

Safety Data Sheet

Doc ID: SDS-0011	Printing Date: December 15, 2021	Revision: C
Trade name	High Contrast DAB	Revision date: December 15, 2021

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

1.1 Product identifier

Trade name	High Contrast DAB
Article number	K055
Components	N-N-Dimethylformamide, 3,3'-Diaminobenzidine Tetrahydrochloride Hydrate, Imidazole, Tween-20
Registration number	This product is a mixture (see chapter 3). Registration number(s) is/are not available for this substance/these substances as the substance(s) or its/their use are exempted from registration according to Article 2 REACH Regulation (EC) No. 1907/2006, the annual tonnage does not require registration or the registration is envisaged for a later registration deadline.

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

Relevant identified uses
For <i>In Vitro</i> Diagnostics
Uses advises against:
No further relevant information available.

1.3 Details of the supplier of the safety data sheet

Diagnostic BioSystems, Inc. 6616 Owens Drive Pleasanton, CA 94588 www.dbiosys.com Customersupport@dbiosys.com

1.4 Emergency telephone number

Phone: + (925) 484-3350 (English) (9:00am - 4:00 pm, Pacific Standard Time)

SECTION 2: Hazards Identification

2.1 Classification of the substance or mixture

COMPONENT 1 (K055C)		
Mixture (N-N-Dimethylformamide and 3,3'-Diaminobenzidine Tetrahydrochloride Hydrate)		
Hazard class	Category	Hazard statements
Repr.	1B	H360D: May damage the unborn child.
Muta	2	H341: Suspected of causing genetic defects

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Carc.	1A	H350: May cause cancer
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COMPONENT 2 (K055B)		
Imidazole		
Hazard class	Category	Hazard statements
Repr.	1B	H360D: May damage the unborn child.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

COMPONENT 1 (K055C)	
Hazard pictograms	 GHS08
Signal word	Danger
Hazard-determining components of labelling	N-N-Dimethylformamide 3,3'-Diaminobenzidine Tetrahydrochloride Hydrate Imidazole
Hazard statements	H341 Suspected of causing genetic defects. H350 May cause cancer. H360D May damage the unborn child.
Precautionary statements	P201 Obtain special instructions before use. P280a Wear protective gloves / protective clothing / eye protection. P308+P313 If exposed or concerned: Get medical advice / attention. P405 Store locked up.
Additional information	Restricted to professional users.
EUH statements	None

COMPONENT 2 (K055B)	
Hazard pictograms	 GHS08
Signal word	Danger
Hazard-determining components of labelling	Imidazole
Hazard statements	H360D May damage the unborn child.

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Precautionary statements	P201 Obtain special instructions before use. P280a Wear protective gloves / protective clothing / eye protection. P308+P313 If exposed or concerned: Get medical advice / attention. P405 Store locked up.
Additional information	Restricted to professional users.
EUH statements	None

2.3 Other hazards

Results of PBT/vPvB assessment
Substance(s) does/do not meet the criteria for PBT according to Regulation (EC) No 1907/2006, Annex XIII.

SECTION 3: Composition/information on ingredients

COMPONENT 1 (K 055C)		
Dangerous components:		
Name	Classification (for pure substances)	Concentration
N-N-Dimethylformamide CAS: 68-12-2 EINECS: 200-679-5 Index number: 616-001-00-X	Acute Tox. 4; H312, H332 Eye Irrit. 2; H319 Repr. 1B; H360D	Concentration: <5%
3,3'-Diaminobenzidine Tetrahydrochloride Hydrate CAS: 868272-85-9 EINECS: None Index number: None	Acute Tox. 4; H302 Eye Irrit. 2; H319 Muta. 2; H341 Carc. 1A; H350 Skin Irrit. 2; H315	Concentration: <5%

COMPONENT 2 (K 055B)		
Dangerous components:		
Imidazole CAS: 288-32-4 EINECS: 206-019-2 Index number: None	Acute Tox. 4; H302 Skin Corr. 1C; H314 Repr. 1B; H360	Concentration: <0.5%

Results of PBT/vPvB assessment	Substance(s) does/do not meet the criteria for PBT according to Regulation (EC) No 1907/2006, Annex XIII.
SVHC	None
Additional information:	For the wording of the listed H-phrases please refer to Section 16.

SECTION 4: First aid measures

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4.1 Description of first aid measures

If inhaled	Remove victim to fresh air and keep at rest in a position comfortable for breathing.
If on skin	Remove contaminated clothing and wash skin thoroughly. Get medical attention. Wash clothing and clean shoes thoroughly before reuse.
If in eyes	Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. If irritation persists, seek medical attention.
If swallowed	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.
Self-protection of the first aider	No further relevant information available for this mixture.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available for this mixture

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available for this mixture

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	Foam, dry chemical, or carbon dioxide
For safety reason unsuitable extinguishing agents	No further relevant information available for this mixture.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products	Foam, dry chemical, or carbon dioxide
Other information	No further relevant information available for this mixture.

5.3 Advice for firefighters

Wear protective clothing containing self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Protective equipment	Ensure adequate ventilation Eye Protection: Wear goggles or safety glasses Hand protection: Wear latex or vinyl gloves Other protective equipment: Use lab coat or apron to prevent contact with eyes, skin and clothing
Emergency procedures	No further relevant information available for this mixture.

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For emergency responders	No further relevant information available for this mixture.
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6.2 Environmental precautions

Do not allow to enter sewage system

6.3 Methods and material for containment and cleaning up

For containment	No further relevant information available for this mixture.
For cleaning up	Comply with applicable waste disposal regulations
Other information	No further relevant information available for this mixture.

6.4 Reference to other sections

See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Measures to prevent fire	No further relevant information available for this mixture
Measures to prevent aerosol and dust generation	No further relevant information available for this mixture
Measures to protect the environment	No further relevant information available for this mixture
Advice on general occupational hygiene	No further relevant information available for this mixture

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions	Store in a cool, dry, well-ventilated area away from incompatible substances. Keep containers tightly closed.
Storage class	See respective national guidelines.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2, no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Additional information about design of technical systems: Use in a well-ventilated place and keep away from heat and open flame.

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Components with critical vales that require monitoring at the workplace:	
N,N-Dimethylformamide	
limit values as workplace exposure limit WEL or other	Short-term value: 10ppm, 30mg/m ³ Long-term value: 5ppm, 15mg/m ³
3,3'-Diaminobenzidine Tetrahydrochloride Hydrate	
limit values as workplace exposure limit WEL or other	Short-term value: No Data Available Long-term value: No Data Available
Imidazole	
limit values as workplace exposure limit WEL or other	Short-term value: No Data Available Long-term value: No Data Available

DNELs

N,N-dimethylformamide:

Route of Exposure	Systemic	Local
Inhalation	Long-term/Chronic value: 6mg/m ³ Short-term/Acute value: no hazard identified:	Long-term/Chronic value: no hazard identified: Short-term/Acute value: no hazard identified
Dermal	Long-term/Chronic value: 1.1 mg/kg bw/day Short-term/Acute value: no hazard identified	Long-term/Chronic value: no hazard identified: Short-term/Acute value: no hazard identified
Eyes	N/A	No hazard identified

Imidazole:

Route of Exposure	Systemic	Local
Inhalation	Long-term/Chronic value: 10.6 mg/m ³ Short-term/Acute value: no hazard identified:	Long-term/Chronic value: medium hazard (no threshold derived) Short-term/Acute value: medium hazard (no threshold derived)
Dermal	Long-term/Chronic value: 1.5mg/kg bw/day Short-term/Acute value: no hazard identified	Long-term/Chronic value: medium hazard (no threshold derived) Short-term/Acute value: medium hazard (no threshold derived)
Eyes	N/A	No hazard identified

PNECS No further information available.

8.2 Exposure controls

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Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. See Section 7.

Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with eyes and skin. Remove contaminated clothing immediately. Do not eat or drink while working. Keep away from food and beverages. Wash hands during breaks and at the end of work.
Respiratory Protection	Use in well-ventilated laboratory.
Skin	Disposable medical gloves (AQL 1.5) The breakthrough times started below on laboratory test methods which cannot fully simulate working conditions. It is the responsibility of the end user to choose the appropriate gloves for his application. If working with substances or mixtures harmful in contact with skin, check the gloves beforehand for holes and fissures. Material for gloves: Natural rubber (NR), Nitrile rubber (NBR) Thickness: 0.11 mm, the product quality has to comply with DIN EN 455. Penetration time: > 120 min Product has not been designed for permanent contact.
Body protection	Wear protective work clothing.
Eye/face protection	Wear safety glasses (standard EN 166).

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General information	
Color:	Liquid
Smell:	No information available
Odor threshold:	No information available
Melting point/freezing point:	No information available
Boiling point or initial boiling point and boiling range	No information available
Flammability	Not flammable
Lower and upper explosion limit	No information available
Lower:	No information available
Upper:	No information available
Flash point:	No information available
Self-inflammability:	No information available
Decomposition temperature:	No information available
pH	7.5±0.2
Viscosity:	No information available
Kinematic viscosity	No information available

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Dynamic:	No information available
Solubility	No information available
Water:	No information available
Partition coefficient n-octanol/water (log value)	No information available
Steam pressure:	No information available
Density and/or relative density	No information available
Density	No information available
Relative density	No information available
Vapor density	No information available

9.2 Other Information

Appearance:	Liquid
Form:	Liquid
Important information on protection of health and environment, and on safety.	No further information available.
Ignition temperature:	Not applicable.
Explosive properties:	Not explosive.
Solvent content:	No information available
Organic solvents:	No information available
Water:	No information available
Solids content:	No information available
Change in condition	Not applicable
Softening point/range	Not applicable
Oxidizing properties	Not applicable
Evaporation rate	No information available
Information with regard to physical hazard classes	
Explosives	Void
Flammable gases	Void
Aerosols	Void
Oxidizing gases	Void
Gases under pressure	Void
Flammable liquids	Void
Flammable solids	Void
Self-reactive substances and mixtures	Void
Pyrophoric liquids	Void
Pyrophoric solids	Void
Self- heating substances and mixtures	Void
Substances and mixtures, with emit flammable gases in contact with water	Void
Oxidizing liquids	Void
Oxidizing solids	Void
Organic peroxides	Void

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Corrosive to metals	Void
Desensitized explosives	Void

Section 10: Stability and Reactivity

10.1 Reactivity

No further relevant information available for this mixture

10.2 Chemical Stability

Stable under recommended storage conditions

10.3 Possibility of Hazardous Reactions

No further relevant information available for this mixture

10.4 Conditions to Avoid

No further relevant information available for this mixture

10.5 Incompatible Materials

Strong Acids
Strong Oxidizers
Metals and Metallic compounds

10.6 Hazardous Decomposition Products

No further relevant information available for this mixture.

SECTION 11: Toxicological Information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

LD/LC ₅₀ values that are relevant for classification:		
CAS-No: 68-12-2	LC / LD₅₀: Oral Inhalation Dermal	Endpoint value: LD50 (Oral) values: 3010 mg/kg bw (Rats) LC50 (Inhalation): 5 850 mg/m ³ (Rats) LD50 (Dermal): 3160 mg/kg bw (Rats)
CAS-No: 868272-85-9	LC / LD₅₀: No data Available	Endpoint value: No data Available
CAS-No: 288-32-4	LC / LD₅₀: Oral Inhalation Dermal	Endpoint value: LD50 (Oral) values: 970 mg/kg bw (Rats) LC50 (Inhalation): No Data Available LD50 (Dermal): No Data Available
Acute toxicity	Category 4	
Skin corrosion/irritation	3,3'-Diaminobenzidine Tetrahydrochloride Hydrate: Category 2	

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	Imidazole: Category 2
Serious eye damage/irritation	Based on available data, the classification criteria are not meet
Respiratory or skin sensitization	Based on available data, the classification criteria are not meet
Germ cell mutagenicity	Based on available data, the classification criteria are not meet
Carcinogenicity	3,3'-Diaminobenzidine Tetrahydrochloride Hydrate: Carcinogenic 1A
Reproductive toxicity	<p>N,N-dimethylformamide: There are three studies available in humans. Two studies shows a minimum of 165 mg/kg bw causes reproductive toxicity. NOAEL for fetal toxicity of 165 mg/kg bw was determined based teratogenic effects (number of total litter losses by resorption and body weight change at 1500 and 500 mg DMF/kg).</p> <p>A NOAEL for maternal toxicity of 165 mg/kg/bw was determined based on a dose-dependent decrease in body weight gain at 1500 and 500 mg DMF/kg.</p> <p>Imidazole: Imidazole, when tested in the rat according to OECD Guideline 414 at dose levels of 20, 60, and 180 mg/kg bw/d, was developmentally toxic and teratogenic at 180 mg/kg bw/d. The NOAEL for maternal toxicity, developmental toxicity and teratogenicity was 60 mg/kg bw/d.</p>
STOT-single exposure	Based on available data, the classification criteria are not meet
STOT-repeated exposure	Based on available data, the classification criteria are not meet
Aspiration hazard.	Based on available data, the classification criteria are not meet
Potential Effects of Chronic Exposure	Based on available data, the classification criteria are not meet
Symptoms of Overexposure	Based on available data, the classification criteria are not meet

11.2 Information on other hazards

Endocrine disrupting properties
None

SECTION 12: Ecological Information

12.1 Toxicity

Aquatic Toxicity: No further relevant information available

12.2 Persistence and Degradability

No further relevant information available

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12.3 Bioaccumulative potential

No further relevant information available

12.4 Mobility in Soil

No further relevant information available

12.5 Results of PBT and vPvB Assessment

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

12.6 Endocrine disrupting properties

The product does not contain substances with endocrine disrupting properties.

12.7 Other adverse effects

Additional ecological information:

General notes:

Persistent Organic Pollutant This product does not contain any known or suspected substance

Ozone Depletion Potential This product does not contain any known or suspected substance

SECTION 13: Disposal Considerations

13.1 Waste Treatment Methods

Dispose of waste product, unused product and contaminated packaging in compliance with federal, state and local regulations. If unsure of the applicable requirements, contact the authorities for information.

Recommendation for uncleaned packaging: Uncleaned packagings have to be disposed of in the same manner as the product residues

SECTION 14: Transport Information

14.1 UN Number

ADR	N/A
IMDG	N/A
IATA	N/A

14.2 Un Proper Shipping Name

ADR	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

14.3 Transport Hazard Class (es)

ADR	Class: N/A
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	Label: N/A Limited Quantities (LQ): N/A Excepted Quantities (EQ): N/A Maximum net quantity per inner packaging: N/A Maximum net quantity per outer packaging: N/A Transport category: N/A Tunnel restriction code: N/A
IMDG	Class: N/A Label: N/A Limited Quantities (LQ): N/A Excepted Quantities (EQ): N/A Maximum net quantity per inner packaging: N/A Maximum net quantity per outer packaging: N/A Transport category: N/A
IATA	Class: N/A Label: N/A

14.4 Packing Group

ADR	N/A
IMDG	N/A
IATA	N/A

14.5 Environmental Hazards

No

14.6 Special Precautions for User

Not applicable

14.7 Maritime transport in bulk according to IMO instruments

Not applicable	
Transport/Additional information:	N/A
UN "Model Regulation":	Not regulated

SECTION 15: Regulatory Information

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

Labelling according to Regulation (EC) No 1272/2008 See Section 2. EU Regulations: Regulation (EC) No. 2037/2000 substances that deplete Ozone layer: None Regulation (EC) No.850/2004 on persistent Organic Pollutants: None Regulation (EC) No. 649/2012 Import and Export of dangerous chemical: None

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EU REACH Candidate List of Substances of very High Concern for Authorization (SVHC): None
Regulation (EC) No.1907/2006, REACH Annex XIV Substances Subject to Authorization, as amended:
None
Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use:
None
Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work: Listed
Directive 2012/18/EU named dangerous substances – ANNEX I: None
Directive 96/82/EC (Seveso III): on the control of Major accident hazards involving dangerous substances: None
EU Regulation No. 166/2006 PRTR (Pollutant Release and transfer Registry) Annex II: Pollutants:
None
Directive 98/24/EC on the protection of workers from the risks related to chemical agents at Work:
None

Water hazard class:
N-N-Dimethylformamide: WGK-2
Imidazole: WGK-2
Diaminobenzidine tetrahydrochloride hydrate: Not Classified

15.2 Chemical Safety Assessment

A chemical safety assessment has not been carried out

SECTION 16: Other Information

This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information of their particular purposes.

Relevant phrases

None

Department issuing data specification sheet: Regulatory Affairs

Contact: Customersupport@dbiosys.com

Replaces version from: Revision B; December 03, 2015