

EasyDECON® DF200

Making the world a safer place



www.intelagard.com

A microscopic view of various bacteria, including rod-shaped and spherical forms, set against a blue background. The bacteria are rendered in shades of blue and white, giving a three-dimensional appearance.

Section I

EasyDECON DF200 Background & Development

EasyDECON® DF200

CAPABILITY OVERVIEW

EasyDECON DF200 is a safe, highly effective, inherently biodegradable, full-spectrum solution designed by Sandia National Laboratories for chemical and biological decontamination.

EasyDECON DF200 is EPA registered and is

VIRUCIDAL BACTERICIDAL
FUNGICIDAL MILDEWSTAT DEODORIZER

EasyDECON is designed to offer unprecedented versatility and is deployable as a liquid, fog or foam using any number of industry standard commercial applicators. It is especially effective when deployed by compressed air foam systems (CAFS). This versatile, broad-spectrum and proven formulation solves many challenges while saving time and money.

EasyDECON® DF200

NEED DRIVEN TECHNOLOGY

The original product concept was created at the US Army's Soldier Chemical and Biological Command (SBCCOM).

The goal was to create a decontaminating solution to be effective against all known Chemical and Biological weapons (full spectrum), providing a safe and effective means to restore infrastructure in the event of a terrorist attack involving the use of weapons of mass destruction.

Additional requirements were that the decontaminant would also be:

- Environmentally friendly
- Non-Hazardous for storage and transport
 - Stable with long shelf life
 - Of low corrosivity
- Non-Hazardous to personnel and Individual Protective Equipment (IPE)
 - Logistically advantageous
 - Deployable in different forms

ORIGINAL PRODUCT DEVELOPMENT

Sandia National Laboratories received a US Department of Energy (DoE) grant to develop the concept and perform testing.

A team of scientists from Sandia created DF100, a binary solution that met or exceeded all initial requirements

"In response to a national initiative to combat the domestic chemical and biological warfare (CBW) threat Sandia National Laboratories has developed Sandia Decon Formulation for mitigation and decontamination of chemical and biological (CB) agents"

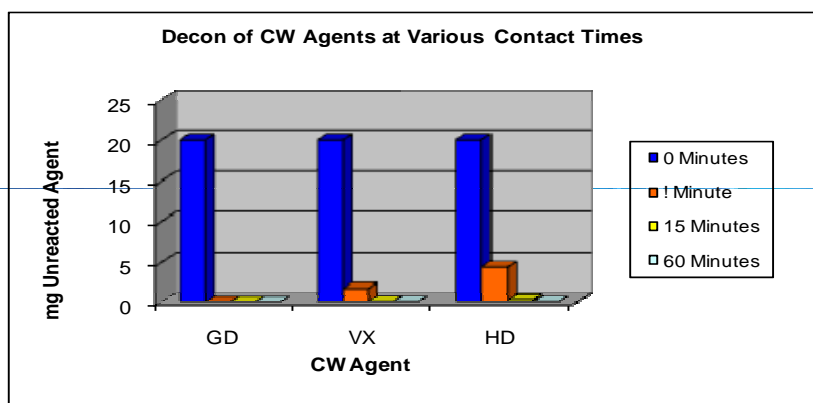
---Sandia Press Release

Internal and external testing has proven that the solution is effective against viruses, bacteria and spores, as well as the most harmful and historically challenging chemical warfare agents.

EasyDECON® DF200

EARLY TESTING VALIDATES PRODUCT EFFECTIVENESS

Destruction of the most dangerous and challenging military chemical weapons



Complete destruction of GD within 1 minute

Complete destruction of VX within 10 minutes

Complete destruction of HD within 30 minutes

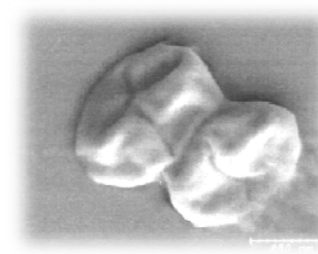
Destruction of Toxic Industrial Chemicals

TIC	% Decontamination		
	1 Minute	15 Minutes	60 Minutes
Malathion (liquid)	89	95	Below Detection
Hydrogen Cyanide (gas)	>99	>99	>99
Sodium Cyanide (solid)	93	98	>99
Butyl Isocyanate (liquid)	99	Below Detection	Below Detection
Carbon Disulfide (liquid)	>99	>99	Below Detection
Phosgene (gas)	98	>99	>99
Chlorine (gas)	>99	>99	>99
Anhydrous Ammonia (gas)	>99	>99	>99

Destruction Weaponized Anthrax Spores



Healthy Spores



Destroyed Spores
Contact Time: 1 Hour

EasyDECON® DF200

COMMERCIALIZATION

Sandia Labs granted US patent
6,566,574

National laboratories are prohibited from marketing
and selling products they develop.

EnviroFoam Technologies (EFT) was granted a
commercial license and executed a Cooperative
Research and Development Agreement (CRADA) with
Sandia laboratories to further evolve the product.

Sandia improved the original formula by the
addition of a third part, decreasing
the kill time of biological agents.

EFT commercialized final product under the
trade name:

EasyDECON DF200

EARLY GOVERNMENT TESTING & NEED

The many advantages of EasyDECON DF200
and the product's effectiveness resulted in selection
for additional testing by the US military

All testing was successful and EasyDECON DF200 was
procured in large quantities for use by
US forces abroad.

US CENTCOM DIRECTED TESTING

Formulation	Anthrax Simulant
	% Kill after 30 Minute
EasyDECON DF200	99.99999%

The Petri dishes used for cell growth on each of these tests were saved for
21 days following the tests to verify that EasyDECON DF200 actually killed
the spores rather than just inhibited their growth. No growth on any of the
Petri dishes was observed after the 21 day period.

Agent	% Destruction of Chemical Agent at Time Interval		
	1 Minute	15 Minutes	60 Minutes
GD	99.98 ± 0.01	99.97 ± 0.01	99.98 ± 0.01
VX	91.20 ± 8.56	99.80 ± 0.08	99.88 ± 0.04
HD	78.13 ± 10.53	98.46 ± 1.43	99.84 ± 0.32

EasyDECON® DF200

EPA REGISTRATION & TESTING

EFT obtained **EPA registration** of EasyDECON DF200

as

VIRUCIDAL

BACTERICIDAL

FUNGICIDAL

MILDEWSTAT

DEODORIZER

EasyDECON DF200 has passed all US EPA mandated independent laboratory testing, validating all label claims.

EPA REGISTRATION NUMBERS

- Part 1: EPA Reg. No. 74436-1
- Part 2: EPA Reg. No. 74436-2

Intelagard, Incorporated acquired EFT Holdings and now operates EFT as a wholly owned subsidiary.

EPA VALIDATED USES OF EasyDECON

Disinfectant for:

Hospitals
Nursing Homes
Medical & Dental Offices
Operating Rooms
Isolation Wards
Quarantine Areas
Medical Research Facilities
Morgues & Mortuaries
Emergency Rooms
Acute & Long-Term Care Facilities
EMS, Police & Fire Vehicles, Living Quarters & Vehicles
Crimes Scenes
Gymnasiums, Locker Rooms
Cruise Ships, Theatres, Schools
Airports, Shipping Terminals
Public Transportation
Private Residences
...and many more

EasyDECON® DF200

WHERE HAS EasyDECON BEEN TESTED?

Independent Laboratory Testing

Battelle Research Institute (HRMC & MREF) – Contracted testing for SCCCOM

ABC Laboratories – Biodegradation Test

Canadian DND – Canadian Down-Select Testing for standard decontaminant

MicroBioTest Laboratories (**LIVE AGENT**)

Eurofins, Inc.

Tox Monitor Laboratories, Inc.

IITRI Research Institute – EPA Panel Testing (**LIVE AGENT**)

Kansas State University (Food Industry Testing) (**LIVE AGENT**)

Rice University

TNO Prins (Netherlands) (**LIVE AGENT**)

Vizon SciTec

US Government Testing

Edgewood Chemical & Biological Center (ECBC) (**LIVE AGENT**)

US Army RDE Command

Central Command Urgent Needs Requirement Testing (**LIVE AGENT**)

US Marine Corps Systems Command (MARCORSYSCOM) (**LIVE AGENT**)

Sandia National Laboratories – numerous internal tests

US Department of Agriculture

US Environmental Protection Agency (**LIVE AGENT**)

Naval Surface Warfare Center (Dahlgren)

West Desert Test Center (Dugway Proving Ground)

The Defense Advanced Research Projects Agency (DARPA) (**LIVE AGENT**)

EasyDECON® DF200

PROVEN TO NEUTRALIZE/KILL

BIOHAZARDS

Microorganisms, Viruses, Toxins

Aspergillus Niger	Erwinia herbicola	Plague - Y. Pestis
Avian Flu H5N8	Escherichia Coli	Pseudomonas A.
Avian Flu H5N1	Feline Calicivirus	Pseudomonas F.
Bacillus anthracis	Foot & Mouth (FMD)	Pseudomonas P.
Bacillus subtilis	Hemorrhagic Fever (VHFs)	Rhinovirus–Mult. Strains
Bovine coronavirus	Hepatitis A (HAV)	Ricin toxin
Candida albicans	HIV Type 1	Salmonella enterica
Cholera	Influenza A	Salmonella choleraesuis
Citrus Canker	Listeria monocytogenes	SEB (Staph Toxin)
Clostridium botulinum	Mycobacterium bovis	Staph A (MRSA)
Clostridium difficile	Norovirus	Smallpox
Clostridium sporogenes	Penicillium digitatum	Tularemia
	Yellow Fever Virus	

EasyDECON® DF200

CHEMICAL AGENT TESTING

EasyDECON vs. Chemical Agents

EasyDECON was designed to rapidly neutralize military-grade chemical weapons using environmentally safe, non-hazardous materials.

The goal was to neutralize the chemical agent and leave behind harmless by-products.

EasyDECON has been tested and proven to neutralize the standard chemical agents, identified below.

Chemical weapons tested against

GA (Tabun) Nerve Agent
GA (Soman) Nerve Agent
GA (Sarin) Nerve Agent
HD (Mustard) Blister Agent
Lewisite (Blister
VX Nerve Agent
Multiple Industrial Chemicals

OTHER TOXIC SUBSTANCES

General

The same process that destroys military chemical weapons makes EasyDECON DF200 extremely effective against other toxic substances.

Other Uses for EasyDECON DF200 include:

- Disinfection and cleaning
- Destruction of organophosphates such as pesticides
- Destruction of pathogenic microorganisms
- Laboratory cleanup and cleanout
- Destruction of mold and mildew
- Destruction of biomasses
- Cleaning/laundry agent for PPE, rescue/recovery dive gear, linens, body armor or other materials potentially contaminated with hazardous biological materials
- Powerful odor neutralizer and stain eliminator
- Oil dispersant

A microscopic view of various bacteria, including rod-shaped and spherical forms, against a blue background. The bacteria are rendered in shades of blue and white, giving a three-dimensional appearance.

Section II

Properties of EasyDECON DF200

EasyDECON® DF200

GENERAL

Form

EasyDECON DF200 is a three-part liquid solution, with each of the components packaged individually and boxed as a kit.

When the three components are combined, the resulting mixture constitutes activated EasyDECON DF200 solution.



*EasyDECON DF200
5-gallon kit*

The three components are:

- Non-hazardous for storage
- Non-restricted for transportation
- Non-flammable

Part 1: Surfactant

Part 2: Hydrogen Peroxide (H₂O₂) Mixture

Part 3: Diacetin (catalyst)

EasyDECON DF200 ingredients can be found in most homes. The ingredients in EasyDECON are found in hair shampoo, conditioner, toothpaste, first-aid antiseptic and common household cleaning products.

PART 1, EasyDECON DF200

Part 1 Properties

- Labeling: EasyDECON Part 1
- Active Ingredients:
3.20% : n-Alkyl (C12-16-N, N-dimethyl-N benzyl ammonium chloride)
- Inert Ingredients - 96.8%

Part 1 is 49% of the final mixture, by weight

pH: 10.5 – 10.7

Role of Part 1:

- Surfactant solution - contains soaps and salts
- Serves as the 'carrier solution' for Part 2
- Soapy quality allows the solution to be applied as an extremely dense foam
- Enables expansion of the solution up to 35x liquid volume when foamed
- 'Wets out' contamination, suspending it in a micelle
- Renders contaminants soluble

EasyDECON® DF200

PART 2, EasyDECON DF200

Part 2 Properties

- Labeling: EasyDECON Part 2
- Active Ingredients:
7.98% - Hydrogen Peroxide (H_2O_2)
- Inert Ingredients: 92.02%

Part 2 is 49% of the final mixture, by weight

pH is 2.0-3.0

Role of Part 2:

- Oxidizes and 'breaks' the molecular chain of toxic chemicals
- H_2O_2 attacks the protein chain of the DNA of microorganisms killing them

PART 3, EasyDECON DF200

Part 3 Properties

- Labeling: EasyDECON Part 3 (Booster)
- Active Ingredients:
100% - Diacetin

Part 3 is 2% of the final mixture, by weight

pH - Neutral

EPA registration is not required

Role of Part 3:

- Diacetin is a energetic catalyzing agent.
- When diacetin is added to H_2O_2 it causes the peroxide to break down into water and oxygen gas ($2\text{H}_2\text{O}_2$) much more rapidly.

This reaction makes much faster kills of the toughest microorganisms possible.

EasyDECON® DF200

MATERIAL COMPATABILITY



EasyDECON DF200 is a very mild solution – particularly when compared to chlorine and hypochlorite solutions commonly used in the industry.

When unsure, always test a material for compatibility if color fading or mild corrosion of metals are concerns.

EasyDECON Df200 application should always be followed by a rinse and wipe down after the necessary contact time has been achieved. When used on certain surfaces such as soft rubber, EasyDECON will have a drying effect and additional rinsing/wiping may be necessary.

Never store EasyDECON DF200 in metal containers.

Sandia Demonstration – Corrosion Comparison

EasyDECON can have a mild affect on some metals.

Steel Coupons



De-ionized Water - 24 Hour Exposure



DF200 - 24 Hour Exposure.
EasyDECON DF200 solution has a final pH of 9.6 – 9.9



Bleach - 24 Hour Exposure

EasyDECON® DF200

STORAGE/SHELF-LIFE

Part 2 TESTING

Proper Storage of EasyDECON DF200

The H_2O_2 in Part 2 decays over time. Product decay is more rapid when:

- Exposed to high temperatures
- Exposed to direct sunlight
- Exposed to air
- Organic and/or metal materials are introduced
- Containers are opened and resealed

Shelf-life of unopened components of EasyDECON DF200, when stored under ideal conditions, is up to 5 years. Components should be stored unopened, out of sunlight and between 40 - 80°F (5 - 27°C) :

Always store containers/cartons in upright position, and not touching.

EasyDECON DF200 is labeled with a manufacturing date. Testing of EasyDECON Part 2 18 months and over past that is recommended before use to rule out product deterioration due to improper storage.

How long Part 2 remains effective depends on several factors. Use of an Intelagard Part 2 Test Kit is recommended for a 'GO/NO GO' test to verify serviceability .

Part 2 Quality Assurance Testing

Part 2 Test Kits are available through Intelagard or its authorized distributors.

60 Test Kit, Part Number: 200-9060

Part 2 Test Kit includes:

- Pre-loaded/disposable test vials (60)
- Indicator solution
- Pipette with disposable pipette tips
- MSDS
- Instruction card with color comparison chart

1-drop indicator solution & 1 sample of Part 2 added to test vial/reagent will give a color reaction within 2 minutes. Furnished color comparison chart is used to determine pass/fail.

Pass achieved at or above 6% H_2O_2 .

A microscopic view of various bacteria, including rod-shaped and spherical forms, set against a blue background. The bacteria are rendered in shades of blue and white, giving a three-dimensional appearance.

Section III

**Using
EasyDECON DF200**

EasyDECON® DF200

DEPLOYMENT FORMS

Mode of Deployment

EasyDECON DF200 is a versatile formula and may be employed as:

- Liquid
- Foam
- Fog / Aerosol

The best mode of EasyDECON DF200 deployment should be determined based upon:

- Resources available;
- Accessibility of area to various modes of application;
- Time available; and
- Size of area to be decontaminated.

Each mode of deployment has advantages and drawbacks.

APPLIED AS A LIQUID

Advantages & Disadvantages - LIQUID Application of EasyDECON DF200

LIQUID	
ADVANTAGES	DISADVANTAGES
Highest decontaminant to contaminant ratio	<ul style="list-style-type: none">- Highest material expenditure- Runoff – can lead to over use of product/waste- Liquid can saturate causing collateral damage
May be performed using inexpensive, disposable applicators such as towels, sponges, mops	<ul style="list-style-type: none">- Improper/ineffective application can lead to spread of hazards- Contaminant transfer through contact- Solid waste disposal
	<ul style="list-style-type: none">- Absorption can make removal more challenging- Time and labor Intensive



EasyDECON® DF200

APPLIED AS A FOG

Advantages & Disadvantages - FOG Application of EasyDECON DF200

FOG	
ADVANTAGES	DISADVANTAGES
EasyDECON DF200 is compatible with many commercial fogging devices	-Reduced life cycle of some fogging devices/material compatibilities
Ability to 'fill' a structure, air ducts and other difficult to access areas	-Time invested in sealing structure prior to treatment -Time necessary to 'flood' a structure
Minimum collateral damage	-Lowest decontaminant-to-contaminant ratio. - Extra time required to ensure necessary concentrations of decontaminant are achieved



EasyDECON DF200 is compatible with many commercially available fogging devices



APPLIED AS A FOAM

Advantages & Benefits - FOAM Application of EasyDECON DF200

FOAM	
ADVANTAGE	BENEFITS
Logistically Advantageous	- Liquid can be expanded up to 35x, covering far more area and lowering cost. - Large areas can be covered in a very short time - Easy cleanup/limited solid waste
Nozzle Changes to Vary Application Pattern	Nozzles can be changed in seconds to achieve ideal spray patterns
Projection Range	Spray ranges up to 35 feet for large areas
Foam has numerous advantages	- Sticks to walls, ceilings - Runoff/waste minimal - Very little liquid content = limited saturation/collateral damage - Clear visual of the effectiveness of coverage -Foam tacks, prevents spread and inhibits off-gassing

EasyDECON® DF200

The Advantages of Foam

Cost effective/value

- 1-gal solution = up to 35 gallons of decontaminating foam.
- Gallon-for-gallon weighs up to 35x less than non-foaming solutions..
- Projects farther using Compressed Air Foam (CAF) equipment.
- Foam breaks down slowly = wet contact time.
- Less material required, less logistical impact and associated costs.
- Less solid waste and collateral damage. Clean up is easy and inexpensive.



How long would it take to hand wash this area?

Adheres to vertical and horizontal surfaces

- Water runs off, drips and drains. Foam sticks and maintains contact/wet time.
- Water saturates/floods incident sites – foam breaks down leaving VERY little moisture = little collateral damage.

Clear coverage indicator

- Foam is a visual indicator of the effectiveness/completeness of coverage.
- Very difficult to judge coverage with non-foaming solutions/products.

Foam blankets

- Acts as a barrier between environment and contaminants - Reduces transfer risk.
- Inhibits off gassing by suppressing vapors.
- Pure decontaminant – to – contaminant



EasyDECON® DF200

The Advantages of EasyDECON DF200

Tested & Proven to effectively neutralize chemical and biological warfare agents, including Sarin, Mustard, VX, Soman and Anthrax

~5 Year Shelf Life –Part 2 test kit provides rapid, visual indication of Part 2 stability.

The Original Sandia National Laboratories Formula created to neutralize chemical and biological warfare agents

Foam, Liquid or Fog deployment options

NOT HAZARDOUS for transportation or storage; not flammable

Foam adheres and provides visual assurance of effective coverage on vertical and horizontal surfaces

Thoroughly Tested for 10+ Years by the US Military. The **ONLY** DF200 blend that can make this claim!

Multi-Use Formula – EasyDECON is a powerful odor killer, neutralizes toxic chemicals, blood borne pathogens, and has many more uses!

US EPA Registered - claims vs 30+ microorganisms verified through testing – Spores, toxins, viruses and bacteria

Intelagard CAFS Expands Up To 35 times over liquid volume

EasyDECON® DF200

Intelagard CAF Systems

- Proprietary compressed air foam technology produces superior foam
- Multiple configurations available – from 2 to 1000 gallons
- Adjustable foam expansion
- Mechanical metering and in-stream mixing
- Single cell (tank) batch mixing for small applicators
- Customizable large systems
- 3-part tank configurations available
- Multiple purpose systems for economical use
- Easy to operate, and low maintenance

Intelagard Compressed Air Foam Systems are ideal for the application of decontaminants that are designed to be deployed as a foam, as is EasyDECON DF200. Proprietary components of Intelagard CAFS lead to the production of superior, long lasting foam. Intelagard systems have been used by the US military for over 10 years, and are considered the CAF systems of choice.



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A microscopic view of various bacteria, including long, rod-shaped bacilli and smaller, more spherical cocci, all appearing in shades of blue against a darker blue background. The bacteria are scattered throughout the frame, with some in sharp focus and others blurred in the background.

Section IV

**How Does
EasyDECON DF200
Work?**

EasyDECON® DF200

HOW PART 1 WORKS

Part 1, Surfactant

Part 1 contains surfactant that dissolves various oils and lipid/hydrophobic soils and chemicals.

Through these actions Part 1 reduces the surface tension (wets out) biological materials and chemicals.

The unique and patented chemistry of Part 1 suspends the contamination in a micelle and draws the hydrogen peroxide (Part 2) to and into the contaminant.

HOW PART 2 WORKS

Part 2, H₂O₂/ Hydrogen Peroxide

BIOLOGICAL

The Hydrogen Peroxide adds oxygen bonds to the protein chains in the DNA of a microorganism. By adding the oxygen bonds the protein chain is destroyed.

Once the protein chain is destroyed the microorganism cannot repair itself or re-grow.

CHEMICAL

After the agent is 'wetted out' the H₂O₂ in the formula attacks the contaminant molecular chain at points subject to oxidation. Through oxidation the molecule is broken up.

A microscopic view of various bacteria, including rod-shaped and spherical forms, set against a blue background. The bacteria are rendered in shades of blue and white, giving a three-dimensional appearance.

Section V

QUALITY

EasyDECON® DF200

QUALITY STATEMENT

When EFT was granted the license by Sandia National Laboratories EFT immediately engaged a quality partner to blend the formulation precisely to Sandia specifications. Intelagard still uses this same blender today, over 14 years later.

Numerous government and independent audits, inspections and tests have verified that EasyDECON is precisely adherent to Sandia National Laboratories and Intelagard's stringent quality standards. To date, not one batch of EasyDECON DF200 has ever deviated from these standards.

Intelagard has invested considerable resources into obtaining the necessary federal and state approvals to license EasyDECON DF200. Testing performed over the years includes formula testing, safety testing, efficacy testing, material compatibility testing, biodegradability testing, shelf life testing. All testing has been performed to guarantee EasyDECON DF200 is a safe and effective formulation.

EasyDECON DF200 has successfully passed over 10 years of US Military Testing and is the most tested and validated full spectrum decontaminant in the world.

EasyDECON® DF200

QUALITY ASSURANCE

Quality Control

EasyDECON DF200 is blended in bulk, assigned lot numbers and shipped to Intelagard's Lafayette, Colorado facility.

Intelagard verifies that this bulk product meets acceptance criteria.

Bulk product is then bottled in standard packages that are assigned individual serial numbers.

Intelagard stores all EasyDECON DF200 product in a climate controlled facility and orders are filled on a First-in/First-out (FiFo) basis.

User Procedures to Maintain Quality

To ensure continued quality:

- Store product indoors, out of direct sunlight;
- Protect the product from extreme temperatures;
- Keep the product sealed until ready to use;
- Store upright;
- Perform Part 2 testing if applicable;
- DO NOT mix product that will not be used immediately; and
- Never store product in a metal container – always reuse original packaging.

EasyDECON® DF200



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Contact us today with any questions about EasyDECON DF200 or our
multi-hazard, multi-purpose Compressed Air Foam Systems

www.intelagard.com