



D/2 Biological Solution

Discover the D/2 difference!

D/2 Biological Solution is a biodegradable, easy to use liquid that removes stains from mold, algae, mildew, lichens and air pollutants. It is effective on marble, granite, limestone, brownstone, travertine, masonry, terra cotta, concrete, stucco, wood, and other architectural surfaces including monuments, sculpture and headstones. A contact time of only 10 to 15 minutes followed by scrubbing with a soft nylon or natural bristle brush will loosen most biological and air pollutant staining.

D/2 Biological Solution is effective for removing harmful biological and air pollutant staining from many building materials including masonry, marble, granite, limestone, brownstone, travertine, terra cotta, concrete, stucco, wood, canvas and vinyl & aluminum siding.

Features and Benefits

- **Fast acting:** 10 to 15 minutes contact time for great results.
- **Biodegradable**
- **Contains no acids, salts, or chlorine**
- **pH neutral**
- **Will not etch metals or glass**
- **Safer to use around plantings**
- **Is not a hazardous material and requires no special handling or protection**
- **Use full strength, no in-field mixing required**
- **Shelf life of 5 years**

Application Procedures

Always do a spot test sample before proceeding with project. D/2 works best when air and surface temperatures are 45°F or above. Use D/2 undiluted for best results. In the event of

excessive plant exposure, rinse all plants and water in all planted ground areas.

Immediate Result Method

1. Apply D/2 Biological Solution with a brush, roller, hand pump sprayer (garden style pump sprayer) or low pressure power sprayer.
2. Allow undiluted D/2 to remain on the surface 10-15 minutes.
3. Apply additional D/2 as necessary to maintain a wet surface.
4. Scrub with soft nylon or natural bristle brush. **DO NOT USE METAL BRUSH.**
5. Lightly mist with water and continue scrubbing.
6. Rinse thoroughly with clean, potable water.

No Scrub/No Rinse Method

1. Apply D/2 Biological Solution with a brush or pump sprayer to a dry surface. Do not pre-wet the surface.
2. Allow to dry. Repeat if there are heavy biological stains.

D/2 works with the elements and results occur within one week to one month depending on severity of growth and weather conditions. The surface will become cleaner over time as the subsurface biological stains release.

Safety Information

D/2 Biological Solution is non-mutagenic, and contains no carcinogenic compounds as defined by NTP, IARC, or OSHA. It is considered essentially non-toxic by swallowing, as it has an oral LD50 of 2.0 g/kg of body weight. No special ventilation is required during use.

Packaging and Coverage

D/2 Biological Solution is available in 1 gallon and 5 gallon containers, and 55 gallon drums. The area that can be treated with one gallon of D/2 will vary considerably as a function of the nature and extent of biological deposits, as well as the physical characteristics of the surface. Typical coverage to remove medium deposits will vary from 250 to 350 square feet per gallon.

Technical Data

Physical Form Transparent, low viscosity liquid

Color Almost colorless

pH 9.5

Specific Gravity 1.01g/cc

Solubility in Water Complete

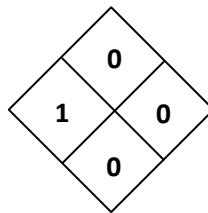
Vapor Pressure 25 mm Hg @ 20°C

Notice: The information contained herein is based on our own research and the research of others, and it is provided solely as a service to help users. It is believed to be accurate to the best of our knowledge. However, no guarantee of its accuracy can be made, and it is not intended to serve as the basis for determining this product's suitability in any particular situation. For this reason, purchasers are responsible to make their own tests and assume all risks associated with using this product.

10/2012

Section 1: PRODUCT & COMPANY IDENTIFICATION**Product Name:** D/2 Biological Solution**Manufactured By:** D/2 Biological Solution
PO Box 3746
Westport, MA 02790
(917) 693-7441
<http://d2bio.com>**Emergency Phone:** Chem-Tel 24-Hour Emergency Service: (800) 255-3924**Use of Product:** D/2 Biological Solution is a biodegradable, easy to use liquid that removes stains from mold, algae, mildew, lichens and air pollutants. It is effective on marble, granite, limestone, brownstone, travertine, masonry, terra cotta, concrete, stucco, wood, and other architectural surfaces including monuments, sculpture and headstones.**Section 2: HAZARDS IDENTIFICATION****D/2 Biological Solution is a colorless liquid with a very faint detergent-like odor.****It is non-flammable, non-combustible, non-explosive, and non-reactive.****Hazard Rating (NFPA/HMIS)**Health = 1* Reactivity = 0
Fire = 0 Special = 0

* Mild eye irritant, non-mutagenic and non-carcinogenic

**Rating Scale**0 = Minimal 1 = Slight 2 = Moderate
3 = Serious 4 = Severe**Eye Contact:** Eye Irritant.**Skin Contact:** Prolonged skin contact with D/2 Biological Solution may irritate the skin. Repeated daily application to the skin without rinsing, or continuous contact of D/2 Biological Solution on the skin may lead to irritation.**Ingestion:** Essentially non-toxic. May cause stomach or intestinal upset if swallowed.**Inhalation:** No adverse effects expected under typical use conditions. Adequate ventilation should be present when using D/2 Biological Solution over a prolonged period of time. Open windows or ventilate via fan or other air-moving equipment if necessary. Mucous membranes may become irritated by concentrate mist.**Carcinogens:** No ingredients are listed by OSHA, IARC, or NTP as known or suspected carcinogens.**Medical Conditions:** No medical conditions are known to be aggravated by exposure to D/2 Biological Solution.**Section 3: COMPOSITION/INFORMATION ON INGREDIENTS****Ingredients**Surfactants
Wetting Agents
Buffers**CAS Number**Proprietary
Proprietary
Proprietary**OSHA PEL ACGIH TLV**None established
None established
None established

Section 4: FIRST AID MEASURES

- If in Eyes:** Immediately rinse the eye with large quantities of cool water; if present, contact lenses should be removed after 5 minutes of rinsing; continue rinsing 10-15 minutes more. Both upper and lower lids should be lifted to facilitate thorough rinsing.
- If on Skin:** Minimal effects, if any, from diluted product; rinse skin with water, rinse shoes and launder clothing before reuse. Reversible reddening may occur in some dermal-sensitive users; thoroughly rinse area.
- If Inhaled:** Use in well-ventilated area, or use adequate protection from inhaling mist during spray applications. Prolonged exposure of workers to concentrate-mist during spray application may cause mild irritation of nasal passages or throat. If this happens, relocate workers to fresh air.
- If Ingested:** Give several glasses of milk or water to dilute; do not induce vomiting. If stomach upset occurs, consult physician.

Section 5: FIRE FIGHTING MEASURES

- Extinguishing Media:** Not flammable/non-explosive. No special procedures required.
- Special Fire Fighting Procedures:** None required.

Section 6: ACCIDENTAL RELEASE MEASURES

- Personal Precautions:** Avoid contact with eyes. Do not rub eyes with hands during cleanup. No special precautions for dermal contact are needed. Wash hands thoroughly after cleaning up spill or leak.
- Procedure to follow in case of spill or leak:** Evacuate area. Identify source of leak or spill and contain with sand, earth, or containment bin. Then proceed to clean up spill or leak.
- Method for cleaning up:** Recover all usable material. Residual may be removed by wipe or wet mope. Rinse area with plenty of water and mop to sanitary sewer.

Section 7: HANDLING AND STORAGE

No special handling is required. Keep in a closed plastic container. Store at ambient temperature. Avoid contact with eyes. Wash hands thoroughly after handling. **This product is non-hazardous for storage and transport according to the U.S. Department of Transportation Regulations.**

This material does not meet the definition of a hazardous material according to 49 CFR, ICAO, IMDG and the UN Orange Book.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

- Precautionary measures:** No special requirements under normal use conditions.
- Exposure Limits:** The D/2 Biological Solution formulation presents no health hazards to the user, other than mild eye irritancy.
- Eye protection:** Caution, including reasonable eye protection, should always be used to avoid eye contact where splashing may occur, such as during spray applications.
- Respiratory Protection:** No special precautions required.
- Ventilation:** No special ventilation is required during normal use.
- Skin protection:** No special precautions required; rinse completely from skin after contact.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (cont'd)

General hygiene conditions: There are no known hazards associated with this material when used as recommended. The following general hygiene considerations are recognized as common good industrial hygiene practices:

- Avoid breathing vapor or mist.
- Avoid contact with eyes.
- Wash thoroughly after handling and before eating, drinking, or smoking.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear Liquid	Freezing Point:	-9 °C (16 °F)
Odor:	Very faint detergent-like odor	Boiling Point:	98 °C (209 °F)
pH:	9.5	Specific Gravity:	1.011
Evaporation Rate:	0.4 (butyl acetate = 1)	Vapor Pressure:	20.7 mm Hg
Water Solubility:	100%	Vapor Density:	1.3 (air = 1)

Section 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials to Avoid: Contains ammoniated compounds – do not mix with bleach, tub & tile cleaner, mold/mildew removers, or chlorinated compounds.

Hazardous Decomposition Products: None expected

Section 11: TOXICOLOGICAL INFORMATION

Toxicity Data: Available from relevant laboratory testing of ingredients or similar mixtures.

Acute Toxicity: Oral LD50: >2.0 g/kg body weight Dermal LD50: Not estimated

Eye Irritation: With or without rinsing with water, the irritation scores in rabbits at 24 hours did not exceed 17 (mild irritant) on a scale of 110 (extremely irritating); all scores were normal at seven days.

Dermal Irritation: In a standard test on rabbits, mild irritation was found at 72 hours; well-defined reddening was observed at 7 and 14 days after exposure.

Dermal Sensitization: No allergic reactions occurred in guinea pigs treated with D/2 Biological Solution.

Carcinogenicity: D/2 Biological Solution contains no carcinogenic compounds as defined by the National Toxicology Program (NTP), the international Agency for Research on Carcinogens (IARC), or the Occupational Health and Safety Administration (OSHA).

Section 12: ECOLOGICAL INFORMATION

Biodegradability: All components are inherently biodegradable.

Ecotoxicity: Not Tested.

Section 13: DISPOSAL CONSIDERATIONS

Unused Product: Dilute with water 1:10 (1 part D/2 to 10 parts water) and dispose by sanitary sewer.

Used Product: Used product may be hazardous depending on the cleaning application and resulting contaminants.

Empty Containers: Triple-rinse with water and offer for recycling if available. Otherwise, dispose as non-hazardous waste.

Dispose of used or unused product, and empty containers in accordance with the local, State, Provincial, and Federal regulations for your location. Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Section 14: TRANSPORT INFORMATION

This product is non-hazardous for storage and transport according to the U.S. Department of Transportation Regulations. D/2 Biological Solution requires no special labeling or placarding to meet U.S. Department of Transportation requirements.

IATA Proper Shipping Name: Detergent solution

Hazard Class: Nonhazardous

UN Number: Not Required

Section 15: REGULATORY INFORMATION

Reportable components: None. The U.S. Environmental Protection Agency (EPA) has determined that propylene glycol ethers are not included within the listed category "glycol ethers" under either EPCRA §313 Toxic Release Inventory or Clean Air Act §112 Hazardous Air Pollutants (both lists include only ethylene glycol ethers). Nor are propylene glycol ethers included in the various EPA Resource Conservation and Recovery Act, and Clean Water Act lists, nor the California Proposition 65 lists.

All components are listed on: EINECS and TSCA Inventory

No components listed under: Clean Air Act Section 112

RCRA Status: Not a hazardous waste.

TSCA TRI Reporting: Not required / Not listed

CERCLA Status: No components listed

CA PROP. 65 Status: No components listed

Section 16: OTHER INFORMATION**Technical information contact:**

D/2 Biological Solution

PO Box 3746

Westport, MA 02790

(917) 693-7441

<http://d2bio.com>

DISCLAIMER: All information appearing herein is based upon data obtained by the manufacturer and recognized technical sources. Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of this information, D/2 Biological Solutions, inc. or its distributors extends no warranties, makes no representations and assumes no responsibility as to the suitability of such information for application to purchaser's intended purposes or for consequences of its use.



GUIDELINE FOR WRITING SPECIFICATIONS WHEN USING

D/2 Biological Solution

Select Relevant Section

Division 04900-Masonry Restoration and Cleaning

Part 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The Contract Documents shall govern work of this section. Provide materials, labor, equipment, and services necessary to furnish, deliver, and install all work of this section as shown on the drawings, as specified herein, and/or as required by job conditions.

1.2 SUMMARY OF WORK

- A. This section includes, but is not limited to, the following:
 - a. Removal of stains from biological growth by chemicals from all historic surfaces including smooth and ornamental wood, metal, masonry, concrete, and brick. Mock- ups will determine the best appropriate method.
- B. Visual Requirements:
 - a. Maintain aesthetic or historic qualities of Project by protecting Work designated to remain.

1.3 REFERENCES

- A. Manufacturer's specifications and instructions.

1.4 SUBMITTAL

- A. Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: Submit manufacturer's specifications and installation instructions for products used including finishing materials and methods.
- C. Submit manufacturer's technical data sheet for product indicated including recommendations for their application and use.
- D. Submit a work plan describing capture, storage, and disposal as required and/or governed by any and all local, state, and/or federal laws, codes, and regulations.

- E. Samples: Provide sample installation of product. Locations per the owner or owner's representative's directions.

1.5 QUALITY ASSURANCE

- A. Mock-ups: Prepare sample of D/2 Biological Solution on the appropriate substrate indicated. See 1.6 Test Panels.
- B. Provide at least one person who shall be present at all times during the execution of the work of this section, who shall be thoroughly familiar with the specified requirements, and the materials and methods needed for their execution, and who shall direct all work performed under this section.
- C. Provide adequate numbers of workers skilled in the necessary crafts and properly informed of the specialized methods and materials to be used in this work.

1.6 TEST PANELS

- A. The Contractor shall arrange for providing test panels. Minimum size of test panels shall be a 5 ft. by 5 ft. area. Manufacturer's application instructions shall be followed. Allow a minimum of 7 days drying time before inspection or longer if possible. Some forms of biological staining will continue to diminish for as long as three to four weeks or longer. Test panel shall serve as the performance standard and remain available for comparison during the cleaning process.
- B. Contractor shall prepare a written report detailing results of testing including description of methods employed, materials, concentration of cleaner, dwell times and other elements of test procedures as defined above.
- C. Each test panel must be carefully labeled, charted, and photographed. Approved test panels will become a part of the Work, and serve as the quality standard for similar type work on this project.
- D. Notify the owner's representative seven (7) days in advance of the dates and time when the test panels will be installed.

1.7 PROJECT/SITE CONDITIONS

- A. Contractor shall be responsible for protecting all existing adjacent materials such as doors, windows, flashings, roofing, and other existing materials that are not intended to be treated.
- B. Contractor shall be responsible for the repair of all damaged adjacent materials due to the execution of the work at no additional expense to the owner. Repairs shall be made by qualified mechanics skilled in the type of repairs required, to the satisfaction of the owner's representative.

- C. Protect adjacent areas and surfaces not being treated with barriers suitable for the product being used. Appropriate care should be taken at air intakes, air conditioning vents and similar openings that may come in contact with the product.
- D. Take appropriate precautions to avoid harm to building occupants, pedestrians and nearby property.
- E. Safety: For any number of reasons it is essential to maintain a high degree of worker and occupant safety while working with biological solution.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. D/2 Biological Solution
 - a. D/2 Biological Solution shall be used. D/2 is biodegradable, pH neutral, and contains no salts, chlorine or acids. Products containing salts, chlorine or acids shall not be used. D/2 Biological Solution is available nationwide; for a distributor in your region see the D/2 website www.d2bio.com or call (917) 693-7441.
- B. Miscellaneous Equipment
 - a. Natural bristle brushes
 - b. Soft clean rags
 - c. Clean, potable water
 - d. Rubber gloves
 - e. Eye and skin protection
 - f. Low-pressure applicator, such as pump sprayer or battery powered sprayer.
 - g. Pressure washers using 600 psi or less.

PART 3 – EXECUTION

3.1 GENERAL APPLICATION OF INITIAL CHEMICAL TREATMENT

D/2 is most effective when surface and air temperature is 45°F or above.

- A. Follow manufacturer's instructions (see Data Sheet) and as follows:
 - a. Apply undiluted D/2 Biological Solution with a brush, roller, hand pump sprayer (garden style pump sprayer) or low pressure power sprayer.

- b. Allow undiluted D/2 to remain on the surface for 10-15 minutes.
 - c. Apply additional D/2 as necessary to maintain a wet surface.
 - d. Scrub with soft nylon or natural bristle brush and potable water. DO NOT USE METAL BRUSH.
 - e. Lightly mist with water and continue scrubbing.
 - f. Rinse thoroughly with clean, potable water.
- B. Work sections that can easily be applied in one shift.
 - C. Clearly mark or identify time of application and dwell time.
 - D. Wash down in the same sequence of sections in which product was applied.
 - E. Thoroughly rinse application areas and surrounding adjacent surfaces.

3.2 CLEAN UP

- A. Thoroughly rinse application areas and surrounding adjacent surfaces.

PART 4 – CONTRACTOR QUALITY CONTROL

4.1 QUALITY CONTROL

- A. The implementation of a Contractor Quality Control Program does not relieve the Contractor from the responsibility to provide work in accordance with the Contract Documents, applicable codes, regulations, and governing authorities. The Contractor Quality Control Program shall include, but not be limited to, the elements herein. These elements are provided only as a minimum starting point for the Contractor to use to generate the complete Contractor's Quality Control Program.

END OF SECTION

11/2012