1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product Name	PC-10
Chemical Name	Mixture
CAS No.	Mixture
EINECS No.	Mixture
REACH Registration No.	None assigned.

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

Identified Use(s)	Photostress® measurements.
Uses Advised Against	None known.

1.3 Details of the supplier of the safety data sheet

Company Identification	VISHAY MEASUREMENTS GROUP UK LTD Stroudley Road Basingstoke Hampshire United Kingdom RG24 8FW
Telephone	+44 (0) 1256 462131
Fax	+44 (0) 1256 471441
E-Mail (competent person)	mm.uk@vishaypg.com

1.4 Emergency telephone number

(00-1) 703-527-3887
CHEMTREC

2. SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation (EC) No. 1272/2008 (CLP)

Acute Tox. 4; H302
Skin Irrit. 2; H315
Skin Sens. 1; H317
Eye Irrit. 2; H319
Muta. 2; H341
Carc. 2; H351
STOT SE 2; H371
Aquatic Chronic 2; H411

2.2 Label elements

Regulation (EC) No. 1272/2008 (CLP)

Product Name: PC-10

Hazard Pictogram(s):

Signal Word(s): Warning

Contains: Resorcinol Diglycidyl Ether, Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700), P-Tert-butylphenyl 1-(2,3-epoxy)propyl ether and Resorcinol.

Hazard Statement(s):

H302: Harmful if swallowed.
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H341: Suspected of causing genetic defects.

H351: Suspected of causing cancer.
H371: May cause damage to organs.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statement(s)

P201: Obtain special instructions before use.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352: IF ON SKIN: Wash with plenty of water.
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309+P311: IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

Additional Information None.

2.3 Other hazards None.

3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances Not applicable

3.2 Mixtures

Regulation (EC) No. 1272/2008 (CLP)

Chemical identity of the substance	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard Statement(s)
Resorcinol Diglycidyl Ether	34 - 40	101-90-6	202-987-5	None assigned.	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Muta. 2; H341 Carc. 2; H351 Aquatic Chronic 3; H412
Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)	< 100	25068-38-6	500-033-5	None assigned.	Skin Irrit. 2; H315 (SCL: ≥ 5%) Skin Sens. 1; H317 Eye Irrit. 2; H319 (SCL: ≥ 5%) Aquatic Chronic 2; H411
Aluminium powder (stabilised)	15 - 20	7429-90-5	231-072-3	None assigned.	Flam. Sol. 1; H228 Water-react. 2; H261
Tert-butylphenyl 1-(2,3-epoxy)propyl ether	0.4 – 3.8	3101-60-8	221-453-2	None assigned.	Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Aquatic Chronic 2; H411
Linseed oil, epoxidised	1 - 2	8016-11-3	232-401-3	None assigned.	Not classified
Resorcinol	1 - 2	108-46-3	203-585-2	None assigned.	Acute Tox. 4; H302 Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 STOT SE 1; H370 Aquatic Acute 1; H400
Stearic acid	< 1	57-11-4	200-313-4	None assigned.	Not classified
Silicon	< 0.5	7440-21-3	231-130-8	None assigned.	Not classified
Iron	< 0.5	7439-89-6	231-096-4	None assigned.	Not classified

H228: Flammable solid. H261: In contact with water releases flammable gases. H302: Harmful if swallowed. H312: Harmful in contact with skin. H315: Causes skin irritation. H317: May cause an allergic skin reaction. H319: Causes serious eye irritation. H341: Suspected of causing genetic defects. H351: Suspected of causing cancer. H370: Causes damage to organs. H400: Very toxic to aquatic life. H411: Toxic to aquatic life with long

lasting effects. H412: Harmful to aquatic life with long lasting effects. SCL: Specific Concentration Limit.

4. SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Self-protection of the first aider	Do not breathe vapour. Wear suitable protective clothing. Wear suitable respiratory protective equipment if exposure to high levels of material are likely. Do not use mouth-to-mouth resuscitation.
Inhalation	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Apply artificial respiration if breathing has ceased or shows signs of failing. IF exposed or concerned: Get medical advice/attention.
Skin Contact	IF ON SKIN: Remove contaminated clothing and wash all affected areas with plenty of water. Contaminated clothing should be thoroughly cleaned. If skin irritation or rash occurs: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.
Eye Contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if eye irritation develops or persists.
Ingestion	IF SWALLOWED: Rinse mouth. Do not induce vomiting. Do not give anything by mouth to an unconscious person. Call a POISON CENTER/doctor if you feel unwell. IF exposed or concerned: Get medical advice/attention.

4.2 Most important symptoms and effects, both acute and delayed

Harmful if swallowed. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Suspected of causing genetic defects. Suspected of causing cancer. May cause damage to organs.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing media	As appropriate for surrounding fire. Extinguish with dry sand or special powder for metal fire.
Unsuitable extinguishing media	Do not use water jet. Direct water jet may spread the fire.

5.2 Special hazards arising from the substance or mixture

May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide, phenolics, Aluminium oxides and Aldehydes. Sealed containers may rupture explosively if hot. Dense smoke is emitted when burned without sufficient oxygen.

5.3 Advice for fire-fighters

Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Eliminate all ignition sources if safe to do so. Stop leak if safe to do so. Use personal protective equipment as required. See Section: 8. Do not breathe vapour.

6.2 Environmental precautions

Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.

6.3 Methods and material for containment and cleaning up

Ensure suitable personal protection during removal of spillages. Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a container for disposal. Ventilate the area and wash spill site after material pick-up is complete. This material and its container must be disposed of as

hazardous waste.

6.4 Reference to other sections — See Section: 8, 13

7. SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling — Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin, eyes or clothing. Do not breathe vapour. Ensure adequate ventilation. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities — Store in a well-ventilated place. Keep container tightly closed. Keep away from heat, sources of ignition and direct sunlight. Protect from moisture.

Storage temperature — Ambient.

Storage life — Stable under normal conditions.

Incompatible materials — Keep away from: Acids, strong bases, Oxidizing agents, mercaptans and unintended contact with amines. The following may occur: Hazardous Polymerization.

7.3 Specific end use(s) — Photostress® measurements.

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Aluminium	7429-90-5	-	10 (1) 4 (2)	-	-	WEL
Resorcinol	108-46-3	10	46	20	92	WEL
Silicon	7440-21-3	-	10 (3) 4 (4)	-	-	WEL

Note: WEL: Workplace Exposure Limit (UK HSE EH40).

1) Inhalable dust
2) Respirable dust
3) Inhalable aerosol
4) Respirable aerosol

8.1.2 Biological limit value — Not established.

8.1.3 PNECs and DNELs — Not established.

8.2 Exposure controls

8.2.1 Appropriate engineering controls — Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Have available eyewash bottle with clean water.

8.2.2 Individual protection measures, such as personal protective equipment (PPE) — General hygiene measures for the handling of chemicals are applicable. Avoid contact with skin, eyes or clothing. Do not breathe vapour. Wash hands before breaks and after work. Keep work clothes separately. Contaminated clothing should be thoroughly cleaned. Contaminated leather articles should be discarded (e.g. shoes). Do not eat, drink or smoke at the work place.

Eye/ face protection — Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection (EN166).

Skin protection — Hand protection: Wear impervious gloves (EN374). Gloves should be changed

regularly to avoid permeation problems. The gloves type used must be chosen based on the work activity and duration as well as concentration/quantity of material being handled. Recommended: Neoprene.

Body protection: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. Open system(s): Wear suitable respiratory protective equipment.

Thermal hazards — Not applicable.

8.2.3 Environmental Exposure Controls — Avoid release to the environment.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Aluminium coloured liquid
Odour	Faint odour
Odour threshold	Not available.
pH	Not established.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	204°C
Flash point	110°C [Closed cup]
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable - Liquid.
Upper/lower flammability or explosive limits	Not applicable.
Vapour pressure	< 1 mm Hg
Vapour density	> 1 (Air = 1)
Relative density	1.51 (H2O = 1)
Solubility(ies)	Insoluble in water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not applicable.
Decomposition Temperature	Not available.
Viscosity	Not available.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

9.2 Other information — Volatile Organic Compound Content (%): 0

10. SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity — Stable under normal conditions.

10.2 Chemical stability — Stable under normal conditions.

10.3 Possibility of hazardous reactions — Keep away from: Acids, strong bases, Amines and mercaptans. The following may occur: Hazardous Polymerization. Contact with aliphatic amines will cause irreversible polymerization with considerable heat build-up.

10.4 Conditions to avoid — Keep away from heat, sources of ignition and direct sunlight.

10.5 Incompatible materials — Keep away from: Acids, strong bases, Amines and mercaptans.

10.6 Hazardous decomposition product(s) — May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide, phenolics, Aluminium oxides and Aldehydes.

11. SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects (Substances in preparations / mixtures)

Acute toxicity

Ingestion — Acute Tox. 4: Harmful if swallowed.

		Acute Toxicity Estimate Mixture Calculation: Estimated LC50 1244 mg/kg bw/day.
	Inhalation	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 20.0 mg/l.
	Skin Contact	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
	Skin corrosion/irritation	Skin Irrit. 2: Causes skin irritation.
	Serious eye damage/irritation	Eye Irrit. 2: Causes serious eye irritation.
	Respiratory or skin sensitization	Skin Sens. 1: May cause an allergic skin reaction.
	Germ cell mutagenicity	Muta. 2: Suspected of causing genetic defects.
	Carcinogenicity	Carc. 2: Suspected of causing cancer.
	Reproductive toxicity	Based upon the available data, the classification criteria are not met.
	STOT - single exposure	STOT SE 2: May cause damage to organs.
	STOT - repeated exposure	Based upon the available data, the classification criteria are not met.
	Aspiration hazard	Based upon the available data, the classification criteria are not met.
11.2	**Other information**	None.

12. SECTION 12: ECOLOGICAL INFORMATION

12.1	**Toxicity**	Aquatic Chronic 2: Toxic to aquatic life with long lasting effects. Estimated Mixture LC50 > 1 ≤ 10 mg/l (Fish)
12.2	**Persistence and degradability**	Part of the components are poorly biodegradable.
12.3	**Bioaccumulative potential**	The product has low potential for bioaccumulation.
12.4	**Mobility in soil**	The product is predicted to have low mobility in soil. (Insoluble in water.)
12.5	**Results of PBT and vPvB assessment**	Not classified as PBT or vPvB.
12.6	**Other adverse effects**	None known.

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1	**Waste treatment methods**	Dispose of this material and its container as hazardous waste (2008/98/EEC). Containers of this material may be hazardous when empty since they retain product residue.
13.2	**Additional Information**	Dispose of contents in accordance with local, state or national legislation.

14. SECTION 14: TRANSPORT INFORMATION

		ADR/RID / IMDG / IATA
14.1	**UN number**	UN 3082
14.2	**UN proper shipping name**	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) and Tert-butylphenyl 1-(2,3-epoxy)propyl ether)
14.3	**Transport hazard class(es)**	9
14.4	**Packing group**	III
14.5	**Environmental hazards**	Classified as a Marine Pollutant./ Environmentally hazardous substance
14.6	**Special precautions for user**	See Section: 2
14.7	**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**	Not applicable.
14.8	**Additional Information**	None.

15. SECTION 15: REGULATORY INFORMATION

15.1	**Safety, health and environmental regulations/legislation specific for the substance or mixture**	
15.1.1	**EU regulations**	
	Authorisations and/or Restrictions On Use	None

	Substance(s) of Very High Concern (SVHCs)	None
15.1.2	**National regulations**	
	Wassergefährdungsklasse (Germany)	Water hazard class: 2
15.2	**Chemical Safety Assessment**	Not available.

16. SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1-16.

References: Existing Safety Data Sheet (SDS), Harmonised Classification(s) for Resorcinol diglycidyl ether (CAS# 101-90-6), Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) (CAS# 25068-38-6), Aluminium powder (stabilized) (CAS# 7429-90-5) and Resorcinol (CAS# 108-46-3). Existing ECHA registration(s) for Reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) (CAS# 25068-38-6), Tert-butylphenyl 1-(2,3-epoxy)propyl ether (CAS# 3101-60-8), Aluminium powder (stabilised) (CAS# 7429-90-5), Linseed oil, Epoxidized (CAS# 8016-11-3), Resorcinol (CAS# 108-46-3), Stearic acid (CAS# 57-11-4), Silicon (CAS# 7440-21-3) and Iron (CAS# 7439-89-6).

Classification of the substance or mixture According to Regulation (EC) No. 1272/2008 (CLP)	**Classification Procedure**
Acute Tox. 4; H302	Acute Toxicity Estimate Mixture Calculation
Skin Irrit. 2; H315	Threshold Calculation
Skin Sens. 1; H317	Threshold Calculation
Eye Irrit. 2; H19	Threshold Calculation
Muta. 2; H341	Threshold Calculation
Carc. 2; H351	Threshold Calculation
STOT SE 2; H371	Threshold Calculation
Aquatic Chronic 2; H411	Summation Calculation

LEGEND

LTEL	Long Term Exposure Limit
STEL	Short Term Exposure Limit
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
PBT	PBT: Persistent, Bioaccumulative and Toxic
vPvB	very Persistent and very Bioaccumulative

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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Annex to the extended Safety Data Sheet (eSDS)

No information available.