



Certificate No. FM 22786  
ISO 9001:2015

## Safety Data Sheet

According to Regulation EC No.1907/2006 Annex 2

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

#### 1.1 Product Identifier

|                     |                                     |
|---------------------|-------------------------------------|
| Product Name        | Face Fit Test Solution              |
| Product Code        | RNAZ-000-300                        |
| Product Description | 0.169% Denatonium benzoate solution |
| Product Type        | Mixture                             |

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

Only to be used as part of a qualitative face fit of respiratory protective equipment. No other uses.

#### 1.3 Details of the supplier

|                |  |
|----------------|--|
| Address:       | JSP Ltd<br>Worsham Mill<br>Minster Lovell<br>Witney<br>Oxfordshire<br>OX29 0TA |
| Telephone:     | +44 1993 826051  |
| Email Address: | technical.support@jsp.co.uk  |

#### 1.4 Emergency Telephone Number

Emergency Phone # +44 1993 826051

### SECTION 2 Hazards identification

#### 2.1 Classification of the substance or mixture

The hazardous substances in this mixture are in concentrations below the cut-off values specified in Article 11 of Regulation (EC) No. 1272/2008 and therefore this mixture is classified as non-hazardous under Regulation (EC) No. 1272/2008

#### 2.2 Label Elements

The hazardous substances in this mixture are in concentrations below the cut-off values specified in Article 11 of Regulation (EC) No. 1272/2008 and therefore this mixture is classified as non-hazardous under Regulation (EC) No. 1272/2008

#### 2.3 Other Hazards

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## SECTION 3 Composition/information on ingredients

### 3.1 Substances

### 3.2 Mixtures

| Substance           | Identifiers                    | %       | Classification:  |   | Type |
|---------------------|--------------------------------|---------|--|---|------|
|                     |                                |         | Regulation EC No. 1272/2008  | 67/548/EEC  |      |
| Denatonium benzoate | CAS: 3734-33-6<br>EC:223-095-2 | ≤ 0.169 | Acute Tox. 4, H302<br>Acute Tox. 4, H332<br>Skin Irrit. 2, H315<br>Eye Dam. 1, H318<br>Aquatic Chronic 3, H412<br><br>See Section 16 for the full text of the H-statements declared above. | Xn; R20/22<br>Xi; R41, R38<br>R52/53<br><br>See Section 16 for the full text of the R-phrases declared above. | [1]  |

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, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type:

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

[5] Substance of equivalent concern

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

## SECTION 4 First Aid Measures

### 4.1 Description of First Aid Measures

Eye contact

If irritation of the eyes is experienced, 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.

Inhalation

If irritation of the respiratory tract is experienced, 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 necessary, call a poison centre or physician. 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.

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|                            |   |
|----------------------------|---|
| Skin contact               | 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.   |
| Ingestion                  | Wash out mouth with water. Remove dentures if any. 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. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. 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. |
| Protection of first-aiders | No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.  |

#### 4.2 Most Important symptoms and effects, both acute and delayed

The hazardous substances in this mixture are in concentrations below the cut-off values specified in Article 11 of Regulation (EC) No. 1272/2008 and therefore this mixture is classified as non-hazardous under Regulation (EC) No. 1272/2008. The potential health effects outlined below reference those of the substances in this mixture.

##### Potential acute health effects

|              |   |
|--------------|---|
| Eye contact  | May causes serious eye irritation   |
| Inhalation   | May be harmful if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. |
| Skin contact | No known significant effects or critical hazards.   |
| Ingestion    | May be irritating to mouth, throat and stomach  |

##### Over-exposure signs/symptoms

|              |   |
|--------------|---|
| Eye contact  | Adverse side effects may include pain or irritation, watering and redness |
| Inhalation   | No specific data  |
| Skin contact | No specific data  |
| Ingestion    | No specific data  |

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

|                     |                        |
|---------------------|------------------------|
| Notes to physician  | No specific notes      |
| Specific treatments | No specific treatment. |

## SECTION 5 Firefighting measures

### 5.1 Extinguishing Media

|                              |  |
|------------------------------|--|
| Suitable Extinguishing Media | Under foreseeable circumstances this mixture is not considered flammable |
|------------------------------|--|

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Unsuitable Extinguishing Media For fires in the immediate vicinity of the mixture please ensure the extinguishing medium is appropriate

## 5.2 Special hazard arising from the substance or mixture

Suitable Extinguishing Media Under foreseeable circumstances this mixture is not considered flammable

## 5.3 Advice for firefighters

Wear suitable personal protective equipment for fighting fires as necessary

## SECTION 6 Accidental release measures

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

For non-emergency personnel 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. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders 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".

### 6.2 Environmental precautions

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).

### 6.3 Methods and materials for containment and cleaning up

Large spill Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

### 6.4 Reference to other sections

See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7 Handling and storage

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The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

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## 7.1 Precautions for safe handling

Protective measures 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 respiratory protection when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene 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 following use of the product. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

## 7.2 Conditions for safe storage, including any incompatibilities

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.

## 7.3 Specific end use(s)

Recommendations Only suitable for the sensitivity test as part of Qualitative fit testing as outlined in UK HSE document OC282/28

Industrial sector Qualitative fit testing  
specific solutions

## SECTION 8 Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 8.1 Control Parameters

Occupational Exposure limits  
No exposure limit known

In house exposure limit: 0.1mg/m<sup>3</sup>

Recommended monitoring procedures If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents)

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Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs No DNELs/DMELs available.

PNECs No PNECs available

## 8.2 Exposure Controls

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Appropriate engineering controls Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protective 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: chemical splash goggles.

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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

*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

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Environmental exposure

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection

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controls

legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9 Physical and chemical properties

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### 9.1 Information on basic physical and chemical properties

|  |                                       |
|--|---------------------------------------|
| Physical State                             | Liquid                                |
| Colour                                     | Colourless                            |
| Odour                                      | Alcohol-like                          |
| Odour threshold                            | Not available                         |
| pH   | Not available                         |
| Melting point/freezing point               | Not available                         |
| Initial boiling point and boiling range    | Not available                         |
| Flash point                                | Not available                         |
| Evaporation rate                           | Not available                         |
| Flammability                               | Not available                         |
| Upper/lower flammability /explosive limits | Not available                         |
| Vapour pressure                            | Not available                         |
| Vapour density                             | Not available                         |
| Relative density                           | Not available                         |
| Solubility(ies)                            | Readily soluble in hot and cold water |
| Partition coefficient: n-octanol/water     | Not available                         |
| Auto-ignition temperature                  | Not available                         |
| Decomposition temperature                  | Not available                         |
| Viscosity                                  | Not available                         |
| Explosive properties                       | Not available                         |
| Oxidising properties                       | Not available                         |

### 9.2 Other information

No additional information

## SECTION 10 Stability and reactivity

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### 10.1 Reactivity

No specific test data related to reactivity available for this product

### 10.2 Chemical Stability

This mixture is considered chemically stable under foreseeable use and recommended storage conditions

### 10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

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#### 10.4 Conditions to Avoid

No specific data

#### 10.5 Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced

### SECTION 11 Toxicological information

#### 11.1 Information on toxicological effects

##### Acute toxicity

| Product/Ingredient Name                    | Exposure Route  | Species | Exposure Time | Dose                 |
|--|-----------------|---------|---------------|----------------------|
| 2.5% Denatonium benzoate solution in water | LC50 Inhalation | Rat     | 4 hours       | 2.31mg/L             |
| Denatonium benzoate                        | LC50 Inhalation | Rat     | 4 hours       | 200mg/m <sup>3</sup> |
|  | LD50 Dermal     | Rat     | -             | >2000 mg/kg          |
|  | LD50 Oral       | Rat     | -             | 584 mg/kg            |

##### Skin corrosion/irritation

| Substance           | Exposure Route | Species | Score | Exposure | Result   |
|---------------------|----------------|---------|-------|----------|----------|
| Denatonium benzoate | Skin           | Rabbit  | -     | -        | Irritant |

##### Serious eye damage/irritation

| Substance           | Exposure Route | Species | Score | Exposure | Result            |
|---------------------|----------------|---------|-------|----------|-------------------|
| Denatonium benzoate | Eyes           | Rabbit  | -     | -        | Moderate Irritant |

##### Respiratory or skin sensitisation

| Substance           | Exposure Route | Species    | Score | Exposure | Result          |
|---------------------|----------------|------------|-------|----------|-----------------|
| Denatonium benzoate | Skin           | Guinea Pig | -     | -        | Not sensitizing |

##### Germ cell mutagenicity

| Substance           | Exposure Route | Species   | Result   |
|---------------------|----------------|-----------|----------|
| Denatonium benzoate | In vitro       | Mammalian | Negative |

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### **Carcinogenicity**

No data available

### **Reproductive toxicity**

No data available

### **Specific target organ toxicity – single exposure**

No data available

### **Specific target organ toxicity – single exposure**

No data available

### **Aspiration**

No data available

### **Additional Information**

## **SECTION 12 Ecological Information**

### **12.1 Toxicity**

| Substance           | Species                 | Exposure Time | Result         |
|---------------------|-------------------------|---------------|----------------|
| denatonium benzoate | Daphnia - daphnia magna | 48 hours      | EC50 13mg/L    |
|                     | Fish                    | 96 hours      | LC50 >1000mg/L |

### **12.2 Persistence and degradability**

#### **Biodegradability**

| Substance           | Exposure time | Result |
|---------------------|---------------|--------|
| denatonium benzoate | 30 days       | 10%    |

### **12.3 Bioaccumulative potential**

| Substance           | LogP <sub>ow</sub> | Potential |
|---------------------|--------------------|-----------|
| denatonium benzoate | 0.9                | low       |

### **12.4 Mobility in soil**

No data available

### **12.5 Results of PBT and vPvB assessment**

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This mixture or the substances that it is composed of are not considered to be persistent, bioaccumulative and toxic, or very persistent and bioaccumulative at levels of 0.1% or higher as defined under Annex XIII of EC Regulation No. 1906:2006

## 12.6 Other adverse effects

No data available

## SECTION 13 Disposal Considerations

---

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 13.1 Waste Treatment Methods

**Product** 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.

**Packaging** The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

## SECTION 14 Transport Information

---

### 14.1 UN number

|         |               |
|---------|---------------|
| ADR/RID | Not Regulated |
| ADN     | Not Regulated |
| IMDG    | Not Regulated |
| ICAO    | Not Regulated |

### 14.2 UN proper shipping name

|         |                |
|---------|----------------|
| ADR/RID | Not Applicable |
| ADN     | Not Applicable |
| IMDG    | Not Applicable |
| ICAO    | Not Applicable |

### 14.3 Transport hazard classes

|         |                |
|---------|----------------|
| ADR/RID | Not Applicable |
| ADN     | Not Applicable |
| IMDG    | Not Applicable |
| ICAO    | Not Applicable |

### 14.4 Packaging group

|         |                |
|---------|----------------|
| ADR/RID | Not Applicable |
| ADN     | Not Applicable |
| IMDG    | Not Applicable |

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ICAO Not Applicable

**14.5 Environmental hazards**

|         |                          |
|---------|--------------------------|
| ADR/RID | Not considered hazardous |
| ADN     | Not considered hazardous |
| IMDG    | Not considered hazardous |
| ICAO    | Not considered hazardous |

**14.6 Special precaution 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

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not Applicable

**SECTION 15 Regulatory information**

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

**Regulation EC No.1907/2006 on the registration evaluation authorisation and restriction of chemicals REACH:**

|  |   |
|--|---|
| Annex XIV  | None of the substances in this mixture are listed |
| Annex XVII   | None of the substances in this mixture are listed |
| Candidate List of Substance of Very High concern for eventual inclusion into Annex XIV | None of the substances in this mixture are listed |

**International regulations:**

|   |            |
|---|------------|
| Chemical Weapon Convention List Schedules I, II & III Chemicals | Not Listed |
| 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 |

**15.2 Chemical Safety Assessment**

This product contains substances for which Chemical Safety Assessments are still required.

**SECTION 16 Other information**

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**Full Text of H-Statements referred to in Section 3**

|      |  |
|------|--|
| H302 | Harmful if swallowed                           |
| H315 | Causes skin irritation                         |
| H318 | Causes serious eye irritation                  |
| H332 | Harmful if inhaled                             |
| H412 | Harmful to aquatic life with long last effects |

**Full text of abbreviated R Phrases referred to in Section 3**

|     |                       |
|-----|-----------------------|
| R20 | Harmful by inhalation |
|-----|-----------------------|

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|        |  |
|--------|--|
| R22    | Harmful if swallowed   |
| R36    | Irritating to eye  |
| R38    | Irritating to skin   |
| R41    | Risk of serious damage to eyes   |
| R52/53 | Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment |

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Date of previous issue: 16/03/2018

### Notice to reader

*This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is given in good faith, being based on the latest information available to JSP Ltd and is to the best of JSP Ltd's knowledge and belief, accurate and reliable at the time of preparation. However, no representation, warranty or guarantee is made as to the accuracy, liability or completeness and JSP Ltd assumes no responsibility therefore, and disclaims any liability for any loss, damage or injury howsoever arising (including in respect of any claim brought by any third party) incurred using this information. The product is supplied on the condition that the user accepts responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use*

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According to Regulation EC No.1907/2006 Annex 2

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#### 1.1 Product Identifier

|                     |                                     |
|---------------------|-------------------------------------|
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| Product Code        | RNAZ-000-300                        |
| Product Description | 0.169% Denatonium benzoate solution |
| Product Type        | Mixture                             |

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

Only to be used as part of a qualitative face fit of respiratory protective equipment. No other uses.

#### 1.3 Details of the supplier

|                |  |
|----------------|--|
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| Telephone:     | +44 1993 826051  |
| Email Address: | technical.support@jsp.co.uk  |

#### 1.4 Emergency Telephone Number

Emergency Phone # +44 1993 826051

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#### 2.3 Other Hazards

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## SECTION 3 Composition/information on ingredients

### 3.1 Substances

### 3.2 Mixtures

| Substance           | Identifiers                    | %       | Classification:  |   | Type |
|---------------------|--------------------------------|---------|--|---|------|
|                     |                                |         | Regulation EC No. 1272/2008  | 67/548/EEC  |      |
| Denatonium benzoate | CAS: 3734-33-6<br>EC:223-095-2 | ≤ 0.169 | Acute Tox. 4, H302<br>Acute Tox. 4, H332<br>Skin Irrit. 2, H315<br>Eye Dam. 1, H318<br>Aquatic Chronic 3, H412<br><br>See Section 16 for the full text of the H-statements declared above. | Xn; R20/22<br>Xi; R41, R38<br>R52/53<br><br>See Section 16 for the full text of the R-phrases declared above. | [1]  |

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, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type:

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII

[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

[5] Substance of equivalent concern

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

## SECTION 4 First Aid Measures

### 4.1 Description of First Aid Measures

Eye contact

If irritation of the eyes is experienced, 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.

Inhalation

If irritation of the respiratory tract is experienced, 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 necessary, call a poison centre or physician. 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.

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|                            |   |
|----------------------------|---|
| Skin contact               | 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.   |
| Ingestion                  | Wash out mouth with water. Remove dentures if any. 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. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. 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. |
| Protection of first-aiders | No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.  |

#### 4.2 Most Important symptoms and effects, both acute and delayed

The hazardous substances in this mixture are in concentrations below the cut-off values specified in Article 11 of Regulation (EC) No. 1272/2008 and therefore this mixture is classified as non-hazardous under Regulation (EC) No. 1272/2008. The potential health effects outlined below reference those of the substances in this mixture.

##### Potential acute health effects

|              |   |
|--------------|---|
| Eye contact  | May causes serious eye irritation   |
| Inhalation   | May be harmful if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. |
| Skin contact | No known significant effects or critical hazards.   |
| Ingestion    | May be irritating to mouth, throat and stomach  |

##### Over-exposure signs/symptoms

|              |   |
|--------------|---|
| Eye contact  | Adverse side effects may include pain or irritation, watering and redness |
| Inhalation   | No specific data  |
| Skin contact | No specific data  |
| Ingestion    | No specific data  |

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

|                     |                        |
|---------------------|------------------------|
| Notes to physician  | No specific notes      |
| Specific treatments | No specific treatment. |

## SECTION 5 Firefighting measures

### 5.1 Extinguishing Media

|                              |  |
|------------------------------|--|
| Suitable Extinguishing Media | Under foreseeable circumstances this mixture is not considered flammable |
|------------------------------|--|

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Unsuitable Extinguishing Media For fires in the immediate vicinity of the mixture please ensure the extinguishing medium is appropriate

## 5.2 Special hazard arising from the substance or mixture

Suitable Extinguishing Media Under foreseeable circumstances this mixture is not considered flammable

## 5.3 Advice for firefighters

Wear suitable personal protective equipment for fighting fires as necessary

## SECTION 6 Accidental release measures

---

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

For non-emergency personnel 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. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders 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".

### 6.2 Environmental precautions

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).

### 6.3 Methods and materials for containment and cleaning up

Large spill Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

### 6.4 Reference to other sections

See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7 Handling and storage

---

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

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## 7.1 Precautions for safe handling

Protective measures 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 respiratory protection when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene 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 following use of the product. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

## 7.2 Conditions for safe storage, including any incompatibilities

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.

## 7.3 Specific end use(s)

Recommendations Only suitable for the sensitivity test as part of Qualitative fit testing as outlined in UK HSE document OC282/28

Industrial sector Qualitative fit testing  
specific solutions

## SECTION 8 Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 8.1 Control Parameters

Occupational Exposure limits  
No exposure limit known

In house exposure limit: 0.1mg/m<sup>3</sup>

Recommended monitoring procedures If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents)

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Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs No DNELs/DMELs available.

PNECs No PNECs available

## 8.2 Exposure Controls

---

Appropriate engineering controls Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protective 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: chemical splash goggles.

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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

*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

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Environmental exposure

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection

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controls

legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## SECTION 9 Physical and chemical properties

---

### 9.1 Information on basic physical and chemical properties

|  |                                       |
|--|---------------------------------------|
| Physical State                             | Liquid                                |
| Colour                                     | Colourless                            |
| Odour                                      | Alcohol-like                          |
| Odour threshold                            | Not available                         |
| pH   | Not available                         |
| Melting point/freezing point               | Not available                         |
| Initial boiling point and boiling range    | Not available                         |
| Flash point                                | Not available                         |
| Evaporation rate                           | Not available                         |
| Flammability                               | Not available                         |
| Upper/lower flammability /explosive limits | Not available                         |
| Vapour pressure                            | Not available                         |
| Vapour density                             | Not available                         |
| Relative density                           | Not available                         |
| Solubility(ies)                            | Readily soluble in hot and cold water |
| Partition coefficient: n-octanol/water     | Not available                         |
| Auto-ignition temperature                  | Not available                         |
| Decomposition temperature                  | Not available                         |
| Viscosity                                  | Not available                         |
| Explosive properties                       | Not available                         |
| Oxidising properties                       | Not available                         |

### 9.2 Other information

No additional information

## SECTION 10 Stability and reactivity

---

### 10.1 Reactivity

No specific test data related to reactivity available for this product

### 10.2 Chemical Stability

This mixture is considered chemically stable under foreseeable use and recommended storage conditions

### 10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

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#### 10.4 Conditions to Avoid

No specific data

#### 10.5 Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced

### SECTION 11 Toxicological information

#### 11.1 Information on toxicological effects

##### Acute toxicity

| Product/Ingredient Name                    | Exposure Route  | Species | Exposure Time | Dose                 |
|--|-----------------|---------|---------------|----------------------|
| 2.5% Denatonium benzoate solution in water | LC50 Inhalation | Rat     | 4 hours       | 2.31mg/L             |
| Denatonium benzoate                        | LC50 Inhalation | Rat     | 4 hours       | 200mg/m <sup>3</sup> |
|  | LD50 Dermal     | Rat     | -             | >2000 mg/kg          |
|  | LD50 Oral       | Rat     | -             | 584 mg/kg            |

##### Skin corrosion/irritation

| Substance           | Exposure Route | Species | Score | Exposure | Result   |
|---------------------|----------------|---------|-------|----------|----------|
| Denatonium benzoate | Skin           | Rabbit  | -     | -        | Irritant |

##### Serious eye damage/irritation

| Substance           | Exposure Route | Species | Score | Exposure | Result            |
|---------------------|----------------|---------|-------|----------|-------------------|
| Denatonium benzoate | Eyes           | Rabbit  | -     | -        | Moderate Irritant |

##### Respiratory or skin sensitisation

| Substance           | Exposure Route | Species    | Score | Exposure | Result          |
|---------------------|----------------|------------|-------|----------|-----------------|
| Denatonium benzoate | Skin           | Guinea Pig | -     | -        | Not sensitizing |

##### Germ cell mutagenicity

| Substance           | Exposure Route | Species   | Result   |
|---------------------|----------------|-----------|----------|
| Denatonium benzoate | In vitro       | Mammalian | Negative |

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### **Carcinogenicity**

No data available

### **Reproductive toxicity**

No data available

### **Specific target organ toxicity – single exposure**

No data available

### **Specific target organ toxicity – single exposure**

No data available

### **Aspiration**

No data available

### **Additional Information**

## **SECTION 12 Ecological Information**

### **12.1 Toxicity**

| Substance           | Species                 | Exposure Time | Result         |
|---------------------|-------------------------|---------------|----------------|
| denatonium benzoate | Daphnia - daphnia magna | 48 hours      | EC50 13mg/L    |
|                     | Fish                    | 96 hours      | LC50 >1000mg/L |

### **12.2 Persistence and degradability**

#### **Biodegradability**

| Substance           | Exposure time | Result |
|---------------------|---------------|--------|
| denatonium benzoate | 30 days       | 10%    |

### **12.3 Bioaccumulative potential**

| Substance           | LogP <sub>ow</sub> | Potential |
|---------------------|--------------------|-----------|
| denatonium benzoate | 0.9                | low       |

### **12.4 Mobility in soil**

No data available

### **12.5 Results of PBT and vPvB assessment**

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This mixture or the substances that it is composed of are not considered to be persistent, bioaccumulative and toxic, or very persistent and bioaccumulative at levels of 0.1% or higher as defined under Annex XIII of EC Regulation No. 1906:2006

## 12.6 Other adverse effects

No data available

## SECTION 13 Disposal Considerations

---

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 13.1 Waste Treatment Methods

**Product** 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.

**Packaging** The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

## SECTION 14 Transport Information

---

### 14.1 UN number

|         |               |
|---------|---------------|
| ADR/RID | Not Regulated |
| ADN     | Not Regulated |
| IMDG    | Not Regulated |
| ICAO    | Not Regulated |

### 14.2 UN proper shipping name

|         |                |
|---------|----------------|
| ADR/RID | Not Applicable |
| ADN     | Not Applicable |
| IMDG    | Not Applicable |
| ICAO    | Not Applicable |

### 14.3 Transport hazard classes

|         |                |
|---------|----------------|
| ADR/RID | Not Applicable |
| ADN     | Not Applicable |
| IMDG    | Not Applicable |
| ICAO    | Not Applicable |

### 14.4 Packaging group

|         |                |
|---------|----------------|
| ADR/RID | Not Applicable |
| ADN     | Not Applicable |
| IMDG    | Not Applicable |

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ICAO Not Applicable

**14.5 Environmental hazards**

|         |                          |
|---------|--------------------------|
| ADR/RID | Not considered hazardous |
| ADN     | Not considered hazardous |
| IMDG    | Not considered hazardous |
| ICAO    | Not considered hazardous |

**14.6 Special precaution 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

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not Applicable

**SECTION 15 Regulatory information**

---

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

**Regulation EC No.1907/2006 on the registration evaluation authorisation and restriction of chemicals REACH:**

|  |   |
|--|---|
| Annex XIV  | None of the substances in this mixture are listed |
| Annex XVII   | None of the substances in this mixture are listed |
| Candidate List of Substance of Very High concern for eventual inclusion into Annex XIV | None of the substances in this mixture are listed |

**International regulations:**

|   |            |
|---|------------|
| Chemical Weapon Convention List Schedules I, II & III Chemicals | Not Listed |
| 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 |

**15.2 Chemical Safety Assessment**

This product contains substances for which Chemical Safety Assessments are still required.

**SECTION 16 Other information**

---

**Full Text of H-Statements referred to in Section 3**

|      |  |
|------|--|
| H302 | Harmful if swallowed                           |
| H315 | Causes skin irritation                         |
| H318 | Causes serious eye irritation                  |
| H332 | Harmful if inhaled                             |
| H412 | Harmful to aquatic life with long last effects |

**Full text of abbreviated R Phrases referred to in Section 3**

|     |                       |
|-----|-----------------------|
| R20 | Harmful by inhalation |
|-----|-----------------------|

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|        |  |
|--------|--|
| R22    | Harmful if swallowed   |
| R36    | Irritating to eye  |
| R38    | Irritating to skin   |
| R41    | Risk of serious damage to eyes   |
| R52/53 | Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment |

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