

Material Safety Data Sheet

Dako REAL Substrate Solution

1. Identification of the material and supplier

Names

- Product name** : Dako REAL Substrate Solution
Part No. : K5003
ADG : Not regulated as Dangerous Goods according to the ADG Code

Supplier

- Supplier/Manufacturer** : Dako Australia Pty Ltd
 Suites 4 & 5, Level 4, 56 Berry Street
 NSW 2060 North Sydney
 Free Call: 1800 653 103
 www.Dako.com
 SDS@Dako.com

- Emergency telephone number** : CHEMTREC®: +(61)-290372994

Uses

- Area of application** : Industrial applications, Professional applications.
Material uses : Laboratory use
 Container type: Bottle
 K5003 // Dako REAL™ AEC/H2O2 Substrate Solution (CHROM) // Dako REAL™ Detection System, Peroxidase/AEC, Rabbit/Mouse // 2 x 100 mL
 Reference number: SDS306

2. Hazards identification

- Classification** : Carc. Cat. 2; R45
 Repr. Cat. 2; R61
 R52/53
- Risk phrases** : R45- May cause cancer.
 R61- May cause harm to the unborn child.
 R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- Safety phrases** : S53- Avoid exposure - obtain special instructions before use.
- Statement of hazardous/dangerous nature** : HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

3. Composition/information on ingredients

- Mixture** : Yes.

Ingredient name	CAS number	%
Polyethylene glycol	25322-68-3	<10
N,N-Dimethylformamide	68-12-2	<10
3-amino-9-ethyl carbazole	132-32-1	<10

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

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

4 . First-aid measures

- Inhalation** : Get medical attention immediately. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. 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. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Ingestion** : Get medical attention immediately. 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. 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.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
- 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. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Advice to doctor** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5 . Fire-fighting measures

Extinguishing media

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is harmful to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
In a fire or if heated, a pressure increase will occur and the container may burst.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

- Personal precautions** : 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. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- 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). Water polluting material.

6 . Accidental release measures

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

7 . Handling and storage

Handling : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. 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.

Storage : Store between the following temperatures: 2 to 8°C (35.6 to 46.4°F). 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.

8 . Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Exposure limits
Polyethylene glycol N,N-Dimethylformamide	TRGS900 AGW (Germany, 8/2010). PEAK: 8000 mg/m ³ 15 minutes. Form: inhalable fraction TWA: 1000 mg/m ³ 8 hours. Form: inhalable fraction Safe Work Australia (Australia, 1/2014). Absorbed through skin. TWA: 30 mg/m ³ 8 hours. TWA: 10 ppm 8 hours.

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

Exposure controls

Engineering measures : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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.

Eyes : 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 or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

8 . Exposure controls/personal protection

- Hands** : 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.
- Respiratory** : 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.
- Skin** : 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.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

- Physical state** : Liquid.
- Colour** : Brown.
- Odour** : Not available.
- Boiling point** : Not available.
- Melting point** : Not available.
- Vapour pressure** : Not available.
- Flash point** : Closed cup: Not applicable.
- Flammable limits** : Not available.
- Vapour density** : Not available.
- pH** : 5
- Auto-ignition temperature** : Not available.
- Solubility** : Soluble in the following materials: cold water and hot water.

10 . Stability and reactivity

- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : No specific data.
- Materials to avoid** : Not available.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

- Inhalation** : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Ingestion** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Eye contact** : No known significant effects or critical hazards.
- Acute toxicity**

11 . Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
N,N-Dimethylformamide	LC50 Inhalation Vapour	Rat	3421 ppm	1 hours
	LC50 Inhalation Vapour	Rat	1948 ppm	4 hours
3-amino-9-ethyl carbazole	LD50 Dermal	Rabbit	4720 mg/kg	-
	LD50 Oral	Rat	2000 mg/kg	-
	LD50 Oral	Rat	144 mg/kg	-

Conclusion/Summary : Not available.

Potential chronic health effects**Chronic toxicity**

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Polyethylene glycol	Eyes - Mild irritant	Rabbit	-	-	-
N,N-Dimethylformamide	Skin - Mild irritant	Rabbit	-	-	-
	Eyes - Severe irritant	Rabbit	-	100 Percent	-

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Product name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
N,N-Dimethylformamide	-	-	Repr. Cat. 2; R61	-
3-amino-9-ethyl carbazole	Carc. Cat. 2; R45	-	-	-

Chronic effects : No known significant effects or critical hazards.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : May cause birth defects.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations

Skin : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations

Eyes : No specific data.

Target organs : Contains material which may cause damage to the following organs: kidneys, liver, cardiovascular system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

12 . Ecological information

Ecotoxicity : This material is harmful to aquatic life with long lasting effects.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Polyethylene glycol N,N-Dimethylformamide	Acute LC50 >1000000 µg/l Fresh water	Fish - Salmo salar - Parr	96 hours
	Acute EC50 4500000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 >100000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
	Acute LC50 7100000 µg/l Fresh water	Fish - Lepomis macrochirus - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic NOEC 1500 mg/l Fresh water	Daphnia - Daphnia magna	21 days

Other ecological information

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
N,N-Dimethylformamide	-1.01	0.3 to 1.2	low

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

13 . Disposal considerations

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

14 . Transport information

Regulatory information

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

15 . Regulatory information

Standard Uniform Schedule of Medicine and Poisons

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Control of Scheduled Carcinogenic Substances

<u>Ingredient name</u>	<u>Schedule</u>
No listed substance	

Australia inventory (AICS) : Not determined.

16 . Other information

Date of issue : 15/06/2015

Date of previous issue : No previous validation.

✔ Indicates information that has changed from previously issued version.

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