	Not available.
		QuikChange Lightning Enzyme	Not available.
		40 mM dNTP	Not available.
		Positive Control Plasmid pWS4.5	Not available.
		10x Positive Control Primer Mix	Not available.
		1.1 kb Gel Standard	Not available.
		Dpn I Enzyme	Not available.
Odour threshold	:	QuikChange Solution	Not available.
		2x PfuUltra II HS Master Mix AD	Not available.
		10x QuikChange Lightning Buffer	Not available.
		QuikChange Lightning Enzyme	Not available.
		40 mM dNTP	Not available.
		Positive Control Plasmid pWS4.5	Not available.
		10x Positive Control Primer Mix	Not available.
		1.1 kb Gel Standard	Not available.
		Dpn I Enzyme	Not available.
pH	:	QuikChange Solution	Not available.
		2x PfuUltra II HS Master Mix AD	10
		10x QuikChange Lightning Buffer	8.8
		QuikChange Lightning Enzyme	8.2
		40 mM dNTP	7.5
		Positive Control Plasmid pWS4.5	7.5
		10x Positive Control Primer Mix	8
		1.1 kb Gel Standard	7.5
		Dpn I Enzyme	7.5

Section 9. Physical and chemical properties

Melting point	:	QuikChange Solution	18.5°C (65.3°F)
		2× PfuUltra II HS Master Mix	0°C (32°F)
		AD	
		10x QuikChange Lightning	Not available.
		Buffer	
		QuikChange Lightning	Not available.
		Enzyme	
		40 mM dNTP	0°C (32°F)
		Positive Control Plasmid	0°C (32°F)
		pWS4.5	
		10× Positive Control Primer	0°C (32°F)
		Mix	
		1.1 kb Gel Standard	0°C (32°F)
		Dpn I Enzyme	Not available.
Boiling point	:	QuikChange Solution	189°C (372.2°F)
		2× PfuUltra II HS Master Mix	100°C (212°F)
		AD	
		10x QuikChange Lightning	Not available.
		Buffer	
		QuikChange Lightning	Not available.
		Enzyme	
		40 mM dNTP	100°C (212°F)
		Positive Control Plasmid	100°C (212°F)
		pWS4.5	
		10× Positive Control Primer	100°C (212°F)
		Mix	
		1.1 kb Gel Standard	100°C (212°F)
		Dpn I Enzyme	Not available.
Flash point	:	QuikChange Solution	Open cup: 87°C (188.6°F)
		2× PfuUltra II HS Master Mix	Not available.
		AD	
		10x QuikChange Lightning	Not available.
		Buffer	
		QuikChange Lightning	Not available.
		Enzyme	
		40 mM dNTP	Not available.
		Positive Control Plasmid	Not available.
		pWS4.5	
		10× Positive Control Primer	Not available.
		Mix	
		1.1 kb Gel Standard	Not available.
		Dpn I Enzyme	Not available.
Evaporation rate	:	QuikChange Solution	0.026 (butyl acetate = 1)
		2× PfuUltra II HS Master Mix	Not available.
		AD	
		10x QuikChange Lightning	Not available.
		Buffer	
		QuikChange Lightning	Not available.
		Enzyme	
		40 mM dNTP	Not available.
		Positive Control Plasmid	Not available.
		pWS4.5	
		10× Positive Control Primer	Not available.
		Mix	
		1.1 kb Gel Standard	Not available.
		Dpn I Enzyme	Not available.

Section 9. Physical and chemical properties

Flammability (solid, gas)	: QuikChange Solution	Not applicable.
	2× PfuUltra II HS Master Mix	Not applicable.
	AD	
	10x QuikChange Lightning Buffer	Not applicable.
	QuikChange Lightning Enzyme	Not applicable.
	40 mM dNTP	Not applicable.
	Positive Control Plasmid pWS4.5	Not applicable.
	10× Positive Control Primer Mix	Not applicable.
	1.1 kb Gel Standard	Not applicable.
	Dpn I Enzyme	Not applicable.
Lower and upper explosive (flammable) limits	: QuikChange Solution	Lower: 2.6%
		Upper: 28.5%
	2× PfuUltra II HS Master Mix	Not available.
	AD	
	10x QuikChange Lightning Buffer	Not available.
	QuikChange Lightning Enzyme	Not available.
	40 mM dNTP	Not available.
	Positive Control Plasmid pWS4.5	Not available.
	10× Positive Control Primer Mix	Not available.
	1.1 kb Gel Standard	Not available.
	Dpn I Enzyme	Not available.
Vapour pressure	: QuikChange Solution	0.056 kPa (0.42 mm Hg) [room temperature]
	2× PfuUltra II HS Master Mix	Not available.
	AD	
	10x QuikChange Lightning Buffer	Not available.
	QuikChange Lightning Enzyme	Not available.
	40 mM dNTP	Not available.
	Positive Control Plasmid pWS4.5	Not available.
	10× Positive Control Primer Mix	Not available.
	1.1 kb Gel Standard	Not available.
	Dpn I Enzyme	Not available.
Vapour density	: QuikChange Solution	2.7 [Air = 1]
	2× PfuUltra II HS Master Mix	Not available.
	AD	
	10x QuikChange Lightning Buffer	Not available.
	QuikChange Lightning Enzyme	Not available.
	40 mM dNTP	Not available.
	Positive Control Plasmid pWS4.5	Not available.
	10× Positive Control Primer Mix	Not available.
	1.1 kb Gel Standard	Not available.
	Dpn I Enzyme	Not available.

Section 9. Physical and chemical properties

Relative density	: <input checked="" type="checkbox"/> QuikChange Solution	1.1
	2x PfuUltra II HS Master Mix	Not available.
	AD	
	10x QuikChange Lightning	Not available.
	Buffer	
	QuikChange Lightning	Not available.
	Enzyme	
	40 mM dNTP	Not available.
	Positive Control Plasmid	Not available.
	pWS4.5	
	10x Positive Control Primer	Not available.
	Mix	
	1.1 kb Gel Standard	Not available.
	Dpn I Enzyme	Not available.
Solubility	: <input checked="" type="checkbox"/> QuikChange Solution	Easily soluble in the following materials: cold water and hot water.
	2x PfuUltra II HS Master Mix	Easily soluble in the following materials: cold water and hot water.
	AD	
	10x QuikChange Lightning	Easily soluble in the following materials: cold water and hot water.
	Buffer	
	QuikChange Lightning	Soluble in the following materials: cold water and hot water.
	Enzyme	
	40 mM dNTP	Easily soluble in the following materials: cold water and hot water.
	Positive Control Plasmid	Easily soluble in the following materials: cold water and hot water.
	pWS4.5	
	10x Positive Control Primer	Easily soluble in the following materials: cold water and hot water.
	Mix	
	1.1 kb Gel Standard	Easily soluble in the following materials: cold water and hot water.
	Dpn I Enzyme	Soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: <input checked="" type="checkbox"/> QuikChange Solution	-1.35
	2x PfuUltra II HS Master Mix	Not available.
	AD	
	10x QuikChange Lightning	Not available.
	Buffer	
	QuikChange Lightning	Not available.
	Enzyme	
	40 mM dNTP	Not available.
	Positive Control Plasmid	Not available.
	pWS4.5	
	10x Positive Control Primer	Not available.
	Mix	
	1.1 kb Gel Standard	Not available.
	Dpn I Enzyme	Not available.
Auto-ignition temperature	: <input checked="" type="checkbox"/> QuikChange Solution	300 to 302°C (572 to 575.6°F)
	2x PfuUltra II HS Master Mix	Not available.
	AD	
	10x QuikChange Lightning	Not available.
	Buffer	
	QuikChange Lightning	Not available.
	Enzyme	
	40 mM dNTP	Not available.
	Positive Control Plasmid	Not available.
	pWS4.5	
	10x Positive Control Primer	Not available.
	Mix	
	1.1 kb Gel Standard	Not available.
	Dpn I Enzyme	Not available.

Section 9. Physical and chemical properties

Decomposition temperature	: <input checked="" type="checkbox"/> QuikChange Solution	140 to 189°C (284 to 372.2°F)
	2× PfuUltra II HS Master Mix	Not available.
	AD	
	10x QuikChange Lightning	Not available.
	Buffer	
	QuikChange Lightning	Not available.
	Enzyme	
	40 mM dNTP	Not available.
	Positive Control Plasmid	Not available.
	pWS4.5	
	10× Positive Control Primer	Not available.
	Mix	
	1.1 kb Gel Standard	Not available.
	Dpn I Enzyme	Not available.
Viscosity	: <input checked="" type="checkbox"/> QuikChange Solution	Dynamic (room temperature): 2.14 mPa·s (2.14 cP)
	2× PfuUltra II HS Master Mix	Not available.
	AD	
	10x QuikChange Lightning	Not available.
	Buffer	
	QuikChange Lightning	Not available.
	Enzyme	
	40 mM dNTP	Not available.
	Positive Control Plasmid	Not available.
	pWS4.5	
	10× Positive Control Primer	Not available.
	Mix	
	1.1 kb Gel Standard	Not available.
	Dpn I Enzyme	Not available.

Section 10. Stability and reactivity

Reactivity	: <input checked="" type="checkbox"/> QuikChange Solution	No specific test data related to reactivity available for this product or its ingredients.
	2× PfuUltra II HS Master Mix	No specific test data related to reactivity available for this product or its ingredients.
	AD	No specific test data related to reactivity available for this product or its ingredients.
	10x QuikChange Lightning	No specific test data related to reactivity available for this product or its ingredients.
	Buffer	No specific test data related to reactivity available for this product or its ingredients.
	QuikChange Lightning	No specific test data related to reactivity available for this product or its ingredients.
	Enzyme	No specific test data related to reactivity available for this product or its ingredients.
	40 mM dNTP	No specific test data related to reactivity available for this product or its ingredients.
	Positive Control Plasmid	No specific test data related to reactivity available for this product or its ingredients.
	pWS4.5	No specific test data related to reactivity available for this product or its ingredients.
	10× Positive Control Primer	No specific test data related to reactivity available for this product or its ingredients.
	Mix	No specific test data related to reactivity available for this product or its ingredients.
	1.1 kb Gel Standard	No specific test data related to reactivity available for this product or its ingredients.
	Dpn I Enzyme	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: <input checked="" type="checkbox"/> QuikChange Solution	The product is stable.
	2× PfuUltra II HS Master Mix	The product is stable.
	AD	
	10x QuikChange Lightning	The product is stable.
	Buffer	
	QuikChange Lightning	The product is stable.
	Enzyme	
	40 mM dNTP	The product is stable.
	Positive Control Plasmid	The product is stable.
	pWS4.5	
	10× Positive Control Primer	The product is stable.
	Mix	
	1.1 kb Gel Standard	The product is stable.

Section 10. Stability and reactivity

Dpn I Enzyme The product is stable.

Possibility of hazardous reactions

: QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
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Conditions to avoid

: QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
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Incompatible materials

: QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	Reactive or incompatible with the following materials: oxidizing materials May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials. May react or be incompatible with oxidising materials.
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Section 10. Stability and reactivity

Hazardous decomposition products	: QuikChange Solution	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	2x PfuUltra II HS Master Mix AD	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10x QuikChange Lightning Buffer	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	QuikChange Lightning Enzyme	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	40 mM dNTP	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Positive Control Plasmid pWS4.5	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	10x Positive Control Primer Mix	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	1.1 kb Gel Standard	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Dpn I Enzyme	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
QuikChange Solution Dimethyl sulfoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
QuikChange Lightning Enzyme Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Dpn I Enzyme Glycerol	LD50 Oral	Rat	12600 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
QuikChange Solution Dimethyl sulfoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 milligrams	-
QuikChange Lightning Enzyme Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

Section 11. Toxicological information

Dpn I Enzyme Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

Sensitisation

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on likely routes of exposure	QuikChange Solution	Routes of entry anticipated: Oral, Dermal, Inhalation.
	2x PfuUltra II HS Master Mix	Routes of entry anticipated: Oral, Dermal, Inhalation.
	AD	
	10x QuikChange Lightning Buffer	Routes of entry anticipated: Oral, Dermal, Inhalation.
	QuikChange Lightning Enzyme	Not available.
	40 mM dNTP	Not available.
	Positive Control Plasmid pWS4.5	Not available.
	10x Positive Control Primer Mix	Not available.
	1.1 kb Gel Standard	Not available.
	Dpn I Enzyme	Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact	QuikChange Solution	No known significant effects or critical hazards.
	2x PfuUltra II HS Master Mix	No known significant effects or critical hazards.
	AD	
	10x QuikChange Lightning Buffer	No known significant effects or critical hazards.
	QuikChange Lightning Enzyme	No known significant effects or critical hazards.
	40 mM dNTP	No known significant effects or critical hazards.
	Positive Control Plasmid pWS4.5	No known significant effects or critical hazards.
	10x Positive Control Primer Mix	No known significant effects or critical hazards.
	1.1 kb Gel Standard	No known significant effects or critical hazards.
	Dpn I Enzyme	No known significant effects or critical hazards.

Section 11. Toxicological information

Inhalation	: QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: QuikChange Solution 2x PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10x Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
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Section 11. Toxicological information

Inhalation	: <input checked="" type="checkbox"/>	QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
Skin contact	: <input checked="" type="checkbox"/>	QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.
Ingestion	: <input checked="" type="checkbox"/>	QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data. No specific data.

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

Section 11. Toxicological information

General	: QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Carcinogenicity	: QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Mutagenicity	: QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
Teratogenicity	: QuikChange Solution 2× PfuUltra II HS Master Mix AD 10x QuikChange Lightning Buffer QuikChange Lightning Enzyme 40 mM dNTP Positive Control Plasmid pWS4.5 10× Positive Control Primer Mix 1.1 kb Gel Standard Dpn I Enzyme	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

Section 11. Toxicological information

Developmental effects	:	QuikChange Solution	No known significant effects or critical hazards.
		2x PfuUltra II HS Master Mix	No known significant effects or critical hazards.
		AD	
		10x QuikChange Lightning Buffer	No known significant effects or critical hazards.
		QuikChange Lightning Enzyme	No known significant effects or critical hazards.
		40 mM dNTP	No known significant effects or critical hazards.
		Positive Control Plasmid pWS4.5	No known significant effects or critical hazards.
		10x Positive Control Primer Mix	No known significant effects or critical hazards.
		1.1 kb Gel Standard	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.
Fertility effects	:	QuikChange Solution	No known significant effects or critical hazards.
		2x PfuUltra II HS Master Mix	No known significant effects or critical hazards.
		AD	
		10x QuikChange Lightning Buffer	No known significant effects or critical hazards.
		QuikChange Lightning Enzyme	No known significant effects or critical hazards.
		40 mM dNTP	No known significant effects or critical hazards.
		Positive Control Plasmid pWS4.5	No known significant effects or critical hazards.
		10x Positive Control Primer Mix	No known significant effects or critical hazards.
		1.1 kb Gel Standard	No known significant effects or critical hazards.
		Dpn I Enzyme	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
10x QuikChange Lightning Buffer	
Oral	25000 mg/kg
Dermal	55000 mg/kg
Inhalation (vapours)	550 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
QuikChange Solution Dimethyl sulfoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 100 µl/L Marine water	Algae - Ulva lactuca	72 hours
QuikChange Lightning Enzyme Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Dpn I Enzyme Glycerol	Acute LC50 54000 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours

Persistence and degradability

Not available.

Section 12. Ecological information

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
QuikChange Solution Dimethyl sulfoxide	-1.35	3.16	low
QuikChange Lightning Enzyme Glycerol	-1.76	-	low
Dpn I Enzyme Glycerol	-1.76	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

Regulatory information

ADG / IMDG / IATA : Not regulated as Dangerous Goods according to the ADG Code .

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of Marpol and the IBC Code : Not available.

Section 15. Regulatory information

Standard Uniform Schedule of Medicine and Poisons



Model Work Health and Safety Regulations - Scheduled Substances

No listed substance

Australia inventory (AICS) : Not determined.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Section 15. Regulatory information

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

International lists

National inventory

Canada	: Not determined.
China	: <input checked="" type="checkbox"/> Not determined.
Europe	: <input checked="" type="checkbox"/> Not determined.
Japan	: <input checked="" type="checkbox"/> Japan inventory (ENCS): Not determined. Japan inventory (ISHL): Not determined.
Malaysia	: <input checked="" type="checkbox"/> Not determined.
New Zealand	: <input checked="" type="checkbox"/> Not determined.
Philippines	: <input checked="" type="checkbox"/> Not determined.
Republic of Korea	: <input checked="" type="checkbox"/> Not determined.
Taiwan	: <input checked="" type="checkbox"/> All components are listed or exempted.
Turkey	: <input checked="" type="checkbox"/> Not determined.
United States	: <input checked="" type="checkbox"/> Not determined.

Section 16. Any other relevant information

History

Date of issue/Date of revision : 30/03/2016

Date of previous issue : 06/06/2014.

Version : 2

Key to abbreviations

: ADG = Australian Dangerous Goods
 ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 NOHSC = National Occupational Health and Safety Commission
 SUSMP = Standard Uniform Schedule of Medicine and Poisons
 UN = United Nations

Procedure used to derive the classification

Classification	Justification
<input checked="" type="checkbox"/> QuikChange Solution Flam. Liq. 4, H227	On basis of test data

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

Section 16. Any other relevant information

Disclaimer: The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.