

## ENVIRONMENTAL IMPACT QUESTIONNAIRE (EIQ)

### I. DIRECTIONS

A. Complete the following questionnaire and submit for review to:

**Professor Jackson**

B. Relate information concerning only one product per questionnaire.

C. All questions may not apply to every product or manufacturer. It is not expected the manufacturer will have addressed all of the environmental concerns expressed in the EIQ.

1. Respond to every question even if response is “not available”, “not applicable”, or “no”.
2. Attach additional sheets as required. Reference additional sheets to correspond with the question number.

### II. IDENTIFICATION

A. Material/Product: **Carpet**

Brand Name: **Earth Square**

Manufacturer: **Milliken**

What is the primary use or application for this product?

**Carpet/Flooring**

B. Contact for EIQ: **Not applicable**

### III. RESOURCE MANAGEMENT

A. Renewable Resources:

1. List renewable resources used as product raw materials. Provide percentage amounts in relation to complete (100 percent) product.

<u>Renewable Resource</u>	<u>Percentage</u>
<b>Used carpet</b>	<b>100%</b>

2. Does manufacturer obtain raw materials or fabricate this product outside of the United States: **No**

If yes, are United States environmental standards or more strict standards followed in these countries: **Not applicable**

List countries involved.

B. Managed Resources:

1. Does extraction of product raw materials or fabrication of this product affect endangered specie(s): **NO**

a. If yes, list species and describe effect, including methods for negative effects.

<u>Endangered Species</u>	<u>Effect</u>
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2. *Products Containing Wood: Are wood materials obtained from certified sustainable forestry operations: Not applicable*

a. If yes, provide name of certification organization for each wood species being used in this project. **Not Applicable**

b. If no, state where the product resources are produced and describe forestry operations.

<u>Product Resources</u>	<u>Forestry Operations</u>
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**Not applicable**

C. Recycled Content:

1. List recycled materials used as product raw materials; distinguish pre-consumer and post-consumer materials. Provide percentage amounts in relation to complete (100 percent) product.

Recycled Material    % Pre-Consumer    % Post-Consumer

**Reused carpet    100%**

D. Embodied Energy:

1. Product Transport:

a. Where are raw materials acquired? Identify state and country.

Raw Material                      Source (State and Country)

**Are acquired from lots of companies all over the United States.**

b. Describe means of transporting raw materials to the manufacturing plant.

Raw Material                      Transportation

**Carpet    Truck**

c. Where is product manufactured/fabricated? Identify state and country.

**LaGrange GA, U.S.A**

d. Is the product warehoused locally, regionally, or nationally?

***Locally***

e. Describe means of transporting product to distribution facilities.

**A truck delivers the product to consumers and vendors.**

2. Production Energy: List energy sources used in production process; indicate which are renewable energy sources (e.g. wind, solar). Provide percentage amounts in relation to complete (100 percent) product.

<u>Energy Sources</u>	<u>Renewable</u>	<u>Percentage</u>
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**Not available**

3. Provide an embodied energy study of the product from extraction of raw materials through production and assembly. Include an estimate for the total number of BTU's required per pound of finished products. Identify parameters for study.

**Not Available**

4. Describe measures the manufacturer has taken to minimize energy usage in the production process.

**16% reduction in energy usage per pound of product since 1991.**

E. Reuse/Recyclability/Disposal: 1. Reuse:

a. Can product be reused directly (in same or similar use): **Yes**

b. If yes, discuss the possibility of direct reuse of the product after project demolition.

**The product is shipped back to milliken and cleaned, retextured, dyed and then ready for use as carpet again.**

2. Recycling:

- a. Can product be recycled: **Yes**
- b. If yes, list the parts of the product which can be post-

consumer recycled into raw materials for the product and the parts which can be post-consumer recycled into other types of items. Provide percentage amounts in relation to complete (100 percent) product.

<u>Post-Consumer - Raw</u>	<u>Post-Consumer - Other</u>	<u>Percentage</u>
<b>Recycle dye mixes</b>		<b>Not Available</b>
	<b>Carpet</b>	<b>100%</b>
	<b>carpet backing</b>	<b>Not available</b>

- c. If yes, describe the process of separation of the parts for post-consumer recycling from the product.

**Dye is collected and then reused. Carpet can me cleaned, retextured, dyed and used again as carpet. Carpet backing is ground up and used to make backing again.**

- d. If yes, list current markets using recycled materials from the product.

**Milliken**

e.If yes, estimate the practical number of times this item can be recycled. **The carpet can be re-used several times and then shredded and recycled after reuse lifespan.**

- 3. Describe the manufacturer’s policy and program to facilitate the recycling or reuse of its product by accepting product returns at the end of their “useful life”.

**Consumer can ship carpet back to Milliken Company. The carpet is then cleaned, retextured, and dyed. The consumer can either buy this “new” carpet, or if they don’t want it Milliken warehouses it until someone wishes to purchase it.**

#### **IV. TOXICITY/HAZARDOUS MATERIALS**

##### **A. Toxic/Hazardous By-Products:**

1. List the production wastes involved with the manufacture of this item. Distinguish the production wastes between toxic and non-toxic. Provide percentage amounts in relation to complete (100 percent) product.

<u>Toxic</u>	<u>Non-Toxic</u>	<u>Percentage</u>
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**47/55 companies send no waste to a landfill.**

2. Estimate the quantity of production waste produced per unit of finished product.

**1% of the company’s solid waste was landfilled in 1999.**

3. Is reclamation of production waste done on site: **Not available**

With outside services:

**Not available**

a. If outside services are used, list companies involved.

3. Is waste water reclaimed by manufacturer: **Yes**

4. a. If yes, describe the process of recycling/reuse of waste water.

**Waste filtration technologies, the company neglects to elaborate.**

5. Describe the manufacturer's active steps to minimize or eliminate production wastes; include process of liquid and solid waste material treatment or reclamation if performed at manufacturing site.

**Each plant has at least two environmental specialists. Milliken uses water filtration systems, have eliminated use of chlorinated solvents, and reduced solid waste to landfills down to 1%.**

6. Describe the manufacturing procedures and chemicals involved that would be considered better than industry standard.

**Millicare, dry cleaning system that uses biodegradable polymers to clean the carpet.**

B. Toxic/Hazardous Contents (carcinogens and other hazards inherent in product/material):

1. Provide a complete chemical profile of the item; include all chemical components and provide percentage amounts in relation to complete (100 percent) product; identify biocides (mildewcides or in-can preservatives) and carcinogens listed by any of the following:

- a. United States Environmental Protection Agency (EPA) Carcinogen Assessment Group (CAG) list of carcinogens.
- b. Clean Air Act Sections 109, 111, and 112.
- c. The National Toxicology Program's latest published "Annual Report on Carcinogens".
- d. IARC Human Carcinogens (Group 1, 2A, and 2B).

e. California Proposition 65.

Chemical

Carcinogen

Percentage

**Not available/applicable**

C. Material Safety Data Sheet (MSDS):

1. Provide Material Safety Data Sheet (MSDS).

The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

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Material Safety Data Sheet

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Millicare Fiber Protector  
0697APP Revised 8-SEP-1997  
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**CHEMICAL PRODUCT/COMPANY IDENTIFICATION**  
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**Company Identification**

**MANUFACTURER/DISTRIBUTOR**

DuPont

1007 Market Street

Wilmington, DE 19898

**PHONE NUMBERS**

Product Information : 1-800-441-7515 (outside the U.S.  
302-774-1000)

Transport Emergency : CHEMTREC 1-800-424-9300 (outside U.S.  
703-527-3887)

Medical Emergency : 1-800-441-3637 (outside the U.S.  
302-774-1000)

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**COMPOSITION/INFORMATION ON INGREDIENTS**  
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**Components**

Material CAS Number %

Polymethylmethacrylate 9011-14-7 <3

NJ Trade Secret Registry #00850201001-5155P <4

NJ Trade Secret Registry #00850201001-5259P <2.5

Citric Acid 77-92-9 <2

Water 7732-18-5 76-82  
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**HAZARDS IDENTIFICATION**  
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**Potential Health Effects**

Skin contact may cause mild skin irritation with discomfort or rash. Skin contact to NJ Trade Secret Registry # 00850201001-5259P may cause allergic skin rashes.

Eye contact may cause eye irritation with discomfort, tearing or blurring of vision.

Inhalation may cause irritation of the upper respiratory passages. Inhalation of respirable particles of NJ Trade Secret Registry #00850201001-5259P may cause lung irritation effects with cough, discomfort, difficulty breathing, shortness of breath of possibly modest symptoms, followed in hours by severe shortness of breath requiring prompt medical attention.

Ingestion of Citric Acid may cause gastrointestinal irritation with upper abdominal pain, "heart burn", nausea,  
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Material Safety Data Sheet

(HAZARDS IDENTIFICATION - Continued)

vomiting, and diarrhea. However, there may be no symptoms at all.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

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#### FIRST AID MEASURES

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First Aid

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

Flush skin with water after contact. Wash contaminated clothing before reuse.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, do not induce vomiting. Immediately give 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physicians

Activated charcoal mixture may be administered. To prepare activated charcoal mixture, suspend 50 grams activated charcoal in 400 mL water and mix thoroughly. Administer 5 mL/kg, or 350 mL for an average adult.

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#### FIRE FIGHTING MEASURES

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Flammable Properties

Not a fire or explosion hazard.

Hazardous decomposition products including carbon dioxide, carbon monoxide, hydrogen fluoride, toxic gases or particles may be formed during combustion. These products may cause severe eye, nose, and throat irritation or toxic effects.

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(FIRE FIGHTING MEASURES - Continued)

Extinguishing Media

Use media appropriate for surrounding material.

Fire Fighting Instructions

Keep personnel removed and upwind of fire. Wear self-contained

breathing apparatus. Wear full protective equipment.

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#### ACCIDENTAL RELEASE MEASURES

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##### Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

##### Accidental Release Measures

Prevent liquid from entering storm sewers, waterways or low areas. Soak up with sawdust, sand, oil dry or other absorbent material. Shovel or sweep up. Place in container for disposal.

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#### HANDLING AND STORAGE

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##### Handling (Personnel)

Avoid inhalation. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling. Do not store or consume food, drink, or tobacco in areas where they may become contaminated with this material. Avoid circumstances that produce respirable particles unless suitable ventilation and respirator are used.

##### Handling (Physical Aspects)

Avoid circumstances that produce respirable particles unless suitable ventilation and respirator are used.

##### Storage

Keep container tightly closed.

Keep from freezing.

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Material Safety Data Sheet

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#### EXPOSURE CONTROLS/PERSONAL PROTECTION

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##### Engineering Controls

Use only with adequate ventilation.

Vent dryer fumes outside work area. Do not aerosolize. In spray applications, use airless type pressure spray equipment at less than 60 psi and exhaust ducts, drip pans, or other design features to minimize worker exposure to mists and overspray.

##### Personal Protective Equipment

###### EYE/FACE

Wear safety glasses or coverall chemical splash goggles.

###### RESPIRATORS

Wear NIOSH approved respiratory protection, as appropriate.

###### PROTECTIVE CLOTHING

Where there is potential for skin contact have available and wear as appropriate impervious gloves, apron, pants, and jacket.

##### Exposure Guidelines

###### Applicable Exposure Limits

###### Polymethylmethacrylate

PEL (OSHA) : None Established

TLV (ACGIH) : None Established

AEL \* (DuPont) : 10 mg/m<sup>3</sup>, 8 Hr. TWA, total dust

5 mg/m<sup>3</sup>, 8 Hr. TWA, respirable dust

NJ Trade Secret Registry #00850201001-5259P

PEL (OSHA) : None Established  
TLV (ACGIH) : None Established  
AEL \* (DuPont) : 0.1 mg/m<sup>3</sup>, 8 & 12 Hr. TWA  
respirable dust

\* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

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Material Safety Data Sheet

(Applicable Exposure Limits - Continued)

Exposure Guideline Comments

No AEL has been established for this product. Other products with fluorinated material components have an AEL of 0.1 mg/m<sup>3</sup> to 1 mg/m<sup>3</sup> (8 hour TWA) for respirable size aerosol particles.

Air monitoring studies conducted at customer sites indicates that the use of the recommended low pressure (less than 60 psi) airless type, garden type or deck specific hand pump sprayer with spray tip orifice minimum of 0.031 inches in diameter does not produce respirable size aerosol particle concentrations near the AEL.

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#### PHYSICAL AND CHEMICAL PROPERTIES

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##### Physical Data

Boiling Point : 100 C (212 F)

% Volatiles : 89 WT%

Solubility in Water : Dispersible

pH : 4-5

Form : Opaque liquid

Color : Off-white, Tan

Specific Gravity : 1.0335 @ 20C (68F)

Density : 8.62 lbs/gal @ 25 deg C (77 deg F)

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#### STABILITY AND REACTIVITY

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##### Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

Incompatible with cationics and mineral acids.

Decomposition

Hazardous decomposition products including carbon dioxide, carbon monoxide, hydrogen fluoride, toxic gases or particles may be formed during combustion. These products may cause severe eye, nose, throat, and lung irritation or toxic effects.

Polymerization

Polymerization will not occur.

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Material Safety Data Sheet

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#### TOXICOLOGICAL INFORMATION

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##### Animal Data

Polymethylmethacrylate:

Inhalation 4 Hr. LC50: >2 mg/L in rats

Skin Absorption LD50: >3,000 mg/kg in rabbits

Oral LD50: >2,000 mg/kg in rats

NJ Trade Secret Registry # 00850201001-5259P:

Inhalation 4 Hr. ALC: 42 mg/m<sup>3</sup> in rats

(Respirable Particles)

Oral LD50: >25,000 mg/kg in rats

Citric Acid:

Oral LD50: 11,700 mg/kg in rats

Polymethylmethacrylate is not a skin or eye irritant, and is not a skin sensitizer in animals. Repeated inhalation exposure caused clinical chemical effects in rabbits.

Single and repeated exposures by ingestion produced mild degenerative changes of the liver and kidneys. No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

25-35% NJ Trade Secret Registry # 00850201001-5155P in water is a mild skin and eye irritant; is not a skin sensitizer; is of very low toxicity by ingestion (Oral ALD, >11,000 mg/kg in rats), and is at worst moderately toxic by inhalation (4 Hour Inhalation ALC, >1300 mg/m<sup>3</sup> in rats).

Single oral doses caused diarrhea and moderate to severe weight losses in the exposed animals. Ocular and nasal discharges were observed in animals exposed by inhalation. No animal test reports are available to define carcinogenic, mutagenic, developmental, or reproductive hazards.

NJ Trade Secret Registry # 00850201001-5259P is a mild skin irritant, is a slight eye irritant, and is a weak skin sensitizer in animals. Single and repeated inhalation exposures produce severe lung congestion with edema and bleeding. No animal test reports are available to define carcinogenic, developmental, or reproductive hazards. This material does not produce genetic damage in bacterial cell cultures, but has not been tested in animals.

Citric acid is a mild skin irritant, is a severe eye irritant, but is untested for animal sensitization.

Prolonged ingestion exposures produced nonspecific effects such as weight loss and irritation as well as slight increase in tooth erosion. No animal test reports are available to define carcinogenic or developmental hazards.

Tests in animals demonstrate no reproductive toxicity.

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Material Safety Data Sheet

(TOXICOLOGICAL INFORMATION - Continued)

Citric acid does not produce genetic damage in bacterial or mammalian cell cultures, but has not been tested in animals.

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#### ECOLOGICAL INFORMATION

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##### Ecotoxicological Information

Citric Acid:

100 Hour LC50, Goldfish: >625 mg/L.

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#### DISPOSAL CONSIDERATIONS

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##### Waste Disposal

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not burn.

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TRANSPORTATION INFORMATION

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Shipping Information

DOT/IMO/IATA

Proper Shipping Name : Not Regulated

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REGULATORY INFORMATION

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U.S. Federal Regulations

TSCA Inventory Status : Reported/Included.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes

Chronic : No

Fire : No

Reactivity : No

Pressure : No

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OTHER INFORMATION

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NFPA, NPCA-HMIS

NPCA-HMIS Rating

Health : 2

Flammability : 0

Reactivity : 0

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Material Safety Data Sheet

(Continued)

Personal Protection rating to be supplied by user depending on use conditions.

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The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS : MSDS Coordinator

DuPont Chemical Solutions Enterprise

Wilmington, De. 19898

Telephone : 800-441-7515

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS

a. Articles: Finished products which are manufactured off-site and shipped to the project for installation while conforming to Title 29 of the Code of Federal Regulations, OSHA Hazard Communication Regulation 29CFR 1910.1200, Section (b)5 and Section (c) are defined as articles. If by being defined as an article, a MSDS has not been developed for a particular product,

then provide MSDS on raw materials, goods, and items used in the fabrication of that article.

D. Outgassing/Reactivity:

1. Chlorofluorocarbon (CFC):

a. Are CFC's or HCFC's used in the manufacture and/or

content of the item specified: **No**

b. If CFC's or HCFC's were previously used in the product and/or its manufacture, describe measures taken by manufacturer to eliminate their use.

**Maintenance on air conditioning in the building to reduce CFC's. No PVC backing or chlorinated cleaning solvents.**

2. Indoor Air Quality:

a. Does the product outgas (emit) carcinogens or other hazardous substances into the air after installation, including final curing/drying: **No**

b. If yes, submit IAQ test report.

E. Electromagnetic Radiation:

1. Does the product emit electromagnetic radiation? **No**

2. If yes, at what rate per hour

3. If yes, describe methods for installation, use, and maintenance of product

to minimize generation of and occupant exposure to electromagnetic radiation. **Not**

**applicable**

F. Compliance with Regulations (Environmental Statutory Compliance):

1. Does the manufacturer meet all federal, state, and local environmental laws, including laws governing air emissions, waste water treatment, and solid waste disposal/treatment: **Yes**

3. Has the manufacturer met the above criteria for the previous five years:  
**Yes**

4. List the applicable standard.  
**EPA**

5. Does the product meet applicable industry standards, such as ASTM, Green Seal, manufacturing standards, LA or NY research report numbers, and UL approvals:  
List these standards.

**Not applicable**

## **V. PERFORMANCE - INSTALLATION**

A. Environmental Procedures/Precautions:

1. Describe special procedures and precautions to be used while handling and installing the product:

**Not applicable**

2. Identify accessories, such as fasteners, sealers, and adhesives that are non-toxic (or less toxic than industry standard), energy efficient, or recycled or recyclable products?

**Backing adhesive, water soluble, PVC free backing, backing is made from recycled content. Carpet is nylon 6,6. Carpet is made from 100% post-consumer carpet.**

B. Installation Energy:

1. Product Transport: List the means to transport the finished product to the construction site. **Truck**

2. Installation: List energy means and describe energy requirements for installation of the product.

**Man-power is needed to lay down and install the carpet.**

C. Construction Waste:

1. List the recommended method(s) for proper products disposal; stipulate preferred method and restrictions which might apply.

**Carpet can be sent back to the company and put through the Earth Square renewal system or shredded and made into new carpet.**

2. Comment on the environmental impact of the product as a waste material.

**The company only landfills 1% of it's solid waste per year.**

**Everything else is reused or recycled.**

3. Packaging:

a. Describe packaging for the product.

**Carpet is shipped in reusable containers that can be sent back to the manufacture.**

- b. Does manufacturer accept return of used packaging for reuse: **yes**
- c. If yes, state limitations and procedures for packaging return.

**Not Available**

## **VI. PERFORMANCE - OPERATIONS**

### **A. Maintenance**

1. Describe the recommended cleaning and maintenance for the product using products, which have minimal VOC emission.

**Millicare dry cleaning system uses biodegradable polymers to remove dirt. VOC levels are at an almost undetectable level.**

2. Estimate the “useful life” expectancy for this product.

**seven year warranty comes with the product.**

3.

Are replacement parts available: **yes**

If yes, can replacement parts be installed in the field: **Yes**

4. Provide a copy of the life cycle analysis for this product. **Not Available**

5. Provide a copy of the manufacturer’s warranty for this product. **Not**

**Available**

### **B. Energy Efficiency (energy required to operate/maintain):**

1. Estimate BTU’s required to operate the product when new? **Not**

**applicable**

### **C. Compliance with Regulations (Environmental Statutory Compliance):**

1. Does the product meet all federal, state, and local environmental laws, including laws governing energy efficiency and air emissions: **Yes**
2. Has the product met the above criteria for the previous five years:  
**yes**
3. List the applicable standards.  
**88% decrease in S.A.R.A**  
**89% decrease in CFC's**  
**98% reduction in emission of 17 chemicals targeted by the**

**E.P.A**

## **VII. CORPORATE COMMITMENT**

- A. Corporate Environmental Policy:

### **Milliken's Environmental Policy**

Milliken is committed to operating our plants and facilities in complete compliance with all applicable environmental regulations and to operate in a manner that protects the quality of our environment and the health and safety of our Associates and the public.

We are committed to strive for a goal of zero waste generation to all media - land, air, water - to be achieved by continual improvement in all our operations. This goal will guide the conduct of our manufacturing operations, the development of new products and our interaction with our suppliers and customers. Recycling of materials is an integral part of this on-going effort.

We are committed to encouraging our families, our Associates and our communities through education and leadership to conserve our natural resources and protect the environment in our daily lives.

We re-affirm our commitment to work with all relevant authorities to develop effective environmental solutions that meet tests of practicality and feasibility.

Roger Milliken, Chairman & CEO - Milliken & Company

<http://www.millikencarpeteurope.com/carpUK/MCEuroP.nsf/SearchView/FED26966F34AE18985256D65004E6FDE?OpenDocument>