

Standard for Business and Institutional Furniture – DRAFT 10-18-07

1 General

1.1 Purpose

The purpose of this voluntary Standard is to provide measurable market-based definitions of progressively more sustainable furniture by establishing performance criteria that address environmental, economic and social aspects throughout the supply chain.

1.2 Scope

This Standard provides a pathway towards sustainability by establishing measurable criteria for multiple levels of achievement and/or performance.

This Standard is applicable to all business and institutional furniture; this includes but is not limited to moveable walls, systems furniture, desking systems, case goods, tables, seating and accessories. The Standard is also applicable to materials and components manufactured by suppliers to furniture manufacturers.

This Standard is applicable to business and institutional furniture manufactured in one facility or multiple facilities, one country or multiple countries. It addresses product-based characteristics in the general areas of materials, use of energy, human and ecosystem health, and social responsibility impacts.

2 Normative References

ANSI/BIFMA M7.1
California Title 24, Chapter 5
CSA sustainable forest practices
FSC sustainable forest practices
ISO 11469
ISO 14001
ISO 14025
ISO 14040
ISO 14044
SFI sustainable forest practices
USGBC LEED - EB

3 Definitions

3.1 air pollutant: Any substance in air that could, in high enough concentration, harm humans, animals, vegetation, or material.

3.2 air pollution: The presence of contaminants or pollutant substances in the air that interfere with human health or welfare, or produce other harmful environmental effects.

3.3 biodegradable: Capable of decomposing under natural conditions.

3.4 biodiversity: The number, variety, and variability of living organisms.

3.5 byproduct: Material, other than the principal product, generated as a consequence of an industrial process or as a breakdown product in a living system.

3.6 carcinogen: Any substance that can cause or aggravate cancer.

3.7 chemicals of concern: is a chemical that makes a significant contribution to one or more of the following life cycle impact categories:

- persistent, bioaccumulative, and toxic (PBT); and
- very persistent, very bioaccumulative (vPvB); and
- carcinogen, mutagen, reproductive toxicant (CMR); and
- endocrine disruptor (ED).

3.8 child labor: Utilizing workers under the minimum legal age for employment in the country where the facility operates.

3.9 compost: The relatively stable humus material that is produced from a composting process in which bacteria in soil mixed with garbage and degradable trash break down the mixture into organic matter.

3.10 cradle-to-gate: a term used to describe the LCA boundary encompassing the life cycle stages of raw material extraction and conversion.

3.11 criteria (air) pollutants: The 1970 amendments to the Clean Air Act required EPA to set National Ambient Air Quality Standards for certain pollutants known to be hazardous to human health. EPA has identified and set standards to protect human health and welfare for six pollutants: ozone, carbon monoxide, total suspended particulates, sulfur dioxide, lead, and nitrogen oxide. The term, "criteria pollutants" derives from the requirement that EPA must describe the characteristics and potential health and welfare effects of these pollutants. It is on the basis of these criteria that standards are set or revised.

3.12 design for the environment (DFE): The systematic integration of environmental attributes into the design of products and processes. There are three unique characteristics of DFE:

- The entire life-cycle is considered
- Point of application is clearly in the product realization
- Decisions are made using a set of values consistent with industrial ecology, integrative systems thinking or another framework.

3.13 ecosystem: The interacting system of a biological community and its non-living environmental surroundings.

3.14 environment: The sum of all external conditions affecting the life, development, and survival of an organism.

3.15 environmental aspect: An element of an organization's activities, products or services that can interact with the environment.

3.16 environmental policy: A statement by the organization of its intentions and principles in relation to its overall environmental performance, which provides a framework for action and for the setting of its environmental objectives and targets.

3.17 environmental management system: The part of a company's overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining the environmental policy.

3.18 forced labor: Compulsory prison or debt bondage labor. Lodging of deposits or identify papers by employers or outside recruiters for the purpose of restricting or preventing the individual from leaving employment.

3.19 fossil fuel: Fuel derived from ancient organic remains. Some examples are peat, coal, crude oil, and natural gas.

3.20 gate-to-gate: a term used to describe the LCA boundary encompassing the life cycle stage of manufacturing.

3.21 greenhouse gas (GHG): Gases related to human activities that accelerate the greenhouse effect.

3.22 hazardous substances (materials): 1. Any substance that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive. 2. Any substance designated by EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or is otherwise released into the environment.

3.23 incidental presence: The presence of a regulated metal (i.e., cadmium, lead, mercury, hexavalent chromium) as an unintended or undesired ingredient of a package or packaging component.

3.24 legacy products: Business and institutional furniture products manufactured for sale prior to the publication date of the BIFMA SAS.

3.25 life cycle: The total impact of a system, function, product, or service from the extraction of raw materials through its end-of-life management.

3.26 life cycle assessment (LCA): A tool for the systematic evaluation of the environmental aspects of a product or service system through all stages of its life cycle consistent with ISO 14040. An analytical tool to implement life cycle thinking, inclusive of both product and process. An LCA is generally quantitative and requires that the results be normalized to a functional unit.

3.27 life cycle thinking: A conceptual approach that addresses environmental problems from a whole-systems or holistic perspective. The essential difference from an LCA is that the results are not normalized to a functional unit, and the results may be expressed qualitatively or quantitatively.

3.28 manufacturing facility: The applicant specified boundary of the location(s) where product(s) seeking conformance are being manufactured.

3.29 package: A container providing a means of marketing, protection, or handling of a product and shall include a unit package, an intermediate package, and a shipping/transport container as defined in American Society for Testing and Materials (ASTM) D 996. "Package" shall also mean and include such unsealed receptacles as carrying cases, crates, cups, pails, rigid foil, and other trays, wrappers and wrapping films, bags, and tubs.

3.30 packaging component: Any individual assembled part of a package such as, but not limited to, any interior or exterior blocking, bracing, cushioning, weatherproofing, exterior strapping, coatings, closures, inks, and labels.

3.31 post-consumer: Generated by households, or by commercial, industrial, and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes return of materials from the distribution chain.

3.32 post-industrial: Diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

3.33 pollution: Generally, the presence of a substance in the environment that because of its chemical composition or quantity prevents the functioning of natural processes and produces undesirable environmental and health effects.

3.34 recovered material: Waste materials and byproducts that have been recovered or diverted from solid waste, but does not include materials and byproducts generated from, and commonly reused within, an original manufacturing process.

3.35 recyclable: capable of minimizing waste generation by recovering and reprocessing usable products that might otherwise become waste.

3.36 recycle/reuse: To minimize waste generation by recovering and reprocessing usable products that might otherwise become waste (e. g., aluminum cans, paper and bottles, etc.).

3.37 recycled-content materials: Materials that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (post-industrial) or after consumer use (post-consumer).

3.38 renewable energy: Energy from a source that is replenishable and replenished on some reasonable time scale. Potential renewable energy sources include, but are not limited to wind, solar, heat from the earth's interior, oceans, rivers, and biomass.

3.39 renewable material: A material that is replenishable and replenished on some reasonable time scale. Renewable material sources include, but are not limited to wood, grass fibers, plant-based plastics, fuels and 100 percent recycled content metals, papers, plastics and glass.

3.40 reuse: The operation by which packaging, which has been conceived and designed to accomplish within its lifecycle a minimum number of trips or rotations, is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market enabling the packaging to be refilled: such reused packaging will become packaging waste when no longer subject to reuse-

3.41 reusable packaging: Packaging or packaging component which has been conceived and designed to accomplish within its lifecycle a minimum number of trips or rotations in a system for reuse.

3.42 significant environmental aspect: An environmental characteristic that has or can have significant environmental impact.

3.43 social responsibility (or equity): The identification of issues, the development of standards, and the implementation of programs that address corporate responsibility for the ethical treatment of employees, communities, and other stakeholders.

3.44 solid waste: Non-liquid, non-soluble materials ranging from municipal garbage to industrial wastes that contain complex and sometimes hazardous substances. Solid wastes also include sewage sludge, agricultural refuse, demolitions wastes and mining residues. Technically, solid waste also refers to liquids and gases in containers.

3.45 source reduction: A pollution prevention technique that eliminates the potential for pollution at the source, or where the polluting material enters the product or service cycle.

3.46 stakeholders: People who are (or might be) affected by any action taken by an organization. Examples are: Customers, owners, employees, associates, partners, contractors, suppliers, related people or located nearby.

3.47 sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their needs.

3.48 toxic: Presenting an unreasonable risk of injury to human health or the environment.

3.49 triple bottom line: Sustainable development involves the simultaneous pursuit of economic vitality; ecological integrity; and social equity. Companies aiming for sustainability need to perform not against a single, financial bottom line, but against the triple bottom line.

3.50 waste: Unwanted materials left over from a manufacturing process, or refuse from places of human or animal habitation.

4 Assessing Conformance, Evaluation, and Assessment Criteria

Organizations that choose to assess their business and/or institutional furniture products to this standard can achieve first-party, second-party, or third-party verification of conformance. Organizations can show continuous improvement by moving products to higher levels of conformance.

The manufacturer of the applicant product can determine the scope of the conformance to the extent that the scope can be clearly communicated to potential purchasers of the product. The scope of conformance can be defined based on geographic location. A product that is manufactured in one location can be included, while the same product manufactured in another location could be excluded. In this case, the credits that are based on “facility” or “corporate” characteristics (such as energy use, water use, and health and safety management) shall be evaluated based on the activities only at the location included in the scope of conformance. The scope of conformance can also be limited or defined based on product options or characteristics. For example, wood/veneer options could be included while laminate/non-wood options are excluded, or vice versa. Certain color options or fabric options could be included in the scope of the conformance while others are excluded.

4.1 Elements

This Standard is divided into four basic elements consisting of various prerequisites and credits that are potentially available to organizations seeking product conformance to the standard. The four basic elements are:

- materials;
- energy and atmosphere;
- human and ecosystem health; and
- social responsibility.

4.2 Prerequisites

Each element has one or more prerequisites that are required as the minimum performance against the standard and applicants/products shall meet all prerequisites in each element in order to proceed. Once the prerequisite(s) are met; products may achieve additional credits toward multiple levels of achievement in each element by meeting the specified performance requirements.

4.3 Credits

Beyond the prerequisites, there is no minimum number of credits from any of the four major elements required to demonstrate conformance to this Standard. The required credits can come from any of the four elements.

4.4 Points

Each credit has one or more points available toward conformance. A minimum of ten (10) product related points are required for any level of conformance.

4.4.1 Levels of Conformance

There are three levels of conformance available within this Standard. Below are the three levels, with the associated number of points required to achieve each level:

Silver	31 to 43 total points
Gold	44 to 61 total points
Platinum	62 to 89 total points

5 Materials

5.1 Prerequisite

The organization shall implement a design for environment (DFE) program. The DFE program shall, at a minimum, consist of the following elements: renewable materials; recycled materials; recyclable and biodegradable materials; end of life management; water management and energy efficiency.

5.2 Climate Neutral Materials

The organization shall increase the use of climate neutral materials. The organization shall receive one point if it: Demonstrates that at least 30% of the final product weight is comprised of climate neutral materials. Materials are climate neutral when there is zero net greenhouse gases (GHG) such as CO₂e, from the entire life cycle of the material. GHG impact is calculated utilizing life cycle analysis then is neutralized utilizing carbon emission reduction credits (ERCs) such as through green power off-set purchases or carbon sequestration projects. The offsets must equal or exceed the GHG produced during extraction, processing, manufacture transport and use of product.

5.3 Life Cycle Assessment

The organization shall encourage use of Life Cycle Assessments (LCA) to inform product design and development, and to optimize materials choices. The organization may complete an LCA for the furniture product being assessed. By fulfilling one of the three criteria below, an organization can earn a maximum of three points in this credit, as detailed below.

5.3.1 The organization shall receive one point if it provides evidence that the company has incorporated life cycle thinking into product design by applying the first two of the four LCA components in ISO 14040 and ISO 14044 (Goal & Scope Definition and Life Cycle Inventory).

5.3.2 The organization shall receive two points if it provides evidence that the company has completed an LCA utilizing all four components in ISO 14040 and ISO 14044.

5.3.3 The organization shall receive three points if it demonstrates compliance to 5.3.2 and provides evidence that the company has completed an independent third-party review of its LCA.

5.4 Efficient Use of Materials

The organization shall reduce the quantity (mass) of raw materials used in the manufacture and delivery of products and services. Material efficiency is calculated for the materials comprising 80 percent of the weight of the products to be assessed. This credit is focused on the substantial conversion of raw material (e.g. sawing, routing, machining, forming, stamping, molding, cutting, sewing) and does not cover the extraction and initial processing of raw materials.

By fulfilling one of the two criteria below, an organization can earn a maximum of two points in this credit, as detailed below.

5.4.1 The organization shall receive one point if it demonstrates a Material Efficiency of 70%.

5.4.2 The organization shall receive two points if it demonstrates a Material Efficiency of 80%.

Material Efficiency = [(Input Mass – Waste Mass)/ (Input Mass)] X 100%

Process aids and incidental consumables (e.g. gloves, sand paper) are not included in the calculation. Waste Mass includes materials sent to recycling unless full economic value recovery is demonstrated.

5.5 Bio-based Renewable Materials - Excluding Wood

The organization shall increase the use of renewable materials that are obtained from bio-based sources and decrease dependency on petroleum-based materials. By fulfilling one or both of the two criteria below, an organization can earn a maximum of two points in this element, as detailed below:

5.5.1 The organization shall receive one point if it selects renewable materials for use as an integral component of new or existing product. An integral component is a primary aesthetic and/or functional aspect that is essential and necessary for product completeness.

5.5.2 The organization shall receive two points if it demonstrates compliance to 5.5.1 and ensures that renewable material production waste is composted or recycled. The organization shall utilize its DFE process to compare and select renewable materials.

5.6 Bio-based Renewable Materials - Sustainable Wood

The organization shall encourage environmentally responsible forest management. The use of endangered wood is prohibited. In order to qualify for these points the product to be assessed must contain at least 5 percent wood by weight. By fulfilling one of the two criteria below, an organization can earn a maximum of two points in this credit, as detailed in 5.6.1 and 5.6.2. The objective evidence is the documentation provided by the supplier.

5.6.1 Base Level

An organization shall receive one point if either:

– A minimum of 50 percent of the total wood weight of the product conforms to SFI's, CSA's,

or another qualified organization's sustainable forest practices; or

– A minimum of 20 percent of the total wood weight of the product conforms to FSC sustainable forest practices.

5.6.2 Advanced Level

An organization shall receive two points if either:

– A minimum of 75 percent of the total wood weight of the product conforms to SFI's, CSA's,

or another qualified organization’s sustainable forest practices; or
 – A minimum of 30 percent of the total wood weight of the product is compliant to FSC sustainable forest practices.

5.7 Recycled content

The organization shall increase the amount of recycled content material incorporated into products and packaging. By fulfilling the criteria below, an organization can earn a maximum of three points in this credit, as detailed below.

5.7.1 Base level

An organization shall receive one point if either:

- It incorporates recycled content materials into the product so that the sum of postconsumer recycled content plus one-half of the post-industrial content constitutes at least 30 percent of the total weight of the materials in the product; or
- It incorporates recovered materials into the product at or above the levels specified in the recommended recovered materials content ranges as listed below in Table One.

Note: this second option shall not be available for products made entirely of steel.

TABLE ONE- Recommended Recovered Materials Content Ranges

Product	Material	Post-consumer Content (%)	Total Recycled Content
Furniture structure	Steel	16	25
Furniture structure	Aluminum	--	75
Cellulose Loose-Fill and Spray-On	Post-consumer Paper	75	75
Particleboard/ Fiberboard component¹	Wood or wood composite		80
	Agricultural fiber	--	90
Fabric	PET	See note 2 below	100
Plastic furniture component	Various (non-fabric)		20
Remanufactured or Refurbished Furniture	Various	25	25
Acoustical Material	Various		20

¹ Particleboard and fiberboard used in the wood components of office furniture may also contain other recovered cellulosic materials, including, but not limited to, paper, wheat straw, and bagasse. The percentages of these materials contained in the product would also count toward the recovered materials content level of the item.

² The 100% post-consumer content requirement of the CPG for PET fabric is not replicated here.

NOTE: Post consumer and total recycled percentages are expressed as weight percent

of total material specified.

5.7.2 Advanced Level

An organization shall receive two points if it demonstrates compliance to either requirement in 5.7.1 and either:

- It incorporates recycled content materials into the product so that the sum of post-consumer recycled content plus one-half of the post-industrial content constitutes at least 50 percent of the total weight of the materials in the product; or
- It demonstrates that the recovered content of its product exceeds the levels specified in the recommended recovered materials content ranges listed in Table One by at least 20 percent in each material category, relevant to the product being assessed, if 100 percent recovered content has not already been achieved.

Note: this second option shall not be available for products made entirely of steel.

5.7.3 Packaging

The organization shall receive one point if it incorporates recovered materials into packaging at or above the levels specified in the recommended recovered materials content ranges as listed in Table Two:

TABLE TWO- Recommended Recovered Materials Content Ranges

Product	Material	Post-consumer Content (%)	Total Recycled Content (%)
Packaging	LDPE, LLDPE	30	40
	HDPE	75	95
	PET	75	95
	Corrugated Cardboard	85	95

5.8 Recyclable and Biodegradable Materials

The organization shall increase the use of recyclable and biodegradable materials in the product.

The organization shall receive one point if it:

- Identifies and quantifies the amount by weight of recyclable and biodegradable materials in the product. All qualifying recyclable and biodegradable materials shall be clearly labeled or otherwise identified in a manner that facilitates easy identification of materials during disassembly; and

– Verifies availability of recycling/biodegradation facilities (excluding waste to energy) for recyclable and biodegradable materials in product in at least six of the ten U. S. EPA regions (see appendix for map of regions).

Note: labeling/marketing of plastic components, to support identification and recycling, shall be completed in accordance with ISO 11469.

5.9 Finished Product Packaging

The organization shall receive one point if it can demonstrate evidence that procedures are in place and used that promote any of the following activities:

- Minimizes materials
- Reduces toxicity
- Promotes reuse
- Lists recyclable content
- Provides consumer recycling instructions

5.10 Extended Product Responsibility

5.10.1 Design for Durability/Upgradeability

An organization shall earn one point if it maximizes the useful life of the product to make it easy to refurbish and upgrade for multiple uses by the original or subsequent users. In order to accomplish this, the organization shall adopt and publicize a policy stating that it will design and manufacture products that have a long useful life; can withstand repeated service, repair, and handling; and has standardized product parts and components available to facilitate maintenance, servicing, and reassembly. The organization's policy may allow for the replacement of design components and reuse of functional components.

5.10.2 Design for Remanufacturing

An organization shall earn one point if it designs products to ensure that they can be remanufactured. The products shall be designed in a modular fashion to facilitate the replacement of components that are subject to wear or breakage, likely to go out of style, or likely to be upgraded. In order to earn a point in this credit, the organization shall conform to all three of the requirements below in its design for remanufacturing:

- Product disassembly instructions are publicly available;
- Disassembly is possible with standard tools and does not require special training; and
- Disassembly can occur in a reasonable amount of time.

5.10.3 Design for Recycling

The organization shall maximize the degree to which materials from the product that cannot be reused or remanufactured can be recycled into value-added products. In order to earn a point in this credit, the organization shall conform to all four of the requirements below in its design for recycling:

- Product disassembly instructions are publicly available;
- Disassembly is possible with standard tools and does not require special training;

- Disassembly of the product can occur in a reasonable amount of time; and
- Product parts are labeled, or otherwise identified, to facilitate separation by material content, and identification and separation of toxic components.

5.10.4 Other Facilitation Efforts

By fulfilling one or both of the two criteria below, an organization can earn a maximum of three points in this credit, as detailed below:

5.10.4.1 Research on Recovery Options

The organization shall receive one point if it researches and publishes information on the highest value recovery opportunities for its legacy product lines and the materials that comprise them.

5.10.4.2 Buy-back/Take-back/Leasing

The organization shall receive two points if it makes a buy-back or take-back program part of its strategic sales strategy for products it is selling or leasing. The organization shall ensure that the program is managed consistently with its own environmental programs.

5.11 Solid Waste Management

The organization shall receive a maximum of two points based on its published and implemented solid waste diversion program for all forms of disposal. The organization shall receive:

- One point for a 50 percent diversion goal; or
- Two points for a 100 percent diversion goal

5.12 Water Management

The intent of this section is to focus on process water only. Process water includes water used for pre-treatment (e.g. phosphating wash line), water-based adhesive processes, cooling water, water-jet cutting operations, and spraybooth over-spray capture systems. In order to qualify for Section 5.12 water credits, the organization must prove that process water was used in the manufacturing of the product to be assessed, at any point in time during the past six years.

5.12.1 Water Inventory of Factory

The organization shall receive one point if it establishes a baseline process water inventory to document water sources/withdrawals, uses, and discharges for the manufacturing facility where the finished product is assembled or manufactured

5.12.2 Water Efficiency

The organization shall receive one point if it implements program(s) to maximize process water efficiency to reduce the burden on the water supply and local wastewater treatment systems for the manufacturing facility where the finished product is assembled or manufactured. The organization shall provide objective evidence that water efficiency

improvement goals have been established for the manufacturing facility within the past 6 years. Performance against the goals must be tracked. Absolute reductions in total water usage must be documented.

5.12.3 Wastewater Discharge

The organization shall receive two points if it achieves zero net process water usage or wastewater discharge rates for the manufacturing facility where the finished product is assembled or manufactured.

6 Energy and Atmosphere

6.1 Prerequisite

Top management of the organization shall develop and implement a corporate energy policy that shall establish the organization's overall direction in terms of its commitment to energy conservation and environmental performance. The policy shall:

- Be appropriate to the nature and scale of the organization's activities, products, and services;
- Include a commitment to continual improvement;
- Include a commitment to comply with relevant local, state, and federal regulations, and with other requirements to which the organization subscribes;
- Provide the framework for setting and reviewing objectives and targets; and
- Be documented, implemented, and communicated.

The policy should focus on the organization's mission, vision, and core values. Specific local or regional conditions should be considered, as should the organization's image and the views of other interested parties. Other interested parties may include employees, shareholders, customers, consumers, local communities, environmental groups, lenders, and regulators.

6.2 Building Energy Performance

6.2.1 The organization shall receive one point if it conducts a building energy baseline from historical energy use data, for buildings directly associated with manufacturing and/or final assembly of the product being assessed.

6.2.2 The organization shall receive up to three additional points if it conforms to 6.2.1 and conducts a building energy baseline from historical energy use data for facilities such as warehouses, office building, showrooms, supply partner facilities (other than final assembly), that are associated with the product being assessed (Note: one point for each facility, maximum of three points).

6.3 EnergyStar Equivalency

6.3.1 The organization shall receive two points if it demonstrates an EnergyStar equivalent rating of at least 60, for buildings directly associated with manufacturing and/or final assembly of the product being assessed; calculated using the method described in the LEED-EB Reference Guide, Credit EA 1.

6.3.2 The organization shall receive up to three additional points if it conforms to 6.3.1 and demonstrates an EnergyStar rating of at least 60 for facilities such as warehouses, office buildings, showrooms, supply partner facilities (other than final assembly) etc., that are associated with the product being assessed; calculated using the method described in the LEED-EB Reference Guide, Credit EA 1 (Note: one point for each facility, maximum of three points)

6.4 Embodied Energy

6.4.1 Cradle-to-Gate Analysis

The organization shall receive one point for assessing the amount of embodied energy consumed for the materials used within the product. The assessment to be completed using publicly available Life-Cycle Inventory (LCI) data that exist for each material.

6.4.2 Gate-to-Gate Analysis

The organization shall receive one point for conducting a Life-Cycle Inventory (LCI) of the amount of embodied energy per unit, associated with the processes used during manufacturing of the product.

6.4.3 Gate-to-Gate - 10% Reduction

The organization shall receive one point for a 10% per unit reduction of embodied energy associated with the processes used during manufacturing of the product.

6.5 Finished Product Energy Consumption

6.5.1 California Title 24

The organization shall receive one point if its lighting products meet Title 24 of the California Energy Code as described in chapter 5, section 5.9, table 9; and section 5.13 of the 2005 Nonresidential Compliance Manual. This credit applies only if the product line being assessed includes lighting products.

6.6 Transportation

6.6.1 Voluntary Transportation Program

The organization shall receive one point if its principle carrier for the facility directly associated with manufacturing and/or final assembly of the products being assessed, participates in a voluntary carrier and shipper program such as the EPA's Smartway Transportation Partnership or an equivalent program.

6.6.2 Carrier and Shipper Emission Reduction Strategies

An organization can earn one point by fulfilling one of the two criteria below for its principle carrier for the facility directly associated with manufacturing and/or final assembly of the product being assessed:

Option A: The organization shall reduce environmental impact of freight transportation by developing and implementing technologies and strategies to facilitate reductions in fuel consumption and emissions associated with freight transportation activities, including receiving and shipping of raw materials, components, and finished products; or

Option B: The organization shall develop, document, and implement technologies and strategies that help truck carriers save fuel, reduce air pollution, and reduce emissions that contribute to climate change.

6.7 On-site and Off-site Renewable Energy

The organization may receive up to a maximum of four points for using increasing levels of on-site and off-site renewable energy to help reduce greenhouse gases and other environmental impacts associated with fossil fuel energy use. This may be accomplished by a combination of individual actions by the organization or its suppliers for the sum of the points allocated to those individual actions. Example: One point would be awarded for implementing 1% of on-site renewable energy. Two additional points would be awarded for meeting the 10% of the total corporate energy requirements with renewable power or certificates over the performance period.

6.7.1 The organization shall receive one point if it uses on-site renewable energy for 1% of its energy requirement for buildings directly associated with manufacturing and/or final assembly of the product being assessed.

OR

If it uses off-site renewable energy/certificates for 5% of its energy requirement for buildings directly associated with the manufacturing and/or final assembly of the product being assessed.

Off-site renewable energy sources as defined by the Center for Resource Solutions (Green-e certified power marketer, a Green-e accredited utility program, Green-e certified tradable Renewable Certificates) or the equivalent.

6.7.2 The organization shall receive an additional point if it uses on-site renewable energy for 2% of its energy requirement for buildings directly associated with manufacturing and/or final assembly of the product being assessed.

OR

If it uses off-site renewable energy/certificates for 10% of its energy requirement for buildings directly associated with manufacturing and/or final assembly of the product being assessed.

6.7.3 The organization shall receive an additional point if it uses on-site renewable energy for 3% of its energy requirement for buildings directly associated with manufacturing and/or final assembly of the product being assessed.

OR

If it uses off-site renewable energy/certificates for 15% of its energy requirement for buildings directly associated with manufacturing and/or final assembly of the product being assessed.

6.7.4 The organization shall receive an additional point if it uses on-site renewable energy for 4% of its energy requirement for buildings directly associated with manufacturing and/or final assembly of the product being assessed.

OR

If it uses off-site renewable energy/certificates for 20% of its total energy requirement for buildings directly associated with manufacturing and/or final assembly of the product being assessed.

6.8 Greenhouse Gases

By fulfilling the following criteria, an organization can earn up to six points in the Greenhouse section.

6.8.1 Greenhouse Gases Inventory Baseline

The organization shall receive one point if it establishes a baseline for greenhouse gas (GHG) emissions from such activities as energy use, industry processes, including all emissions sources of the six major GHGs below. Calculation of the baseline shall be based on the total number of units produced within the facility where manufacturing and/or final assembly of the product being assessed occurs.

- Carbon Dioxide (CO₂)
- Methane (CH₄)
- Nitrous Oxide (N₂O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF₆)

6.8.2 Greenhouse Gas Reduction by 2%

The organization shall receive an additional point if it conforms to 6.8.1 and reduces greenhouse emission inventory by 2% from the baseline for all emissions sources of the six previously listed GHGs. Calculation of the baseline shall be based on the facility where manufacturing and/or final assembly of the product occurs.

6.8.3 Greenhouse Gas Reduction by 4%

The organization shall receive an additional point if it conforms to 6.8.1 and reduces greenhouse emission inventory by 4% from the baseline for all emissions sources of the six previously listed GHGs. Calculation of the baseline shall be based on the facility where manufacturing and/or final assembly of the product occurs.

6.8.4 Greenhouse Gas Reduction by 6%

The organization shall receive an additional point if it conforms to 6.8.1 and reduces greenhouse emission inventory by 6% from the baseline for all emissions sources of the six previously listed GHGs. Calculation of the baseline shall be based on the facility where manufacturing and/or final assembly of the product occurs.

6.8.5 Greenhouse Gas Voluntary Reporting Program

The organization shall receive two points if it participates in a voluntary GHG Reporting program, where companies annually inventory and report their GHG emissions; and voluntary commitment to reducing their GHG emissions. EPA Climate Leaders Program, Chicago Climate Exchange, or similar programs are acceptable.

7 Human and Ecosystem Health

7.1 Prerequisites

7.1.1 Demonstration of Compliance

The organization shall screen all facilities for compliance with environmental and health and safety requirements of their products and processes. The organization shall evaluate compliance with all applicable environmental and health and safety regulations that govern toxic and hazardous substance use and risk management associated with human and ecosystem health. The organization or any representative of the organization shall not have any human or ecosystem health related criminal violations within the previous three years. Any human or ecosystem health related criminal violation at an acquired company which preceded the date of acquisition shall not preclude an organization from participating in this standard.

7.1.2 Key Chemical, Risk, and EMS Policies

The organization shall adopt a policy statement. The policy statement shall be publicly available and communicated to all persons working for or on behalf of the organization. In addition to the aforesaid topics, the organization shall document the following:

- An environmental policy that includes commitments to prevention of pollution, continuous improvement, and compliance with applicable regulations and other obligations;
- A chemical management policy that includes a statement of how the company assesses and reduces human and ecosystem health impacts; and
- Incorporation of life-cycle thinking into company policies.

7.2 ISO 14001 or Equivalent

The organization shall receive two points if it documents conformance with ISO 14001 *Environmental management systems – Specification with guidance for use*, or a recognized equivalent, for all facilities associated with the product being assessed.

7.3 Chemical Management Plan (CMP) – Facility

The organization shall establish a chemical management plan (CMP) to manage chemicals in products and processes. By fulfilling one of the following three criteria, an organization can earn one point as detailed below.

- The organization shall receive one point if it develops and implements a system for inventory tracking and control of process, product, and facility management chemicals that includes acquisition, use, storage, transportation, and final disposition; or
- The organization shall receive one point if it adopts as part of best management practices (BMPs) chemical hazard recognition using appropriate parts of

the Process Safety Management Standard (OSHA Std. 29 CFR 1910.119) and/or EPA Risk Management Plan (RMP) (40 CFR Part 68); or

- The organization shall receive one point if its CMP contains a documented action plan for emergency planning and response that includes the basic reporting requirements of SARA Title III (U.S. Code Title 42- The Public Health and Welfare, Chapter 116 – Emergency Planning and Community Right to Know).

7.4 Effects of Process and Product Chemicals

The organization shall design safer products and processes by using design for the environment (DFE) protocol to identify and assess the human health and ecosystem health impacts of chemicals of concern. Evaluation may take place at the:

- Product level; and/or
- Process level; and/or
- Maintenance/operations level.

The intent of the identification and assessment process is for the product manufacturer to collect data from the supply chain. The chemical constituents are to be reported and referenced by CAS number. Chemical constituents of metal alloys can be based on generic composition defined by appropriate standards organizations. No further review of wood and other natural fibers is required; however products using these materials shall report added chemical constituents as defined below.

7.4.1 Product Level (Material Specification)

The organization shall identify all chemical constituents of the materials incorporated in to the product, and shall assess them for human and ecosystem impact. Product level materials excludes finishes, stains and other surface treatments. By fulfilling one or more of the following criteria, an organization can earn a maximum of four points as detailed below.

Option One

7.4.1.1 Basic (1 point)

Identify and assess all MSDS reportable chemicals down to 10,000 ppm for hazardous chemicals and down to 1,000 ppm all carcinogens for materials that add up to 95% by weight of the final product – 1 point.

Or Option Two

7.4.1.2 Advanced (maximum of 4 points)

Identify and assess all chemical constituents down to 100 parts per million for materials that add up to:

- 75% by weight of final product (2 points); or
- 90% by weight of product (3 points); or
- 99.9% by weight of product; (4 points).

7.4.2 Process Level (Process Chemicals)

The organization shall receive one point if it identifies and assesses all process chemical constituents down to 1,000 ppm of at least 3 manufacturing processes associated with the manufacture of the product (either by the organization itself or its supply chain), and assesses them for human and ecosystem impact. The scope of this credit shall include the following manufacturing processes (if applicable to the product): plating, cleaning, degreasing, coating, finishing, metal fabrication (forming, stamping, cutting, etc.), wood fabrication, treatments, welding, casting, molding, sanding and gluing. Manufacturing processes does not cover the extraction and initial processing of raw materials. If there are only 1 or 2 manufacturing processes then all process chemical constituents must be identified and assessed.

The organization shall receive one point if they can demonstrate that there are no process chemicals associated with the manufacturing of the product (as described above) either by the organization itself or its supply chain.

7.4.3 Maintenance/Operations Level

The organization shall receive one point if it identifies and assesses all chemical constituents down to 1,000 ppm of 50 percent (by purchase amount) of all maintenance and operating chemicals not directly used in the manufacture of the product, and assesses them for human and ecosystem impact.

7.4.4 Chemical Reduction Strategy

The organization shall receive one point if it develops a strategy to improve public and environmental health by reducing the use of materials and processes with significant life cycle impacts. The strategy shall be based on the findings of 7.4.1, 7.4.2, and 7.4.3. Significance shall be based on quantity of chemical used, relative impact, applicable impact categories, likelihood of impact, and feasibility.

7.5 Reduction/Elimination of Chemicals of Concern

The organization shall minimize the impact on human and ecosystem health of chemicals used in or associated with production of furniture.

7.5.1 Elimination From Products

The organization shall document that the product does not contain chemicals of concern in the following classifications down to 100 ppm. The organization shall receive two points for each classification that is shown not to be present above 100 ppm (maximum eight points available):

- persistent, bioaccumulative, and toxic (PBT); and
- very persistent, very bioaccumulative (vPvB); and
- carcinogen, mutagen, reproductive toxicant (CMR); and
- endocrine disruptor (ED).

7.5.2 Reduction From Processes

Following from credit 7.4.2, an organization can earn points by reducing and/or eliminating chemicals of concern that are recognized as being:

- persistent, bioaccumulative, or toxic (PBT); and/or
- very persistent, very bioaccumulative (vPvB); and/or
- a carcinogen, mutagen, or reproductive toxicant (CMR); and/or
- an endocrine disruptor (ED); and/or
- the chemical has recognized potential to contribute to any of the following life-cycle impact categories: Acidification; Aquatic Toxicity; Eutrophication; Global Warming; Photochemical Smog Formation; Stratospheric Ozone Depletion; or Terrestrial Toxicity.

An organization can earn points by fulfilling the criteria below but shall not receive more than four total points for 7.5.2 regardless of how many criteria it fulfills beyond this limit.

7.5.2.1 On initial certification, an organization shall receive:

- One point for demonstrating a 10-19 % reduction, on an absolute basis, in chemical(s) in one or more of the above categories; or
- Two points for demonstrating a 20-29 % reduction, on an absolute basis, in chemical(s) in one or more of the above categories; or
- Three points for demonstrating a 30-39 % reduction, on an absolute basis, in chemical(s) in one or more of the above categories; or
- Four points for demonstrating a reduction of 40 % or more, on an absolute basis, in chemical(s) in one or more of the above categories.

On re-certification, the organization shall earn points earned in this category by demonstrating further reductions in increments of 10% (on an absolute basis), or by showing the levels of reduction detailed above in a different set of chemicals without an increase in the former set.

7.5.2.2 An organization can earn points if it documents that the processes used to manufacture the product do not contain any chemical of concern at a concentration greater than 1,000 ppm in one or more of the listed classifications. The organization shall receive one point for each of the classifications in 7.5.2 that is shown to be absent above this concentration.

A chemical is relevant to 7.5.2 if it is present and/or released at any stage of the processing of the final product. Presence or release during processing may be intentional or unintentional; direct or indirect (e. g., intentionally added chemicals, or background levels). For the purposes of 7.5.2, a chemical of concern shall be considered successfully phased out if the presence or release of the chemical in the process is below 1,000 ppm. Where reduction is achieved by substitution, there shall be no net increase of chemicals from any of the above categories.

7.5.3 Reductions from Maintenance/Operations level

Following from credit 7.4.3, an organization can earn points by reducing and/or eliminating chemicals of concern that are recognized as being:

- persistent, bioaccumulative, and toxic (PBT); and/or
- very persistent, very bioaccumulative (vPvB); and/or
- a carcinogen, mutagen, or reproductive toxicant (CMR); and/or
- an endocrine disruptor (ED); and/or
- the chemical has recognized potential to contribute to any of the following life-cycle impact categories: Acidification; Aquatic Toxicity; Eutrophication; Global Warming; Photochemical Smog Formation; Stratospheric Ozone Depletion; Terrestrial Toxicity

On initial certification, an organization shall receive:

- One point for demonstrating a 20% reduction in chemical(s) in one or more of the above categories; or

On re-certification, the organization shall earn a point earned in this category by demonstrating further reductions in increments of 10%, or by showing the levels of reduction detailed above in a different set of chemicals without an increase in the former set.

7.5.4 Reduction of Hazardous Wastes and Air Emissions

The scope of these credits shall include the following manufacturing processes: plating, cleaning, degreasing, coating, finishing, metal fabrication (forming, stamping, cutting, etc.), wood fabrication, treatments, welding, casting, molding, sanding and gluing. Manufacturing processes do not cover the extraction and initial processing of raw materials.

7.5.4.1 Hazardous Waste

The organization shall receive one point if it either reduces the amount of hazardous waste generated from the manufacturing of the product by at least 10% on an absolute basis over three years, or at least 20% on a normalized basis, or demonstrates that there is no hazardous waste generated in the process of manufacturing the product.

7.5.4.2 Air Emissions

By fulfilling one or both of the following criteria, an organization can earn either one point, as detailed below.

The organization shall receive one point if it reduces hazardous air pollutants from the manufacturing of the product by at least 10% on an absolute basis, or at least 20% on a normalized basis, or demonstrates that there are no hazardous air pollutants released in the process of manufacturing the product;

OR

The organization shall receive one point if it reduces criteria air pollutants from the manufacturing of the product by at least 10% on an absolute basis, or at least 20% on a normalized basis, or demonstrates that there are no hazardous air pollutants released in the process of manufacturing the product.

7.6 Low Emitting Furniture

The organization shall ensure good indoor air quality by reducing irritating, odorous, and/or harmful indoor air contaminants in finished products. By fulfilling one or both of the criteria in 7.6.1 and 7.6.2, an organization may earn either one or two points, as detailed below.

Individual furniture components of workstations (e.g., file cabinets, desks, drawer pedestals, work surfaces, tables, vertical panels, privacy screens, etc.) may obtain either or both points of this credit by meeting the maximum allowed emission factors for either an open plan workstation or a private office, using configurations as defined in ANSI/BIFMA M7.1-2007. This criteria also applies to items not necessarily intended to be in workstations like easels, conference tables, etc.

All surfaces are allowed a maximum emission factor depending upon the intended use environment. The maximum emission factor is calculated based on the guideline concentration for a chemical substance as defined in 7.6.1 or 7.6.2, the total surface area for the open plan workstation or private office, and the air flow rates for the open plan workstation or private office.

The standard test method to be used to demonstrate compliance is the ANSI/BIFMA M7.1-2007 Standard Test Method for Determining VOC emissions from Office Furniture Systems, Components and Seating.

7.6.1 The organization shall receive one point if furniture emissions concentrations or factors meet the following criteria as defined in ANSI/BIFMA X7.1-2007 at 168 hours:

Workstation systems (open plan or private) office emissions concentration limits

TVOCtoluene ≤ 0.5 mg/m³
 Formaldehyde ≤ 50 ppb
 Total Aldehydes ≤ 100 ppb
 4-Phenylcyclohexene ≤ 0.0065 mg/m³

Seating office emissions concentration limits

TVOCtoluene ≤ 0.25 mg/m³
 Formaldehyde ≤ 25 ppb
 Total Aldehydes ≤ 50 ppb
 4-Phenylcyclohexene ≤ 0.00325 mg/m³

Individual furniture components maximum emission factors

	ANSI/BIFMA M7.1-2007 Open Plan Workstation	ANSI/BIFMA M7.1-2007 Private Office Workstation
Formaldehyde, (ug/m ² hr)	42.3	85.1
TVOC, (ug/m ² hr)	345	694
Total Aldehyde, (umol/m ² hr)	2.8	5.7

4-Phenylcyclohexene, (ug/m ² hr)	4.5	9.0
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7.6.2 The organization shall receive one point if furniture emissions do not exceed the individual Volatile Organic Chemical (VOC) concentration limits listed in Annex A at 336 hours (14 days) or sooner when determined in accordance with the ANSI/BIFMA M7.1-2007 standard test method. These criteria are based on California EPA's OEHHA's reference exposure VOC limits in the CA Section 01350 specification, on the Standard Practice for the Testing of Volatile Organic Emissions from Various Sources using Small-Scale Environmental Chambers, and on the 2006 California office furniture bid specification.

NOTE – When the emission factor at 336 hours is determined using the power-law defined in ANSI/BIFMA M7.1-2007 Section 10.4 and 10.5, emission factors with $0.20 < b < 0.20$ shall be reported as constant.

Seating may obtain this credit by meeting ½ the maximum acceptable limits for a workstation as defined in 7.6.2.

Small chamber testing of component pieces of workstations per the ANSI/BIFMA M7.1-2007 standard is acceptable for this point, provided that there is third-party oversight in selecting representative components and in applying the calculations in ANSI/BIFMA M7.1-2007 Section 10.6.1 and 10.6.2 to estimate the emission factor of a product.

8 Social Responsibility

8.1 Prerequisites

8.1.1 Employee Health and Safety Management

The organization shall ensure employee health and safety by establishing management processes that will detect, avoid or respond to actual and potential threats to the health and safety of all personnel.

The processes shall include the following components:

- Identification of the local, national and international health and safety laws applicable to the facility.
- Appointment of a management representative with defined responsibilities
- An employee health and safety policy
- Documented procedures for the management of the system including a corrective action process that addresses regulatory compliance and actual and potential threats to employee health and safety
- Establishment and maintenance of employee health and safety metrics
- Health and safety training for all employees
- Regular evaluation of compliance to applicable health and safety laws, as well as internal procedures and requirements

Intended scope of assessment: The entire facility in which final assembly occurs for the products being assessed.

8.1.2 Labor and Human Rights

The organization shall protect and respect the rights of human resources at the local, national and global levels by ensuring that forced or involuntary labor is not used or supported in any form, that employment is voluntary, and that child labor is not used or supported in any form.

If other forced labor or child labor definitions apply to the organization's operations than those supplied in this standard, and the definitions are more restrictive, the more restrictive definitions shall apply.

Intended scope of assessment: The corporation

8.2 Policy on Social Responsibility

The organization shall receive one point if it adopts a corporate position on social responsibility. It shall develop a documented, publicly available policy on social responsibility that, at minimum, addresses:

- Fair hiring practices
- Education for applicable employees in this subject area
- Corporate ethics
- Receipt of gifts
- Insider trading

Intended scope of assessment: The corporation

8.3 External Health and Safety Management Standard

The organization shall receive one point if it enhances productivity and employee welfare by implementing policies and procedures that go beyond the requirements of 8.1.1 by conforming to the requirements of a publicly available external health and safety management system standard.

Intended scope of assessment: The entire facility in which final assembly occurs for the products being assessed

8.4 Diversity

The organization shall receive one point if it promotes diversity in the workforce, in management, and corporate governance bodies while recognizing the unique local norms which exist in different countries around the world. The organization shall develop and implement a diversity policy that includes the following components:

- Identification of and compliance to the local, national and international diversity rules and regulations applicable to the facility
- Documented procedures for the management of the system.
- Establishment of appropriate feedback mechanisms
- A corrective action process
- Establishment and maintenance of employee diversity metrics and internal performance tracking and reporting
- Diversity education available for employees
- Regular evaluation of compliance to applicable diversity rules and regulations, as well as internal procedures and requirements.

Intended scope of assessment: The entire facility in which final assembly occurs for the products being assessed.

8.5 Engage in Community Outreach and Involvement

The organization shall receive one point if it demonstrates good corporate citizenship to benefit the communities in which it operates. It shall demonstrate at least two volunteer efforts and/or financial contributions supporting community projects within each 12 month period.

Intended scope of assessment: The corporation

8.6 Social Responsibility Reporting

The organization shall promote transparency through public reporting of social responsibility activities and results. Wherever possible, it shall use widely accepted metrics to evaluate the effects of these policies and activities on the company's stakeholders. By fulfilling one or both of the following criteria, the organization can earn up to three points, as detailed below.

Intended scope of assessment: The corporation

8.6.1 Requirements 1 point

Publish a public report that, at minimum, addresses:

- Employee Health and Safety Management
- Labor and Human Rights Management
- Diversity
- Community Outreach and Involvement

8.6.2 Requirements 2 points

Publish a comprehensive public report that follows reporting practices in the Global Reporting Initiative G3 Social Responsibility section, the SA8000 Social Accountability standard, or other internationally recognized guidelines.

8.7 Supply chain

Intent

Through the use of internationally recognized social responsibility criteria, the organization shall encourage continuous improvement in the supply chain relative to sustainable business criteria, and particularly to social responsibility. By fulfilling the following criteria, an organization may earn up to three points, as detailed below.

Intended scope of assessment: The corporation

8.7.1 Requirements 1 point

Establish a documented supplier assessment tool (which may be a self-assessment tool) containing social responsibility criteria for its suppliers. At a minimum, the Assessment tool shall contain criteria in the following categories:

- Child labor
- Forced labor
- Health and safety
- Discrimination
- Discipline/harassment
- Working hours
- Compensation
- Freedom of association and collective bargaining

8.7.2 Requirements 2 points

The organization shall receive two additional points if it conforms to 8.7.1 and provides completed responses to the assessment tool from suppliers comprising at least 75% of its total direct material spend for all products, measured using actual annual spend data for a consecutive 12-month time period within the previous 2 years. For suppliers that are part of the "75% of total material spend" that act as brokers, distributors, inventory management providers, etc. and do *not* manufacture and/or assemble the components/products purchased by the organization, the assessment tool responses must be obtained from their suppliers who do manufacture and/or assemble the components/products.

Annex A – Individual Volatile Organic Chemical (VOC) Concentration Limits (4/11/07)
Reference: State of CA Dept. of General Services IFB 55756 – Open Office Panel Systems

Compound Name	CAS Number	MW	CREL	Workstation	Seating	Individual Components	
				Maximum Allowable Conc. ($\mu\text{g}/\text{m}^3$)	Maximum Allowable Conc. ($\mu\text{g}/\text{m}^3$)	Open Plan Maximum Allowable Emission Factor ($\mu\text{g}/\text{m}^2\text{h}$)	Private Office Maximum Allowable Emission Factor ($\mu\text{g}/\text{m}^2\text{h}$)
Ethylbenzene	100-41-4	106.2	Y	1000	500	689	1392
Styrene	100-42-5	104.2	Y	450	225	310	627
p-Xylene	106-42-3	106.2	Y	350	175	241	487
1,4-Dichlorobenzene	106-46-7	147	Y	400	200	276	557
Epichlorohydrin	106-89-8	92.52	Y	1.5	0.75	1.0	2.1
Ethylene Glycol	107-21-1	62.1	Y	200	100	138	278
1-Methoxy-2-propanol (Propylene glycol monomethyl ether)	107-98-2	90.12	Y	3500	1750	2413	4874
Vinyl Acetate	108-05-4	86.1	Y	100	50	68.9	139
m-Xylene	108-38-3	106.2	Y	350	175	241	487
Toluene	108-88-3	92.1	Y	150	75	103	209
Chlorobenzene	108-90-7	112.56	Y	500	250	345	696
Phenol	108-95-2	94.1	Y	100	50	68.9	139
2-Methoxyethanol	109-86-4	76.1	Y	30	15	21	42
Ethylene glycol monomethyl ether acetate	110-49-6	118.13	Y	45	22.5	31	63
n-Hexane	110-54-3	86.2	Y	3500	1750	2413	4874
2-Ethoxyethanol	110-80-5	90.1	Y	35	17.5	24	49
2-Ethoxyethyl acetate	111-15-9	132.2	Y	150	75	103	209
1,4-Dioxane	123-91-1	88.1	Y	1500	750	1034	2089
Tetrachloroethylene	127-18-4	165.8	Y	17.5	8.75	12.1	24.4
Formaldehyde	50-00-0	30.1	Y	16.5	8.25	11	23
Isopropanol	67-63-0	60.1	Y	3500	1750	2413	4874
Chloroform	67-66-3	119.4	Y	150	75	103	209
N,N-Dimethyl Formamide	68-12-2	73.09	Y	40	20	28	56
Benzene	71-43-2	78.1	Y	30	15	21	42
1,1,1-Trichloroethane	71-55-6	133.4	Y	500	250	345	696
Acetaldehyde	75-07-0	44.1	Y	9	4.5	6	13
Methylene Chloride	75-09-2	84.9	Y	200	100	138	278
Carbon Disulfide	75-15-0	76.14	Y	400	200	276	557
Trichloroethylene	79-01-6	131.4	Y	300	150	207	418
1-Methyl-2-Pyrrolidinone	872-50-4	99.13	N	160	80	110	223

Naphthalene	91-20-3	128.2	Y	4.5	2.25	3	6
o-Xylene	95-47-6	106.2	Y	350	175	241	487