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

1.1 Product identifier

Product Name	PC-12/PC-12C
Chemical Name	Reaction Product of Castor Oil with Toluene Diisocyanate
CAS No.	67700-43-0
EINECS No.	500-169-5
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, INC. Post Office Box 27777 Raleigh, NC 27611 USA
Telephone	919-365-3800
Fax	919-365-3945
E-Mail (competent person)	mm.us@vishaypg.com

1.4 Emergency telephone number

1-800-424-9300
CHEMTREC

2. SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 GHS Classification

Skin Sens. 1; H317
Acute Tox. 2; H330
Resp. Sens. 1; H334
Carc. 2; H351

2.2 Label elements

GHS Classification

Product Name: PC-12/PC-12C

Hazard Pictogram(s)

Signal Word(s): Danger

Additional Information: Reaction Product of Castor Oil with Toluene Diisocyanate (CAS No. 67700-43-0)

Hazard Statement(s):
H317: May cause an allergic skin reaction.
H330: Fatal if inhaled.
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H351: Suspected of causing cancer.

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.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310: Immediately call a POISON CENTER/doctor.

2.3 Other hazards None

3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

GHS Classification

Chemical identity of the substance	CAS No.	EC No.	REACH Registration No.
Reaction Product of Castor Oil with Toluene Diisocyanate **	67700-43-0	500-169-5	None assigned

** Contains: m-tolylidene diisocyanate (Mixture of Toluene 2,4-Diisocyanate and Toluene 2,6-Diisocyanate)

Chemical identity of the substance	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard Statement(s)
m-Tolylidene diisocyanate (Mixture of Toluene 2, 4-diisocyanate and Toluene-2, 6-diisocyanate)	< 10	26471-62-5	247-722-4	None assigned	Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Acute Tox. 2; H330 Resp. Sens. 1; H334 STOT SE 3; H335 Carc. 2; H351 Aquatic Chronic 3; H412

H315: Causes skin irritation. H317: May cause an allergic skin reaction. H319: Causes serious eye irritation. H330: Fatal if inhaled. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335: May cause respiratory irritation. H351: Suspected of causing cancer. H412: Harmful to aquatic life with long lasting effects.

3.2 Mixtures Not applicable

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. Avoid all contact.

Inhalation: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Immediately call a POISON CENTER/doctor. If breathing is laboured, oxygen should be administered by qualified personnel.

Skin Contact: IF ON SKIN: Wash with plenty of water/ Polyethylene glycol. Take off contaminated clothing. Contaminated clothing should be thoroughly cleaned. If irritation (redness, rash, blistering) develops, get medical attention. IF exposed or concerned: Call a POISON CENTER/doctor.

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

Ingestion: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. If ingested, drink milk or egg white, gastric irrigate, call a physician. IF exposed or concerned: Call a POISON CENTER/doctor.

4.2 Most important symptoms and effects, both acute and delayed May cause an allergic skin reaction. Fatal if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Suspected of causing cancer.

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

IF INHALED: Immediately call a POISON CENTER/doctor. The effect of

inhalation may be delayed. Administer corticosteroid dose aerosol to prevent pulmonary edema. Do not use mouth-to-mouth resuscitation.

5. SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing media	As appropriate for surrounding fire. Extinguish preferably with waterspray or dry chemical.
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. Oxides of carbon, Oxides of nitrogen and Hydrogen cyanide. Thermal breakdown of this product during fire or very high heat conditions may evolve the following decomposition products: Amines and Isocyanates. Generation of gas during decomposition can cause pressure in closed systems. Containers may explode when involved in a fire.

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. Keep upwind. Do not breathe vapour. Avoid all contact. Stop leak if safe to do so. Eliminate all ignition sources if safe to do so. Wear suitable respiratory equipment. Use personal protective equipment as required. See Section: 8.

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 full personal protection (including respiratory protection) during removal of spillages. Adsorb spillages onto sand, earth or any suitable adsorbent material. Neutralize with: aqueous solution (90 – 95 %), Ammonia (5 – 10 %) and Detergent liquids (0.2 – 2 %) or aqueous solution (90 – 95 %), sodium carbonate (5 – 10 %) and Detergent liquids (0.2 – 2 %). Transfer to a container for disposal. The components should be allowed to mix before disposal. Decomposition products may include carbon dioxide. CAUTION: BEWARE OF UNRELEASED PRESSURE. Dispose of this material and its container as hazardous waste. Ventilate the area and wash spill site after material pick-up is complete.

6.4 Reference to other sections

See Section: 8, 13

7. SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Provide adequate ventilation. Avoid all contact. Do not breathe vapour. Wear suitable respiratory protective equipment. 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. Protect from moisture.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed, in a cool, well ventilated place. Keep away from heat and flame. Keep away from moisture. Store under inert gas (e.g nitrogen) to prevent ingress of moisture or air into the container. If a container is part emptied flush thoroughly with inert gas prior to resealing.

Storage temperature	Ambient.
Storage life	Stable under normal conditions.
Incompatible materials	Keep away from: Strong oxidising agents, Alcohols, Copper, copper alloy and Water.

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**	Not established.
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. Guarantee that the eye flushing systems and safety showers are located close to the working place.
8.2.2	**Individual protection measures, such as personal protective equipment (PPE)**	General hygiene measures for the handling of chemicals are applicable. Avoid all contact. Do not breathe vapour. Wash hands before breaks and after work. Keep work clothes separately. 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. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. Recommended: Butyl rubber. Body protection: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
	Respiratory protection 	Work in well ventilated zones or use proper respiratory protection. Open system(s): Wear suitable respiratory protection. A self contained breathing apparatus may be appropriate.
	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	Pale yellow liquid
Odour	Pungent
Odour threshold	Not available.
pH	Not established.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not established.
Flash point	93 ℃ [Closed cup]
Evaporation rate	<1 (BuAc = 1)
Flammability (solid, gas)	Not applicable - liquid.
Upper/lower flammability or explosive limits	Not applicable.
Vapour pressure	Not established.
Vapour density	Not available.
Relative density	1.073 (H_2O = 1)
Solubility(ies)	Reacts with - Water. Soluble in: Tetrahydrofuran (CAS No. 109-99-9) and Dimethylformamide (CAS No. 109-99-9).
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**	None

10. SECTION 10: STABILITY AND REACTIVITY

10.1	**Stability and reactivity**	Stable under normal conditions.
10.2	**Chemical stability**	Stable under normal conditions.
10.3	**Possibility of hazardous reactions**	Combustion or thermal decomposition will evolve toxic and irritant vapours.
10.4	**Conditions to avoid**	None known.
10.5	**Incompatible materials**	Keep away from: Strong oxidising agents, Alcohols, Copper, copper alloy and Water.
10.6	**Hazardous decomposition product(s)**	Decomposes in a fire giving off toxic fumes: Carbon monoxide, Carbon dioxide and Hydrogen cyanide. Thermal breakdown of this product during fire or very high heat conditions may evolve the following decomposition products: Amines and Isocyanates.

11. SECTION 11: TOXICOLOGICAL INFORMATION

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

Acute toxicity

Ingestion	Based upon the available data, the classification criteria are not met. m-Tolylidene diisocyanate (CAS No. 26471-62-5): LD50 (mouse) > 2000 mg/kg (National Toxicological Program, 1986, Equivalent/ similar to OECD 401).
Inhalation	Acute Tox. 2: Fatal if inhaled.
Skin Contact	Based upon the available data, the classification criteria are not met. m-Tolylidene diisocyanate (CAS No. 26471-62-5): LD50 (rabbit) > 2000 mg/kg (1964, Equivalent/ similar to: OECD 402).
Skin corrosion/irritation	Based upon the available data, the classification criteria are not met.
Serious eye damage/irritation	Based upon the available data, the classification criteria are not met.
Respiratory or skin sensitization	Skin Sens. 1: May cause an allergic skin reaction. m-Tolylidene diisocyanate (CAS No. 26471-62-5): Skin sensitization: Positive (mouse) (1995, Equivalent/ similar to: OECD 429). Resp. Sens. 1: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met.
Carcinogenicity	Carc. 2: Suspected of causing cancer.
Reproductive toxicity	Based upon the available data, the classification criteria are not met.
STOT - single exposure	Based upon the available data, the classification criteria are not met.
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

NTP Report on Carcinogens	m-Tolylidene diisocyanate (CAS# 26471-62-5): Group 2B – Possibly carcinogenic to humans.
IARC Monographs	m-Tolylidene diisocyanate (CAS# 26471-62-5): Reasonably anticipated to be a human carcinogen.

12. SECTION 12: ECOLOGICAL INFORMATION

12.1	**Toxicity**	Based upon the available data, the classification criteria are not met. Estimated Mixture LC50 > 100 mg/l (Fish)
12.2	**Persistence and degradability**	No data for the mixture as a whole.
12.3	**Bioaccumulative potential**	No data for the mixture as a whole.
12.4	**Mobility in soil**	No data for the mixture as a whole.
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**	Do not release undiluted and unneutralised to the sewer. This material and its

		container must be disposed of as hazardous waste. 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 2810
14.2	**UN proper shipping name**	TOXIC LIQUID, ORGANIC, N.O.S. (Reaction Product of Castor Oil with Toluene Diisocyanate)
14.3	**Transport hazard class(es)**	6.1
14.4	**Packing group**	II
14.5	**Environmental hazards**	Not 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**	
15.1.2	**National regulations**	
	OSHA Occupational Safety and Health Standards	None.
15.1.2	**European regulations**	
	Authorisations and/or Restrictions On Use	None
	Substance(s) of Very High Concern (SVHCs)	None
	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 m-Tolylidene diisocyanate (Mixture of Toluene 2, 4-diisocyanate and Toluene-2, 6-diisocyanate) (CAS# 26471-62-5), Existing ECHA registration(s) for m-Tolylidene diisocyanate (Mixture of Toluene 2, 4-diisocyanate and Toluene-2, 6-diisocyanate) (CAS# 26471-62-5); and the Classification and Labelling Inventory for Reaction Product of Castor Oil with Toluene Diisocyanate (CAS# 67700-43-0).

LEGEND

LTEL	Long Term Exposure Limit
STEL	Short Term Exposure Limit
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
PBT	Persistent, Bioaccumulative and Toxic
vPvB	very Persistent and very Bioaccumulative
OECD	Organisation for Economic Cooperation and Development
NTP	National Toxicology Program
IARC	International Agency for Research on Cancer

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.

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