

MALVERN

VALIDATION INITIATIVE

Malvern Zeta potential transfer standard
DTS1235 (10 syringes)

MRK1753-01
12-2011



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Introduction

This transfer standard is used to verify the correct operation of any Malvern system that measures zeta potential in a capillary cell. The samples are supplied in 10 mL syringes ready to use.

Validation

Each batch of transfer standard is tested on a 'Reference system' kept especially for this purpose. This system is checked against the only standard available, NIST1980. This is a positively charged goethite material.

The Malvern sample is therefore classified as a 'Transfer standard'. That is, it is not a standard, but has been referenced to an accepted standard.

The system of transfer standards is often used to reduce the cost of using standards, or to use a material that is more closely related to the sample of interest. In this case the accepted standard, NIST 1980 is not ideal as it is a goethite with a positive zeta potential. This means that it will adhere to components in the system, such as the quartz capillary cell, which has a negative zeta potential, and therefore will require regular cleaning.

The Malvern transfer standard has a negative zeta potential and is easy to flush from the system.

Using the transfer standard

Before use, please check that the sample has not been subjected to an excessively high temperature by observing the temperature indicator on the lid of the box. If more than two circles are filled black, discard the sample package. If this is the case, when the samples are received please contact your supplier.

Also check that the sample is within the 'use by' date printed on the syringe.

On a Zetasizer Nano running version 6.3 (or later) software, run the:

"Installation Test_0235_v105.zmac" macro as described in the Self installation guide supplied with the instrument, or run the SOP:

"Zeta potential test sample v2"

On Zetasizer Nano running software version 5.0 - 6.31 software, run the SOP:

"Installation Test_0235_v105.zmac", which can

be provided by a Malvern representative.

On a Zetasizer Nano running software earlier than version 5.0 (use Help-About to check the version):

- To measure size, use the sample in a cuvette suitable for size measurement as described in the User Manual.
- To measure zeta potential, use the sample in a folded capillary cell as described in the User Manual.

On other systems (Zetasizer 1000 to 5000 series) inject the transfer standard sample directly into the system.

If the cell is clean and filled with demineralised water, using a careful slow injection procedure it is possible to get two measurements on the Zetasizer 5000 and three or four measurements on the Zetasizer 2000 or Zetasizer 3000 with each syringe. Any remaining sample in the syringe should be discarded at the end of each day.

Storage

The sample should be stored between 4°C and 10°C in a refrigerator. The sample should not be frozen.

If the storage temperature at any time has exceeded 49°C, the 'telltale' indicator on the box will show three or four black circles. In this case the zeta potential of the samples cannot be relied upon and they should be discarded.

Diagnosis of the result

On a Zetasizer Nano running version 5.0 (or later) software, the Test installation macro reports a simple pass/fail for size and/or zeta potential.

On other systems:

The zeta potential of all results should be -42 ± 4.2 mV. The conductivity should be within the range 0.23 to 0.40 mS/cm.

If this is not the case the system needs some attention. Please refer to the Maintenance section of the user manuals for cleaning or alignment instructions appropriate to the system being used.

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifiers**

Product Name: DTS1235 Zeta Potential Transfer Standard
Part Number: DTS1235
REACH No.: A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration.

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

Identified uses: Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Company: Malvern Instruments Ltd.
Enigma Business Park
Malvern
Worcestershire, UK.
WR14 1XZ

Telephone: +44 (0) 1684 892456
Fax: +44 (0) 1684 892789
E-mail Address: helpdesk@malvern.com

1.4 Emergency telephone number

For local contact in your country please follow this link.

<http://www.malvern.com/en/about-us/contact-us/>

In addition +44 (0) 1684 891800 (Hours 07:30-18:30, GMT/UCT time zone).

In the unlikely event of a medical situation you should get medical assistance first in your country and use this MSDS where requested.

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture**

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.

2.2 Label elements**Labelling according Regulation (EC) No 1272/2008**

Pictogram none
Signal word none
Hazard statement(s) none
Precautionary statement(s) none
Supplemental Hazard
Statements none
Safety data sheet available on request.

2.3 Other hazards - none

SECTION 3: Composition/information on ingredients**3.2 Mixtures**

Synonyms: DTS1035 Zeta Potential Transfer Standard

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component	Classification	Concentration
Disodium tetraborate Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)		
CAS-No. 1330-43-4 EC-No. 215-540-4 Index-No. 005-011-00-4 Registration number 01-2119490790-32-XXXX	Repr. 1B; H360FD	≤ 0.1 %

Hazardous ingredients according to Directive 1999/45/EC

Component	Classification	Concentration
Disodium tetraborate Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)		
CAS-No. 1330-43-4 EC-No. 215-540-4 Index-No. 005-011-00-4 Registration number 01-2119490790-32-XXXX	T, Repr.Cat.2, R60 - R61	≤ 0.1 %

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures**4.1 Description of first aid measures****General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

no data available

SECTION 5: Firefighting measures**5.1 Extinguishing media****Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Nature of decomposition products not known.

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

no data available

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

Evacuate personnel to safe areas.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage**7.1 Precautions for safe handling**

Avoid exposure - obtain special instructions before use. Avoid inhalation of vapour or mist.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)

A part from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection**8.1 Control parameters****Components with workplace control parameters**

Component	CAS-No.	Value	Control parameters	Basis
Disodium tetraborate	1330-43-4	TWA	1 mg/m ³	UK. EH40 WEL - Workplace Exposure Limits
	Remarks	The substance is present in solution at less than 0.1% w/v concentration and is not expected to form dusts or aerosols in normal usage		

8.2 Exposure controls**Appropriate engineering controls**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment**Eye/face protection**

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection

Impervious clothing, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties**

a) Appearance Form:	liquid
b) Odour:	no data available
c) Odour Threshold	no data available
d) pH	9.2
e) Melting point/freezing point	0°C
f) Initial boiling point and boiling range	100°C
g) Flash point	no data available
h) Evaporation rate	no data available
i) Flammability (solid, gas)	not flammable
j) Upper/lower flammability or explosive limits	no data available
k) Vapour pressure	no data available
l) Vapour density	no data available
m) Relative density	1.000 g/cm ³
n) Water solubility	soluble/miscible
o) Partition coefficient: n-octanol/water	no data available
p) Auto-ignition temperature	no data available
q) Decomposition temperature	no data available
r) Viscosity	no data available
s) Explosive properties	no data available
t) Oxidizing properties	no data available

9.2 Other safety information

no data available

SECTION 10: Stability and reactivity**10.1 Reactivity**

no data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

no data available

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Sodium, Potassium, Acid anhydrides

10.6 Hazardous decomposition products

Other decomposition products - no data available

In the event of fire: see section 5

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity**

no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitisation

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

IARC:

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure

no data available

Specific target organ toxicity - repeated exposure

no data available

Aspiration hazard

no data available

Additional Information

RTECS:

Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information**12.1 Toxicity**

no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

no data available

SECTION 13: Disposal considerations**13.1 Waste treatment methods****Product**

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

- 14.1 UN number**
ADR/RID: - IMDG: - IATA: -
- 14.2 UN proper shipping name**
ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods
- 14.3 Transport hazard class(es)**
ADR/RID: - IMDG: - IATA: -
- 14.4 Packaging group**
ADR/RID: - IMDG: - IATA: -
- 14.5 Environmental hazards**
ADR/RID: no IMDG Marine pollutant: no IATA: no
- 14.6 Special precautions for user** no data available

SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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

Authorisations and/or restrictions on use

Disodium tetraborate CAS-No.: 1330-43-4
Candidate List of Substances of Very High Concern for Authorisation
Toxic for reproduction (article 57c)
ED/30/2010

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H360FD May damage fertility. May damage the unborn child.
Repr. Reproductive toxicity

Full text of R-phrases referred to under sections 2 and 3

T Toxic
R60 May impair fertility.
R61 May cause harm to the unborn child.
Repr.Cat.2 Toxic to Reproduction Category 2

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Malvern Instruments and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.