IGBC Green Interiors

IGBC Green Interiors Rating System

For New & Existing Interior Fit-outs
Version 1.0

Indian Green Building Council

Greening India since 2001

Abridged Reference Guide
October 2015

www.igbc.in

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Indian Green Building Council

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INDIA

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Ar. B R Ajit has led this initiative from the front. He has shown tremendous involvement, commitment and leadership in developing this standard. His uncanny ability to consult members of the committee and create a consensus was critical in closure of many of the key aspects.

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- Dr Prem C Jain, Chair, Indian Green Building Council & Chairman, AECOM India
- Ar. B R Ajit, Chair, IGBC Rating system for Green Interiors, Chair-IGBC Kochi Chapter, Chair & CEO-Ajit Associates Architectural consultants Pvt. Ltd, Chair & Director-Asian School of Architecture & Design Innovations, Chair – IIA Kerala Chapter
- Ar. Nitin Saolapurkar, Co-Chair, IGBC Rating system for Green Interiors, Immediate National Past President, Principal Planner – Saolapurkar & Associates, Bangalore
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Foreword from the Indian Green Building Council (IGBC)

India is witnessing tremendous growth in infrastructure and construction development. The construction industry in India is one of the largest economic activities and is growing at a rapid rate in the past 10 years. As the sector is growing rapidly, preserving the environment poses a host of challenges. To enable the construction industry become environmentally sensitive, CII has established the Indian Green Building Council (IGBC) in 2001. IGBC, is a consensus driven not-for-profit Council, represents the building industry, consisting of more than 2,065 committed member organisations. The Council encourages, builders, developers, owners, architects and consultants to design & construct green buildings, thereby enhancing the economic and environmental performance of buildings. Thus far, the Council has been instrumental in enabling 3.11 Billion sq.ft of green building projects in the country. The Council's activities have enabled a market transformation with regard to green building materials and technologies. IGBC continuously works to provide tools that facilitate the adoption of green building practices in India. The development of IGBC® Rating system for Green Interiors is another important step in this direction.

IGBC Membership

IGBC draws its strength from its members who have been partners in facilitating the Green Building Movement in India. The local chapters led by individual champions and committed members have been instrumental in reaching out the vision of the IGBC at the regional levels. IGBC is today seen as a leader in spearheading the Indian Green Building Movement. The Council is member-driven and consensus-based.

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I. Introduction:

The building sector in India is growing at a rapid pace and contributing immensely to the growth of the National economy. The sector has embraced sustainable design & construction practices in the past decade and enabled India to be in the International map of green buildings and built environment. While the concept of green was initially adopted in commercial buildings, it is now extending to varied types of buildings and communities.

This augurs well for a country where the sector is expected to grow four-fold in the next two decades.

The green concepts and techniques in the building sector can help address National concerns like water efficiency, energy efficiency, reduction in fossil fuel use, handling of consumer waste and conserving natural resources. Most importantly, these concepts can enhance occupant health and well-being, which is assuming greater importance.

90% of the time people stay indoors. Therefore the indoor aesthetics, air quality and comfort are of paramount importance to occupants. World over, designers are exploring opportunities to construct interiors considering these key elements.

Against this background, the Indian Green Building Council (IGBC) has formed a Technical committee to establish green interior standards for buildings. The committee, through various deliberations has come out with a Pilot rating to establish standards in designing sustainable interiors. This has been developed considering the Indian context and the National priorities. The Pilot will be operational for one year. Based on the learning from the Pilot, the rating system will be further streamlined.

II. Benefits of Green Interiors

Sustainable Interior design can result in multifold benefits:

- 30-40% reduction in Energy cost
- 20-30% reduction in Water requirement
- Enhanced Indoor Air Quality
- Use of materials that are non-toxic
- Better acoustics & ergonomics
- Improved health & wellbeing of occupants

III. National Benefits:

Green Interiors can also result in substantial National benefits:

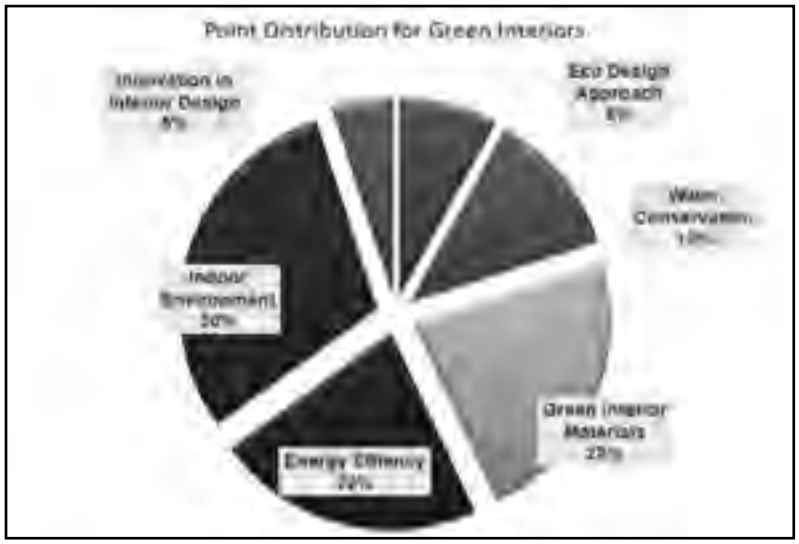
- Reduction in investment for Power & Water Infrastructure
- Conservation of Natural Capital Resources

- Extend the life of virgin materials
- Encourage locally manufactured materials
- Reduction in GHG emissions
- Better health & improved quality of life for citizens

IV. IGBC Green Interiors

The sustainable aspects of green interior design are addressed in the IGBC Green Interiors rating system under the following modules:

- ❖ Eco Design Approach
- ❖ Water Conservation
- ❖ Energy Efficiency
- ❖ Green Interior Materials
- ❖ Indoor Environment
- ❖ Innovation in Interior Design



The guidelines detailed under each mandatory requirement & credit enables the design and construction of green interiors of all sizes and types. Different levels of green building certification are awarded based on the total credits earned. However, every Green Interiors project should meet certain mandatory requirements, which are non-negotiable.

The various levels of rating awarded are:

Certification Level	Recognition
Certified	Best Practices
Silver	Outstanding Performance
Gold	National Excellence
Platinum	Global Leadership

V. Scope of IGBC Green Interiors

The IGBC Green Interior Rating programme is designed to address the specific requirements of tenants-occupied commercial spaces. The rating can also be applied by owner occupied spaces, provided they have not already addressed these in the main building.

The rating is ideally suited but not limited to office interior fit-outs, malls, retail spaces, hotels, restaurants, resorts, IT spaces, banks, hospitals and other buildings.

The rating is applicable for both new and existing interior fit-outs

VI. IGBC® Rating system for Green Interiors - Registration

Project teams interested in IGBC Green Interiors Certification for their project must first register with IGBC. Projects can be registered on IGBC website (www.igbc.in) under 'IGBC® Rating system for Green Interiors progamme'. Registration is the initial step which helps establish contact with IGBC and provides access to documents, templates, important communications and other necessary information.

VII. IGBC® Rating system for Green Interiors - Certification

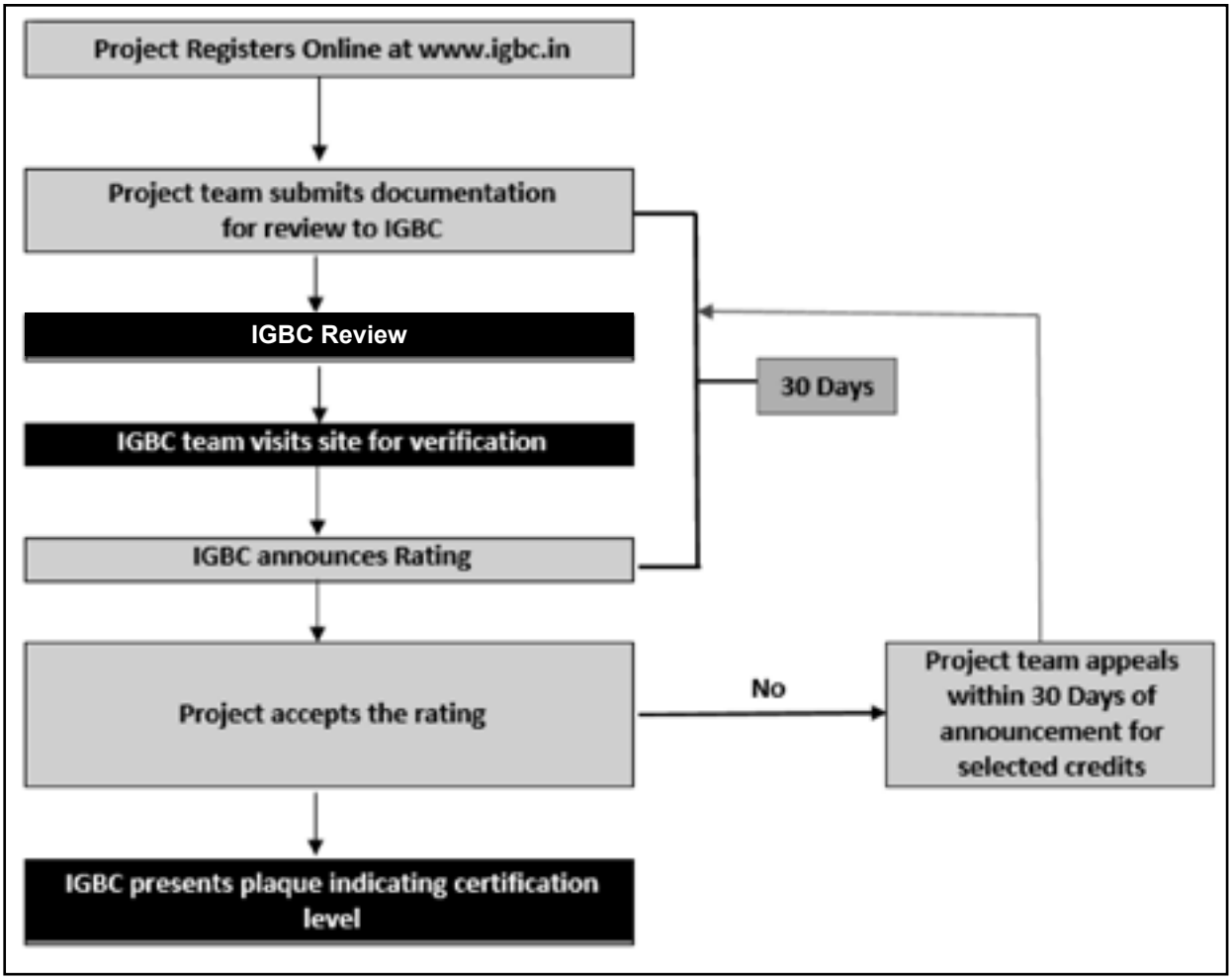
Certification of project will be carried out by a third party assessor, trained by International agencies & IGBC. The certification will comprise of two stages - assessment followed by IGBC site visit.

- The assessment will comprehensively evaluate both design & construction aspects when the project is nearer to completion.
- The assessment also will involve a site visit to verify that all green features have been implemented.

It is important to note that the mandatory requirements/ credits earned at the preliminary assessment are only considered as anticipated. These mandatory requirements/ credits are not awarded until the final documents are submitted, along with additional documents showing implementation. If there are changes after the preliminary assessment, such changes need to be submitted during the IGBC site visit.

IGBC will recognise Interior projects that achieve one of the rating levels with a formal letter of certification and a mountable plaque.

VIII. IGBC Green Interiors - Certification Flow Chart



IX. IGBC® Rating system for Green Interiors - Documentation required

The project must satisfy all the mandatory requirements and minimum number of credit points

The following are the documents required:

1. General information of project including
   - Concept brief, occupancy distribution chart, area calculations, number of floors, occupant density.
   - General drawings (in PDF format only):
     a. All typical floor plans
     b. Interior Elevations & Sections
     c. Photographs/ rendered views

2. Filled-in Green Interiors Master Template (in excel format)

3. The project would submit purchase invoices, manufacturer cut sheets and material test reports, if required by the assessor, verified during IGBC site visit.

The abridged reference standard mentions the documentation required for each mandatory requirement & credits.

X. Physical Verification & Monitoring

Physical audit is unique to IGBC's processes. Before award of rating, the IGBC team would physically audit and verify implementation of the green measures.

XI. Credit Interpretation Ruling

In some instances the design team can face certain challenges in applying or interpreting a mandatory requirement or a credit.

To resolve this, IGBC uses the process of 'Credit Interpretation Ruling' (CIR) to ensure that rulings are consistent and other projects can also get benefitted.

The following are the steps to be followed if a project team faces an issue not addressed in the IGBC Green Interiors Reference Guide:

- Consult the Abridged Version for description of the credit intent
- Review the intent of the mandatory requirement/ credit and self-evaluate whether the project satisfies the intent.
- Review the Credit Interpretation web page for previous CIR on the relevant mandatory requirement or credit. All projects registered under IGBC Green Interiors will have access to this page.

If a similar CIR has not been addressed or does not address the issue sufficiently, submit a credit interpretation request (A CIR shall not exceed 600 words or 5,000 characters including spaces). Only registered projects are eligible to post CIRs. Two CIRs are answered without levying any fee and for additional CIRs beyond the first two CIRs, a fee is levied.

The CIR Rulings for the earlier CIR raised by project teams is available in www.igbc.in

XII. IGBC® Rating system for Green Interiors - Appeal Process

In rare cases, mandatory requirements or credits may be denied due to misinterpretation of the intent. On receipt of the final review, if a Project Team feels that sufficient grounds exist to appeal a credit denied in the final review, the project has an option to appeal to IGBC for reassessment of denied mandatory requirements or credits. The documentation for the mandatory requirements or credits seeking appeal may be resubmitted to IGBC along with necessary fee. IGBC will take 30 days to review such documentation.

If an appeal is pursued, please note that a different review team will assess the Appeal Documentation.

The following documentation should be submitted:

1. General information of project including
    a. Concept brief, occupancy distribution chart, area calculations, number of floors, occupant density.
    b. General drawings (in PDF format only):
        - All typical floor plans
        - Interior Elevations & Sections
        - Photographs/ rendered views
2. Filled-in Letter Template for respective mandatory requirement/ credit.
3. Original, re-submittal, and appeal submittal documentation for only those mandatory requirement/ credits that the project is appealing for. Also include a narrative for each appealed mandatory requirement / credit to describe how the documents address the reviewers` comments and concerns.

XIII. Fee

Registration, Certification, Appeal and CIR fee details are available on IGBC website (www.igbc.in) or projects can write to IGBC (igbc@cii.in)

XIV. IGBC® Rating system for Green Interiors - Updates and Addenda

This is the version 1 of IGBC Green Interiors Reference Standard. As the rating system continues to improve and evolve, updates, addenda and errata to the Reference Standard will be made available through the IGBC website. These additions will be incorporated in the next version of the rating system.

Checklist for
IGBC® Green Interiors Version 1.0

Checklist for IGBC® Rating system for Green Interiors Points Distribution

		New Interiors	Existing Interiors
Eco Design Approach		**8**	**8**
EDA Credit 1	Eco Vision for Interior Design	2	2
EDA Credit 2	Optimise Circulation Spaces	2	2
EDA Credit 3	Public Transportation Proximity	1	1
EDA Credit 4	Occupancy in a Green Facility	1	1
EDA Credit 5	Commercial Lease Term / Ownership	2	2

Water Conservation		**12**	**12**
WC Credit 1	Water Conservation	12	12

Energy Efficiency		**22**	**21**
EE Credit 1	Eco-friendly Refrigerants & Halons	1	1
EE Credit 2	Energy Efficient Interiors	10	10
EE Credit 3	Energy Metering & Management	4	4
EE Credit 4	On-site /Off-site Renewable Energy	6	6
EE Credit 5	Embodied Energy	1	NA

Interior Materials		**23**	**6**
IM Mandatory Requirement 1	Segregation of Waste, Post Occupancy	Required	Required
IM Credit 1	Waste Management (During Installation)	3	NA
IM Credit 2	Local Materials	4	NA
IM Credit 3	Recycled Content Materials	4	NA
IM Credit 4	Salvaged Materials	2	NA
IM Credit 5	Eco Friendly Wood Based Materials	6	NA
IM Credit 6	Eco-certified Interior Furniture	4	4
IM Credit 7	Purchase of Green Consumables	NA	2

Indoor Environment		**30**	**23**
IE Mandatory Requirement 1	Tobacco Smoke Pollution	Required	Required
IE Mandatory Requirement 2	Fresh Air Ventilation	Required	Required
IE Credit 1	Enhanced Fresh Air Ventilation	2	2
IE Credit 2	Daylighting	4	4
IE Credit 3	Thermal comfort	NA	1
IE Credit 4	Ergonomic Design	2	2
IE Credit 5	CO_2 Monitoring	2	2
IE Credit 6	Indoor Plants	2	2
IE Credit 7	Material Acoustic performance	3	NA
IE Credit 8	Outdoor Views	4	4
IE Credit 9	Minimise Indoor Pollutant Contamination	2	3
IE Credit 10	Low-Emitting Materials	4	NA
IE Credit 11	Indoor Air Quality Management, During Installation	2	NA
IE Credit 12	Interior Flush out	1	NA
IE Credit 13	Occupant Well-being Facilities	2	2
IE Credit 14	Dedicated Dining Spaces	NA	1

Innovation in Interior Design		**5**	**5**
ID Credit 1.1	Innovation in Interior Design	1	1
ID Credit 1.2	Innovation in Interior Design	1	1
ID Credit 1.3	Innovation in Interior Design	1	1
ID Credit 1.4	Innovation in Interior Design	1	1
ID Credit 2	IGBC Accredited Professional	1	1
	Total Available Points	**100**	**75**

Certification Level	New Interiors Points	Existing Interiors Points	Recognition
Certified	30-44	22-31	Best Practices
Silver	45-54	32-41	Outstanding Performance
Gold	55-69	42-51	National Excellence
Platinum	70-100	52-75	Global Leadership

Eco Design Approach

Eco Vision for Interior Design

EDA Credit 1 Points: 2

Intent:

Encourage designers to have a eco-vision, thereby incorporating sustainable strategies in all facets of design

Compliance Options:

Demonstrate how the design philosophy and approach have resulted in sustainable practices & impacts in the following areas: *(1 point for two measures, max 2 points)*

- Vernacular architectural elements
- Health & wellbeing of occupants
- Space efficiency
- Materials and resources
- Passive Interior Architecture
- Any other design aspect

Documentation Required:

1. Narratives elaborating the project design philosophy to address the broader goal of sustainability. Highlight the envisaged impacts of the sustainable design
2. Submit conceptual sketches & photographs as applicable

Exemplary Performance

This credit is not eligible for exemplary performance

Optimise Circulation Spaces

EDA Credit 2 Points: 2

Intent:

Design interiors to ensure optimum circulation space, thereby ensuring safety & wellbeing of occupants.

Compliance Options:

Design interior spaces such that the circulation area is atleast 25% of the carpet area

Points are awarded as below:

Circulation space	Points
≥ 25 %	1
≥ 30%	2

Notes:

- *Circulation area = Carpet Area – [Furniture area+ Equipment area+ Storage space]*
- *Carpet Area: Usable office space at any floor level (excluding the area of the walls)*
- *Furniture area shall include movable and immovable furniture*

Documentation Required:

1. Interior layouts showing the circulation zones clearly indicating the passage dimensions, breakup of carpet areas and percentage of circulation areas in each space
2. Photographs taken in different locations of the interior spaces showing circulation

Exemplary Performance

This credit is not eligible for exemplary performance

Public Transportation Proximity

EDA Credit 3 Points: 1

Intent:

Encourage eco-friendly transit facility to minimise environmental impacts associated with automobile use.

Compliance Options:

Demonstrate pedestrian access to mass transit facilities such as bus stations, metro, rail or water ways within a walking distance of 800 meters from the site entrance.

(Or)

In-house pooling facility / shuttle services to the nearest public transit facilities.

Documentation Required:

1. Provide a site vicinity map with scale showing the distance between project and nearest mass transit facilities (bus stations, metro, rail, water ways) within a walking distance of 800 meters from the site entrance.
2. Details of the shuttle services to the nearest public transit facility / Contract agreement for engaging shuttle services.

Exemplary Performance

This credit is not eligible for exemplary performance

Tenancy in Green Facility

EDA Credit 4 Points: 1

Intent:

Encourage tenants to occupy green spaces, thereby saving on resources and minimise environmental impacts

Compliance Options:

Select the interior office space in a certified Green project

Documentation Required:

Submit copy of Green building certificate or Project reference number

Exemplary Performance

This credit is not eligible for exemplary performance

Commercial Lease Term (or) Ownership

EDA Credit 5 Points: 2

Intent:

Encourage long-term occupancy to reduce the materials consumption, thereby minimising environmental impacts

Compliance Options:

Tenant Occupied Areas

Occupancy agreement mentioning tenancy tenure for atleast three or more years to reduce the environmental impacts associated with frequent refurbishment of fit-outs

(Or)

Owner Occupied Areas

The interior fit-out shall not be disturbed for atleast three years. The fit-out may be refurbished after three or more years if required.

Points are awarded as below:

Tenure of Agreement	Points
3 years	1
5 years	2

Documentation Required:

Copy of lease agreement indicating the tenure. Incase of ownership, declaration from owner stating that interior fit outs shall be retained for atleast 3 or more years

Exemplary Performance

This credit is not eligible for exemplary performance

Water Conservation

Water Conservation

WE Credit 1 Points: 12

Intent:

Minimise dependence on municipal and bore water, thereby conserving water resources

Compliance Options:

Case 1: Install efficient water fixtures

(Or)

Case 2: 'Beyond the Fence' water efficiency initiatives

Case 1: Install efficient water fixtures

Use water efficient plumbing fixtures whose flow rates are 10% lower than the baseline criteria as specified in the Uniform Plumbing code of India.

Select efficient fixtures. Alternately, trade-offs are allowed in which case compliance shall be shown by considering daily usages and flow duration as shown in the table below:

Baseline Flow Rates / Consumption for Plumbing Fixtures

Fixture Type	Maximum Flow Rate/ Consumption	Duration	Estimated Daily Uses per FTE**
Water Closets (Full-flush)	6 LPF	1 flush	1 for male; 1 for female
Water Closets (Half-flush)	3 LPF	1 flush	2 for female
Urinals	4 LPF	1 flush	2 for male
Faucets / Taps	6 LPM	15 seconds	4
Health Faucet	6 LPM	15 seconds	1
Showerhead / Handheld Spray	10 LPM	8 Minutes	0.1

Source: Uniform Plumbing Code – India (UPC-I)

* Reporting pressure for these fixtures shall be at 3 bar.

**Full Time Equivalent (FTE) represents a regular building occupant who spends 8 hours per day in the building. Part-time or overtime occupants have FTE values based on their hours per day divided by 8.

Points are awarded as below:

Water Efficient Plumbing Fixtures (Individually or in aggregate)	**Points**
10%, 12.5%, 15%, 17.5%.....40% less than baseline criteria *(1 point for every incremental 2.5%)*	1-12

Notes:

- *Faucets / taps installed for hand wash in rest rooms and canteen shall be considered*
- *Rain showers (if any) need to be considered in the calculations under Showerhead*
- *The baseline flows can be demonstrated at a flowing water pressure of 3 bar. Flowing water pressure of 3 bar does not mean that the water supply in the building is at 3 bar. The building fixtures can operate at lower pressures, but to show compliance under this credit, the design flow rates are to be submitted at 3 bar*
- *Default occupancy shall be considered as 50% men & 50% women*
- *FTE occupancy shall be considered in calculation, including visitors*
- *Plumbing fixtures certified by CII – GPSC (Green Products and Services Council) / GreenPro / IAPMO (The International Association of Plumbing and Mechanical Officials) under Product Certification Programme can also be installed to show the compliance*

Case 2: 'Beyond the Fence' water efficiency initiatives

(For spaces where restrooms are not in interiors scope) **(1- 12 points)**

The project team can show compliance by implementing 'beyond the fence' initiatives as mentioned below:

- **Rainwater Harvesting On site**
  - Occupy a building which has implemented rain water harvesting for atleast 35% of runoff from roof areas

(Or)

❖ **Rainwater Harvesting Off-site**

➢ Install rainwater harvesting systems in any Government School or community centre to capture atleast 35% of runoff from roof areas.

(Or)

❖ **Maintain public Parks/Avenues**

➢ Maintain public parks or avenues so as to supply atleast 35% of estimated storm water runoff from the roof of the occupied space.

Points are awarded as below

(Applicable for areas where rainfall ≤1500mm in a year)

Rainwater Harvesting on-site / off-site, maintain public parks/avenues	**Points**
35%, 40%, 45%.....90% *(1 point for every incremental 5%)*	1-12

(Applicable for areas where rainfall ≥1500mm in a year)

Rainwater Harvesting on-site / off-site, maintain public parks/avenues	**Points**
5%, 10%, 15%, 20% .....60% *(1 point for every incremental 5%)*	1-12

Documentation Required:

Case 1: Install efficient water fixtures

- Water reduction calculations to demonstrate the savings achieved
- Summary sheet of the installed plumbing flow and flush fixtures with flow rates (at 3 bar pressure, for flow fixtures).
- Manufacturer cut-sheets/ brochures/ letters indicating the flow rates of the installed plumbing flow and flush fixtures.
- Purchase invoice of the installed plumbing flow and flush fixtures highlighting the make & model.

Case 2: 'Beyond the Fence' water efficiency initiatives

- Declaration letter from the project owner stating that restrooms are not in the purview of the interior fit-out
- Calculations indicating Interiors roof area and storm water runoff considered Narrative and supporting documents highlighting the projects efforts in establishing rainwater harvesting systems in school/community centre (Or) documents highlighting the quantum of water contributed to the Public Parks / Avenue plantation

Exemplary Performance

This credit is eligible for exemplary performance under innovation in interiors

Energy Efficiency

Eco-friendly Refrigerants & Halons

EE Credit 1 Points: 1

Intent:

Avoid use of refrigerants and ozone depleting gases thereby reducing environmental impacts.

Compliance Options:

❖ **Refrigerants:**

Demonstrate that the base building Heating, Ventilation & Air-conditioning (HVAC) equipment and Unitary Air-conditioners installed in the building are Chloro Fluoro Carbons (CFC) and Hydro Chloro Fluoro Carbons (HCFC) free.

(And)

❖ **Halons:**

Demonstrate that fire suppression systems used in the building should be free from halons or any other ozone depleting substances.

Documentation Required:

1. Declaration letter signed by developer declaring the HVAC system(s) & Fire Suppression systems which are in developer's scope, if any.
2. Declaration letter stating CFC-free refrigerants and Halons free in the installed HVAC & Fire systems.
3. Manufacturer cut-sheet/ brochure indicating the type of refrigerant used in the installed HVAC system(s)

Exemplary Performance

This credit is not eligible for exemplary performance

Energy Efficient Interiors

EE Credit 2 Points: 10

Intent:

Enhance energy efficiency in the interior spaces**,** to optimise energy consumption and thereby reducing environmental impacts.

Compliance Options:

1. A: Non Air-conditioned spaces *(Points Available: 6)*

- 90% of the interior spaces shall meet the following:
  a. Have door and window openings that are atleast 5 % of the carpet area for ventilation. Such openings should be provided so as to be connected to exterior environment. (Openings: 5%, 6%, 7%....10% over baseline)

(1 point for every incremental 1%)

(Or)

  b. Implement alternate efficient cooling methods like Evaporating cooling systems, Air Ambiators (25%, 30%.....50% of the carpet area)

(1 point for every incremental 5%)

1. B: Conditioned spaces *(Points Available: 6)*

- Split/ Window Air-conditioners: Use Bureau of Energy Efficiency (BEE) 3 star and above or equivalent Coefficient of Performance (COP) (or) Energy Efficient Ration (EER)
- Projects using packaged Air-conditioning system: Meet the baselines specified in Energy Conservation Building Code (ECBC) 2007 – *refer Annexure B*
- Projects using Centralized Air Conditioning system: The chiller COP should meet the baselines specified in ECBC 2009 *refer Annexure B*
- Install new cooling technologies like Wind Towers, Earth tunnel Air conditioning, Geo-thermal Air conditioning.
- Heating System: For projects that require heating systems, install minimum BEE 3 star rated heat pumps or systems that meet the COPs specified in ECBC *refer Annexure B*

- Project can show compliance through energy simulation, if the tenant is occupying more than 50% of the building. *(Only Interiors scope, base line as per ASHRAE 90.1, 2010)*

Note: Projects requiring cooling and heating may accordingly consider the above systems

Points are awarded as below:

Conditioned spaces of regularly occupied areas	Points
50%, 55%, 60%,.....75% *(1 point for every incremental 5%)*	1-6

2. Lighting:

- Lighting Power Density (LPD): Demonstrate that the LPDs of the interiors space is reduced by atleast 20% over baselines specified in ECBC *refer Annexure C*

Points are awarded as below:

Lighting Power Density	Points
20%	1
25%	2

- Minimise artificial lighting in atleast 25% of the regularly occupied spaces* during the day. Project can consider strategies like Light pipes, other passive features

And / Or

(1 point)

Use Motion sensors, daylight sensors in the interior space to cover atleast 75% of the regularly occupied areas

3. Appliances:

- Use BEE 3 star rated / CII – GPSC / GreenPro Certified product / Energy 3 star rated appliances (e.g. Refrigerators, Photocopiers, Printers, Water coolers, UPS, Coffee vending machines, TVs, Fans, Ovens and others as appropriate)

(1 point)

Documentation Required:

1. Manufacturer cut-sheets/ brochures indicating the BEE 3 star rating/ 3 star Energy star rating of proposed appliances
2. Details of the installed air-conditioned system along with the manufacturer cut-sheets/ brochures
3. Layout indicating the location of energy efficient appliances in the project
4. Technical Specifications for all major equipment.
5. Technical Specifications and drawing & photographs of Wind towers/Earth tunnel/ Geo-thermal system.

Exemplary Performance

This credit is not eligible for exemplary performance

Energy Metering & Management

EE Credit 3 Points: 4

Intent:

Encourage sub-metering and continuous monitoring to implement energy efficiency measures, thereby reducing environmental impacts.

Compliance Options:

1. Demonstrate sub-metering for atleast one of the following:

(1 point for each measure, max 2 points)

- Lighting circuits
- Power back up systems
- Elevators, escalators
- BTU meter for chilled water consumption
- Meters measuring renewable energy (generation / consumption)
- Any other major equipment and systems

2. Demonstrate that the building management system (BMS) is in place to control and monitor atleast one of the following systems as applicable:

(1 point for each measure, max 2 points)

- Air-conditioning management system
- Lighting management system
- Elevator management system
- Fresh air monitoring system
- CO_2 control & monitoring system

Documentation Required:

1. On-site photographs of the installed sub-meters & BMS system
2. Single line diagram (SLD) schematic
3. Purchase invoice of the BMS & metering systems

Exemplary Performance

This credit is not eligible for exemplary performance

Off-site/ On-site Renewable Energy

EE Credit 4 Points: 6

Intent:

Encourage the use of renewable energy technologies, to minimise the environmental impacts associated with fossil fuel energy use

Compliance Options:

Install On-site renewable energy systems (or) Invest in Off-site renewable energy systems (or) Demonstrate that the project has purchased Renewable Energy Certificates (RECs) equivalent to atleast 5% of the total energy consumption of the interior space.

Points are awarded as below:

On-site Renewable Energy	Points
2%, 4%.....12% of the total energy consumption *(1 point for every incremental 2%)*	1-6

(And / Or)

Off-site Renewable Energy	Points
5%, 10%.....30% of the total energy consumption *(1 point for every incremental 5%)*	1-6

Note:

- *Renewable energy sources include solar energy, wind power, biomass, etc.*
- *The total annual energy consumption can be arrived either through Performance based approach or Prescriptive approach.*
- *The RECs purchased shall be valid for a period of two years.*
- *The RECs can be either solar or non-solar or both*
- *Type of renewable energy source shall be in compliance with the Ministry of New and Renewable Energy (MNRE), Government of India and respective State Regulatory Commissions.*
- *Off-site renewable energy so generated shall be counted only once.*
- *For credit calculations, RECs purchased in the last 6 months of building operation can also be considered, to show compliance.*

- *In case, the Project purchases RECs through an authorised agency of exchange, then a legal contract should exist between the authorised agency and the project.*

Documentation Required:

1. Break-up of annual energy consumption details
2. Provide the Installed Capacity of the RE System
3. Provide the details of the off-site RE Generation
4. Scanned copy of the RECs purchased

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if On-site renewable energy systems (or) Invest in Off-site renewable energy systems (or) Demonstrate that the project has purchased Renewable Energy Certificates (RECs)

Embodied Energy

Not applicable for existing interiors

EE Credit 5 **Points: 1**

Intent:

Identify Materials or products with low embodied energy, to minimise the environmental impacts associated with extraction, manufacturing and packing

Compliance Options:

Source atleast five interior materials which have embodied energy equivalent or lower than the baseline indicated in the following table:

Material	Energy MJ per kg	Carbon kg CO_2 per kg	Density kg / m^3
Concrete (1:1.5:3)	1.11	0.159	2400
Aerated block	3.5	0.3	750
Marble	2	0.116	2500
Steel	20.1	1.37	7800
Timber	8.5	0.46	480-720
Glass wood insulation	28	1.35	12
Mineral fibre ceiling tile	37	2.7	1850
Aluminum	155	8.24	2700
MDF	11	0.72	680-760
Plywood	15	1.07	540-700
Plaster board	6.75	0.38	800
Gypsum Plaster	1.8	0.12	1120
Glass	15	0.85	2500
Vinyl flooring	65.64	2.92	1200
Ceramic Tiles	12	0.74	2000

Source: Inventory of Carbon and Energy ('ICE') prepared by the University of Bath (UK)

Documentation Required:

Submit declaration & supporting reports from the product manufacturer indicating the embodied energy measured in MJ / kg for atleast five products

Exemplary Performance

This credit is not eligible for exemplary performance

Interior Materials

Segregation of Waste, Post Occupancy

IM Mandatory Requirement 1

Intent:

Facilitate segregation of waste at source so as to prevent such waste being sent to land-fills

Compliance Options

Provide colour coded bins to collect three different types of waste

- **Dry Waste**
  - Paper, Card board
  - Glass
  - Plastics, Pet water bottles
  - Metals
- **Wet Waste**
  - Food waste, Tea bags
- **E-Waste**
  - Lamps, Batteries

Documentation Required:

1. Narrative describing the strategies implemented to segregate and divert dry, wet and e- waste.
2. Provide interior layouts of each floor highlighting the location of color coded waste segregation bins.
3. Submit photographs of the measures implemented.

Exemplary Performance

This credit is not eligible for exemplary performance

Waste Management (During Installation)

Not applicable for existing interiors

IM Credit 1 **Points: 3**

Intent:

Encourage practices to manage material waste during installation, to avoid such waste being sent to landfills

Compliance Options:

Ensure that the waste generated (either by weight or volume) during installation is minimised. Following measures can be implemented:

- Explore reusing the waste within the same premises / building
- Sell the waste to a local recycler/ hauler
- Donate the waste to other projects for reuse

Points are awarded as below:

Percentage of Waste reused / sold / donated (by weight/ volume)	**Points**
20%	1
40%	2
60%	3

Documentation Required:

1. Calculations and comprehensive list of all interior materials and their respective waste generated
2. Narrative indicating the amount of waste generated and diverted from landfill, either by weight or volume
3. Letter from vendors/ recyclers stating donation / sale of the interior waste material
4. Photographs showing the interior waste management, segregation of waste materials during execution

Exemplary Performance

This credit is eligible for exemplary performance under innovation in interiors; if more than 80% of the waste is diverted from being sent to landfills.

Local Materials

Not applicable for existing interiors

IM Credit 2 Points: 4

Intent:

Encourage use of locally available materials, thereby minimising the associated environmental impacts

Compliance Options:

Ensure local materials are sourced within a radial distance of 500 km for atleast 20% of procured materials, by cost*. Source local materials for interior applications such as (but not limited to) partitions, workstations, flooring, ceiling, furniture etc.

Points are awarded as below:

Percentage of Local Materials	Points
20 %	1
30 %	2
40 %	3
50 %	4

**Material cost = Construction cost – [Labour cost + installation cost]*

Note:

1. *If labour cost & cost of installing equipment is not known, cost of material can be taken as 60% of the construction cost, by default.*
2. *HVAC equipment, Water fixtures, Electrical fittings need not be considered for calculating the total cost of materials*

Documentation Required:

1. Narrative describing the strategies implemented to source local materials.
2. Calculations indicating the percentage of local materials sourced (in terms of cost) with respect to the total materials cost of the project.
3. Manufacturer letters indicating the distance from manufacturing unit to the project site.

Exemplary Performance

This credit is eligible for exemplary performance under innovation in interiors; if more than 60% of the materials are sourced locally.

Recycled Materials

Not applicable for existing interiors

IM Credit 3 Points: 4

Intent:

Encourage use of materials that have a high recycled content, thereby minimising the associated environmental impacts

Compliance Options:

Select materials wherein a high quantum of recycled content is used during its manufacturing.

Source materials with recycled content (but not limited to) for interior applications such as glazing, partitions, false ceilings, tiles, metal railings, etc. The recycled content value** is based on the cost of materials*.

(Or)

Ensure that the project uses at least four materials certified by CII – GPSC / GreenPro

(1 point for each certified product)

Points are awarded as below:

Percentage of Materials with Recycled Content	Points
≥ 10%	1
≥ 15%	2
≥ 20%	3
≥ 25%	4

***Material Cost** = (Cost of the product – Labour cost - Installation cost)*

****Recycled Content (RC) value** = Material cost X Recycled content %*

***Aggregate Recycled Content value** = $\sum (RC_1 + RC_2 \ldots\ldots RC_N)$*

Documentation Required:

1. Narrative detailing the strategies implemented to source materials with recycled content.
2. Calculations indicating the percentage of recycled content (in terms of cost) with respect to the total materials cost of the project.
3. Manufacturer letters/ cut-sheets/ brochures indicating the recycled content in the materials sourced

Exemplary Performance

This credit is eligible for exemplary performance under innovation in interiors; if materials sourced have recycled content more than 30%.

Salvaged Materials

Not applicable for existing interiors

IM Credit 4 **Points: 2**

Intent:

Encourage the use of salvaged materials and products to reduce the demand for virgin materials, thereby minimising the environmental impacts

Compliance Options:

Source salvaged materials for a minimum 2.5% of procured materials by cost for interior application. The materials sourced must be permanently installed. Salvaged materials can include (but not limited to) beams & posts, doors, frames, flooring, furniture, etc.

Points are awarded as below:

Percentage of Salvaged Materials	Points
≥ 2.5%	1
≥5%	2

Notes:

1. *Materials considered for this credit are those that have lived their life and almost about to be sent to landfill.*
2. *Reuse of old furniture can also be considered under this credit.*
3. *Equipment, appliances and fixtures should not be considered since older equipment will have low efficiency issues*

Documentation Required:

1. Narrative detailing the strategies implemented to source and reuse salvaged materials.
2. Calculations indicating the percentage of salvaged materials (in terms of cost) sourced by the project.
3. Declaration letters from vendors for salvaged material used.
4. Purchase receipts/ invoice from vendors for salvaged material used.
5. Photographs showing the application of salvaged materials (before & after)

Exemplary Performance

This credit is eligible for exemplary performance under innovation in interiors; for salvaged material applications which exceeds the threshold of 7.5% by cost of the total material cost.

Eco friendly wood based materials

Not applicable for existing interiors

IM Credit 5 Points: 6

Intent:

Minimise use of new wood based products, thereby reducing impacts of deforestation

Compliance Options:

Ensure new wood based products (by cost) used in the building are:

- Rapidly renewable*

(And/ Or)

- Composite / Agri based wood** / Recycled waste wood

Points are awarded as below:

$\left(\frac{\text{Cost of alternate wood products}}{\text{Total cost of wood based products}}\right)$	Points
20%,25%,30%.....45% of the total cost of wood based products *(1 point for each incremental 5%)*	1-6

Notes:

**Rapidly renewable materials are those that can be harvested and used within a ten year cycle. Example: Bamboo, Eucalyptus, Bagasse based materials, Jute based materials, cotton blinds; rubber wood*

***Composite / Agri based wood / Reclycled Waste wood examples include (but not limited to) MDF boards, particle boards, linoleum boards etc.*

Documentation Required:

1. Narrative describing the strategies implemented to source rapidly renewable materials or composite / agribased wood / recycled waste wood in the project
2. List of applications where rapidly renewable materials or composite / agribased wood / recycled waste wood are used
3. Unit calculations and total cost of wood free materials indicating the percentage of agri based or composite wood based products used in the project.
4. Purchase invoices of the sourced rapidly renewable material or agri based or composite wood products or recycled waste wood
5. Photographs showing applications of Eco friendly wood

Exemplary Performance

This credit is eligible for exemplary performance under innovation in interiors; if more than 50% of the new wood based materials are sourced are rapidly renewable or composite or agribased products

Eco-certified Interior Furniture

IM Credit 6 Points: 4

Intent:

Encourage the use of eco-certified interior products that consider impacts through the life cycle, thereby resulting in lower environmental impacts

Compliance Options:

- Source eco-certified interior workstations, cabin furniture, chairs etc., that are either GPSC (or) BIFMA (or) Green Guard Certified

Points are awarded as below:

Eco-certified Furniture as % of total furniture cost	Points
10%, 20%, 30%, 40% of total furniture cost*	1-4

** Total furniture cost includes all new wood furniture item cost in the interior fit-outs*

Examples: Chairs, workstations, Sofas, Benches, Storage units, Counters etc.

Documentation Required:

1. Submit copy of GPSC or BIFMA or Green Guard Certificates of the proposed eco-certified interior product, clearly indicating the model & make
2. Purchase invoices of the eco-certified interior product

Exemplary Performance

This credit is eligible for exemplary performance under innovation in interiors; if more than 50% of the new furniture is eco-certified by cost.

Purchase of Green Consumables

Not applicable for new interiors

IM Credit 7 Points: 2

Intent:

Encourage the use of green consumables in the interior space that have low impacts on human health and the environment

Compliance Options:

- Source green consumables for the following applications

  (1 point for each measure, max 2 points)

  - Use of recycled paper for more than 50% requirement of consumption
  - Use of green eco-friendly chemicals which are GreenPro certified or Green seal GS 35 standard
  - No use of plastics in Interior fit-outs

Documentation Required:

1. Submit a narrative on the practices demonstrating the above, post occupancy.
2. Submit photographs / certificates as applicable.

Exemplary Performance

This credit is not eligible for exemplary performance under innovation in interiors.

Indoor Environment

Tobacco Smoke Pollution

IE Mandatory Requirement 1

Intent:

Minimise exposure of non-smokers to adverse health impacts from passive smoking

Compliance Options:

Demonstrate that smoking is prohibited in the building, and is in accordance with the regulations of Ministry of Health & Family welfare, Government of India

In case the project has assigned outdoor smoking areas, locate such areas at a minimum of 7.6 meters from all outdoor air intakes (entrance doors, window openings etc.)

Alternately, compliance can be shown through designated smoking rooms which capture and remove tobacco smoke from the interior office floor.

Notes for Designing a Smoking Room:

- *The smoking room will be completely sealed*
- *The conditioned air entry into the smoking zone shall not return back or be transferred to the air-handling units. This air shall be completely exhausted.*
- *The smoking room shall be maintained at a negative pressure of 5 Pascals (0.00005 bar)*

Documentation Required:

1. A declaration letter from the tenant stating that smoking will be prohibited in all the common areas of the building.
2. Photographs of the designated smoking areas, details of exhaust
3. A plan showing the location of the educative signages
4. Photographs showing the installed educative signages

Exemplary Performance

This credit is not eligible for exemplary performance

Fresh Air Ventilation

IE Mandatory Requirement 2

Intent:

Provide adequate outdoor air ventilation, so as to avoid pollutants affecting indoor air quality.

Compliance Options:

❖ **For Mechanically Ventilated Spaces:**

Demonstrate that the fresh air ventilation in all regularly occupied areas shall meet the minimum ventilation rates, (illustrative table below)

Notes:

- *Projects with unitary air conditioning system (s) catering to less than 10% of the total regularly occupied area can show compliance for minimum fresh air ventilation through the criteria defined for Non Air-conditioned Spaces.*
- *Tenant-occupied buildings should show compliance through feasible typical floor plans & occupancy*

Outdoor Air Rates for different Space types

Space Type	Area – Outdoor Air Rate (cfm/sq.ft) (R_a)
Restaurant Dining rooms	0.18
Cafeteria/ fast food dining	0.18
Conference/ meeting	0.06
Hotels – bed/ living rooms	0.06
Office space/ Reception area/ telephone/ data entry/ main entry lobby	0.06
Libraries	0.12
Retail spaces	0.06
Super Market	0.06
Auditorium	0.06
Health club	0.06
Corridors	0.06
Computer lab	0.12

(And/ Or)

For Non Air-conditioned Spaces:

Provide operable windows or doors to the exteriors, in all regularly occupied areas, such that the operable area is designed to meet the criteria as outlined in the table below:

Design Criteria for Openable Windows and Doors to the Exteriors

Category	Percentage of Openable Area to the Total Carpet Area
Regularly Occupied Area (≤100 sq.m)	4 %
Regularly Occupied Area (≥ 100 sq.m)	8 %

Notes:

- *Doors/ windows should not have any obstruction within 2 m from the exterior surface. Shading devices can be excluded.*
- *For sliding windows / doors, only openable area to the exteriors shall be considered in calculations.*

General Notes:

- *Regularly occupied areas are those where people sit or stand as they work, irrespective of the number of days occupied in a year.*
- *Regularly occupied areas include work stations, cabins, meeting rooms, conference rooms, waiting areas, cafeteria, etc.,*
- *Non-regularly occupied spaces include toilets, store rooms, etc.,*

❖ Example to calculate fresh air requirement:

Minimum ventilation rates in breathing zone

Considering a project with floor Area of 10,000 sq.ft and an occupancy of 100 staff. The outdoor airflow rate required per unit area is 0.06 cfm/sq.ft (from the table 1A) Hence a minimum ventilation rate in breathing zone for meet the mandatory requirement will be arrived as follows:

Minimum ventilation rate required	= outdoor airflow rate/unit area x floor area = 0.06 x 10,000 = 600 cfm

Documentation Required:

Air-conditioned Spaces:

1. Calculations indicating minimum ventilation rates in all regularly occupied areas.
2. Floor plans of the zone and occupancy calculations

Non Air-conditioned spaces

1. Calculations indicating the openable area (i.e. window/ door) as a percentage of carpet area in each regularly occupied spaces.
2. Floor plans showing the door and window schedules

Exemplary Performance

This credit is not eligible for exemplary performance

Enhanced Fresh Air Ventilation

IE Credit 1 Points: 2

Intent:

Provide adequate outdoor air ventilation, so as to avoid pollutants affecting indoor air quality.

Compliance Options:

❖ **For Mechanically Ventilated Spaces:**

Demonstrate that the fresh air ventilation in all regularly occupied areas to meet the minimum ventilation rates, as prescribed in ASHRAE* Standard 62.1 – 2010 (illustrative table below)

Notes:

- *Projects with unitary air conditioning system(s) catering to less than 10% of the total regularly occupied area can show compliance for minimum fresh air ventilation through the criteria defined for Non Air-conditioned Spaces.*
- *Tenant-occupied buildings should show compliance through feasible typical floor plans & occupancy*
- **American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)*

Outdoor Air Rates for different Space types (Table 2A)

Space Type	People - Outdoor Air Rate (cfm / person) ($R_{p)}$	Area – Outdoor Air Rate (cfm/sq.ft) (R_a)
Restaurant Dining rooms	7.5	0.18
Cafeteria/ fast food dining	7.5	0.18
Conference/ meeting	5	0.06
Hotels – bed/ living rooms	5	0.06
Office space/ Reception area/ telephone/ data entry/ main entry lobby	5	0.06
Libraries	5	0.12
Retail spaces	7.5	0.06
Super Market	7.5	0.06
Auditorium	5	0.06
Health club	20	0.06
Corridors	-	0.06
Computer lab	10	0.12

Points are awarded as below:

Mechanically Ventilated Spaces	Points
Design as per baseline	1
≥10% of baseline criteria	2

(And/ Or)

For Non Air-conditioned Spaces:

Provide operable windows or doors to the exteriors, in all regularly occupied areas, such that the operable area is designed to meet the criteria as outlined in the table below:

Design Criteria for Openable Windows and Doors to the Exteriors

Category	No points	Openable Requirement	Points
Regularly Occupied Area (≤100 sq.m)	4 %	6%, 8%	1, 2
Regularly Occupied Area (≥ 100 sq.m)	8 %	10%, 12%	1, 2

Notes:

- *Doors/ windows should not have any obstruction within 2 m from the exterior surface. Shading devices can be excluded.*
- *For sliding windows / doors, only openable area to the exteriors shall be considered in calculations.*

General Notes:

- *Regularly occupied areas are those where people sit or stand as they work, irrespective of the number of days occupied in a year.*
- *Regularly occupied areas include work stations, cabins, meeting rooms, conference rooms, waiting areas, cafeteria, etc.,*
- *Non-regularly occupied spaces include toilets, store rooms, etc.,*

❖ **Example to calculate fresh air requirement:**

Considering a project with floor Area of 10,000 sq.ft and an occupancy of 100 staff. The outdoor airflow rate required per person is 5 cfm/person (from table 2A) plus outdoor airflow rate required per unit area is 0.06 cfm/sq.ft. Hence a minimum ventilation rate in breathing zone is arrived as

Minimum ventilation rate required for meeting this credit compliance

= (total occupancy x outdoor airflow rate/person) + (outdoor airflow rate/unit area x floor area)

= (100 x 5) + (0.06 x 10,000) = 1,100 cfm

Documentation Required:

Air-conditioned Spaces:

1. Calculations indicating minimum ventilation rates in all regularly occupied areas.
2. Floor plans of the zone and occupancy calculations

Non Air-conditioned spaces

1. Calculations indicating the openable area (i.e. window/ door) as a percentage of carpet area in each regularly occupied spaces.
2. Floor plans showing the door and window schedules

Exemplary Performance

This credit is not eligible for exemplary performance

Daylighting

IE Credit 2 Points: 4

Intent:

Provide connectivity between the interior and exterior spaces, to achieve visual delight to occupants

Compliance Options:

The project can choose any one of the following options or a combination, to show compliance:

- ❖ Option 1 – Measurement Approach
- ❖ Option 2 – Simulation Approach

Notes:

- *Regularly occupied areas are those where people sit or stand as they work, irrespective of the number of days occupied in a year.*
- *Regularly occupied spaces include work stations, cabins, meeting rooms, conference rooms, waiting areas, cafeteria, etc.,*
- *Open / Private Office Spaces include, but not limited to, Work stations, Cabins, etc.,*
- *Shared/ Multi-occupied Spaces include, but not limited to, Meeting rooms, Conference rooms, Cafeteria, etc.,*
- *Regularly occupied spaces which are used for multi-purposes, such as cafeteria-cum meeting room, can be considered as separate spaces based on the function. The room boundary need not be a physical boundary.*

Option 1: Measurement Approach

1. Demonstrate through daylight illuminance measurement that 25 % of the regularly occupied spaces in the building achieve daylight illuminance levels as per the table below:
2. Measurements shall be taken after installation of furniture, equipment & systems at work plane height during 9 a.m. to 3 p.m., on a 10 foot square grid. The hourly average measurements between 9 a.m. to 3 p.m. shall be taken to show compliance.

Points are awarded as below:

Percentage of Regularly Occupied Spaces with Daylight	Points
≥ 25%	1
≥ 50%	2
≥ 75%	3
≥ 95%	4

Illuminance Levels for Various Spaces

Space Type	Average Illuminance
General Offices	300 lux
Deep Plan General Offices	500 lux
Computer Work Stations	300 lux
Conference Rooms, Executive Offices	300 lux
Computer and Data Preparation Rooms	300 lux
Drawing Boards	500 lux
Print Rooms	200 lux
Counter, Office Areas	300 lux
Super Markets/ Hyper Markets	300 lux
Showrooms for Large Objects example Cars, Furniture	300 lux
Hotel – Entrance Halls	50 lux
Hotel – Reception/ Cashiers	200 lux
Hotel – Bed room	30 lux
Hotel – Bathrooms	50 lux
Food Preparation & Stores, Cellars, Lifts & Corridors	100 lux

**Reference: Bureau of Energy Efficiency Code – Lighting, 2006*

Option 2: Simulation Approach

Demonstrate through computer simulation that 25 % of the regularly occupied spaces in the building should achieve daylight illuminance minimum 300 lux in a clear sky condition on equinox (21st March or 21st September) at 12 noon, at working plane.

Points are awarded as below:

Percentage of Regularly Occupied Spaces with Daylight	Points
≥ 25%	1
≥ 50%	2
≥ 75%	3
≥ 95%	4

Documentation Required:

1. Measurement Approach

- Detail floor plans with window and skylight schedule.
- Daylight calculations for all regularly occupied spaces in the project.
- Manufacturer brochure/ cut-sheet/ letter of the installed glass showing the visual light transmittance (VLT).
- Photographs showing the interior spaces with daylight.

2. Simulation Approach

- Detail floor plans with window and skylight schedule.
- Daylighting simulation report stating the sky conditions (such as date & month; time; ambient lux levels; wall, floor & roof reflectance properties; etc.,) and showing the daylight analysis for all regularly occupied in the project. During simulation, consider shading devices and 'shadow effect' of adjacent neighboring buildings.
- Manufacturer brochure/ cut-sheet/ letter of the installed glass showing the visual light transmittance (VLT).
- Photographs showing the interior spaces.

Exemplary Performance

This credit is not eligible for exemplary performance

Thermal Comfort

Not applicable for new interiors

IE Credit 3 Points: 1

Intent:

Provide good working environment so as to enhance the productivity and well-being of occupants

Compliance Options:

- **Meet thermal comfort requirement as under, to cater to more than 75% of the regularly occupied areas**
  - Temperature of 26 ± 2 deg C
  - Relative Humidity of 50 – 60 %

Documentation Required:

Submit measurement of temperature & RH in the interior fit-out spaces and demonstrate how this is achieved all through the year

Exemplary Performance

This credit is not eligible for exemplary performance under innovation in interiors.

Ergonomic Design

IE Credit 4 Points: 2

Intent:

Encourage ergonomic design to address occupants' health and well-being

Compliance Options:

Ensure that the Interior fit-out meets the following ergonomic standards as per ISO TC159 (or) Metric Handbook –Planning & Design Data (or) equivalent reference standard to design interior spaces based on the function.

Project can attempt atleast one measure as appropriate interior area based on function.

(1 point for each measure, max 2pts)

Examples *(not limited to)*

1. **Office**
   - Workstations, Cabin furniture, Soft furniture, Over-head storage unit, chairs
2. **Bank**
   - Cubicals, Manager desk, Storage units, Loose furniture, seating spaces
3. **Retail**
   - Racks, Display furniture, stools, seating spaces, cabinetry
4. **Hotel**
   - Reception desk, Visitor Lounge, dining tables, suites, chairs
5. **Hospital**
   - Reception area, visitor lounge, doctor desk, visitor seats, stools, pharmacy

Documentation Required:

1. Narrative describing the ergonomic design of the furniture based on interior space and furniture type.
2. Submit conceptual sketches & photographs as applicable

Exemplary Performance

This credit is not eligible for exemplary performance

CO_2 Monitoring

IE Credit 5 Points: 2

Intent:

Install monitoring systems to measure and control air quality to ensure occupant health and well-being.

Compliance Options:

Mechanically Ventilated spaces:

- Non-Densely occupied Spaces: Install CO_2 sensors in return air ducts. Maintain differential CO_2 level of 530 ppm in all regularly occupied areas.

Points are awarded as below:

CO2 level in regularly occupied areas	Points
50%	1
95%	2

- Densely Occupied Spaces*: Install CO_2 sensors at breathing level of 1.20 meters (4 feet)

**Areas with a design occupant density of 25 people or more per 1000 sq.ft*

Non Air-conditioned spaces:

Interior spaces which are not air-conditioned can comply with the following requirement.

Space Type	% of openable area to total carpet area	Points
Regularly Occupied Spaces ≤100 sq.m	9%, 10%	1, 2
Regularly occupied spaces ≥100 sq.m	13%, 14%	1, 2

Documentation Required:

1. Floor plans showing the location of CO2 sensors.
2. Manufacturer cut-sheets/ purchase invoice of the installed CO2 sensors.
3. Photographs showing the installed CO2 sensors
4. Floor plans showing doors & windows (for non-air-conditioned spaces)

Exemplary Performance

This credit is not eligible for exemplary performance

Indoor Plants

IE Credit 6 Points: 2

Intent:

Encourage usage of indoor plants to enhance indoor air quality, thereby improving the health and wellbeing of occupants

Compliance Options:

Select indoor plant species suitable to indoor environment. The requirement is to have atleast one plant in every 100 sq.ft of carpet area of regularly office spaces.

Plants like these help in absorbing toxins like formaldehydes. This can improve the indoor air quality inside the space, besides enhancing the aesthetics.

Points are awarded as below:

Indoor Plants in regularly office spaces	Points
50%	1
95%	2

Educational Note:

1. *NASA research indicates the following:*

   The champion plants in removing benzene are ivy, gerbera daisies, pot mums, peace lily, bamboo palm, and Mother-in-law's Tongue.

   Trichloroethylene (TCE) is largely employed in the metal degreasing and dry cleaning industries, printing inks, paints, lacquers, varnishes, and adhesives. The best TCE removers are:

   - *Peace lily (for TCE from cleaning products)*
   - *Dracaena (TCE from adhesives, ink, dyes, lacquers, paints and varnishes)*
   - *Gerbera daisy (TCE from adhesives)*
   - *Bamboo palm*

2. *Please refer to examples of indoor plants illustrated in Annexure-A*

Documentation Required:

1. List of indoor plant species proposed in the interiors with description
2. Photographs showing the indoor plants taken at different interior locations

Material Acoustic Performance

Not applicable for existing interiors

IE Credit 7 **Points: 3**

Intent:

Promote occupants' well being, productivity and communication through effective acoustic design

Compliance Options:

Design all occupied spaces in the building to meet the acoustical, sound insulation and noise control requirements as per NBC part 8, Building Services Section 4 - Acoustics Sound Insulation and Noise Control

Acoustic design should meet the following criteria: (1 point for each measure)

S.no	Type of Material	Criteria	Minimum levels
1	**Ceiling Systems**	Noise Reduction Coefficient (NRC)*	≥ 0.7
2	**Flooring Systems**	Noise Reduction Coefficient (NRC)	≥ 0.3
3	**Office types** a. Enclosed offices b. Open office	Noise Criteria	 35 (dB) 40 (dB)

**Noise Reduction Coefficient (NRC) is a single figure descriptor of the sound absorption property of a material*

Note: Ceiling Systems, Partition Systems, Flooring systems can be certified by agencies like GBC, Blue Angel, Carpet & Rug Institute (CRI) etc.

Documentation Required:

1. Narrative on approach to acoustical design in the interiors with respect to ceiling systems, partitions and within office spaces
2. Provide details of product certification

Exemplary Performance

This credit is not eligible for exemplary performance

Outdoor Views

IE Credit 8 Points: 4

Intent:

Design interiors to provide connectivity between the interior and exterior spaces

Compliance Options:

Achieve direct line of sight to vision glazing between 0.9 meters (3 feet) and 2.1 meters (7 feet) above the finished floor level for building occupants in at least 40% of all regularly occupied spaces.

Also, the project shall comply with the following criteria:

- The building occupants must not have any obstruction of views at least 8 meters (26.2 feet) from the exterior vision glazing.

(Or)

- The building occupants must have access either to sky or flora & fauna or both.

Points are awarded as below

% of Views to Exteriors & Interior courtyards	Points
≥ 40%	1
≥ 50%	2
≥ 60%	3
≥ 70%	4

Notes:

- *Regularly occupied areas are those where people sit or stand as they work, irrespective of the number of days occupied in a year.*
- *Regularly occupied spaces include work stations, cabins, meeting rooms, conference rooms, waiting areas, cafeteria, etc.,*
- *Open / Private Office Spaces include, but not limited to, Work stations, Cabins, etc.,*
- *Shared/ Multi-occupied Spaces include, but not limited to, Meeting rooms, Conference rooms, Cafeteria, etc.,*

- *Regularly occupied spaces which are used for multi-purposes, such as cafeteria-cum meeting room, can be considered as separate spaces based on the function. The room boundary need not be a physical boundary.*
- *Internal courtyards with vegetation can be considered for this credit calculation*
- *Non-regularly occupied spaces include toilets, store rooms etc;*

Documentation Required:

1. Drawing showing the connectivity between the interior and outdoor spaces.
2. Photographs of the exterior spaces
3. Section of interior floor with furniture, ceiling sections & glazing level

Exemplary Performance:

This credit is eligible for exemplary performance under Innovation in Design Process, if more than 80% of the regularly occupied spaces achieve direct line of sight to vision glazing.

Minimise Indoor Pollutant Contamination

IE Credit 9 Points: 3

Intent:

Minimise the exposure of building occupants and maintenance team to hazardous indoor and outdoor pollutants, thereby enhancing indoor air quality and occupant health

Compliance Options:

Demonstrate that the project complies with atleast three of the following criteria, as applicable*:* *(1 point for each measure, max. 3 points)*

- ❖ Fresh air supply should be atleast 25 feet away from any source of contamination in order to ensure fresh air supply.
- ❖ Install entryway systems (grates or slots / grilles/ rollout mats which allow for easy cleaning) of minimum 6 feet in length, at all the main entrances.
- ❖ Isolate areas exposed to hazardous gases or chemicals (such as printer rooms, chemical storage rooms, janitor rooms) from regularly occupied areas, as per owner / developer's scope.
- ❖ Also, design such areas with exhaust system, self-closing door, deck-to-deck partition.
- ❖ Clean air-conditioning ducts, filters (once in a year)

Notes:

- *Printers/ Copier machines: Floor-mounted printers/ copier machines shall be considered to show compliance; whereas, tabletop printers/ copier machines need not be considered.*
- *The Printer / Chemical storage / Janitor rooms shall be maintained at a negative pressure of 5 Pascals (0.00005 bar).*

Documentation Required:

1. Narrative describing the strategies adopted to minimise the indoor pollutant contamination
2. Submit photographs of the proposed measures

Exemplary Performance:

This credit is not eligible for exemplary performance.

Low-Emitting Materials

Not applicable for existing interiors

IE Credit 10 **Points: 4**

Intent:

Encourage use of materials and systems with low emissions, so as to reduce adverse health impacts on building occupants.

Compliance Options:

❖ **Paints & Coatings:** ***(1 point)***

Use paints and coatings (including primers) with low or no VOC content (as specified in given below) for 95% of interior wall and ceiling surface area

VOC Limits for Paints & Coatings

Type of Paints & Coatings	VOC Limit (g/L less water)
Non-flat (Glossy)	150
Flat (Mat)	50
Anti-corrosive/ Anti-rust	250
Clear Wood Finish: Varnish	350
Clear Wood Finish: Lacquer	550
Floor Coatings	100

Note:

- *Paints & Coatings certified by CII - GPSC / GreenPro can be used by the project to show compliance, as and when the certified materials are available.*

❖ **Adhesives:** ***(1 point)***

For adhesives used within the interiors, ensure that the VOC content does not exceed the limits as specified in Table given below.

VOC Limits for Adhesives

Type of Adhesives	VOC Limit (g/L less water)
Glazing adhesives	100
Ceramic tile adhesives	65
Drywall and panel adhesives	50
Wood substrata adhesives	30
Wood flooring adhesives	100

Type of Adhesives…	VOC Limit… (g/L less water)
HVAC duct insulation	850
Indoor Carpet adhesives	50
Multipurpose construction adhesives	70

Note:

- *Adhesives certified by CII - GPSC / GreenPro can be used by the project to show compliance, as and when the certified materials are available.*

Notes for Paints & Coatings and Adhesives:

- *Volatile organic compounds (VOCs) are carbon compounds that participate in atmospheric photochemical reactions (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonates, and ammonium carbonate). The compounds vaporize at normal room temperatures.*
- *If the project has used small quantities of non-complying paints & coatings and/or adhesives, a VOC budget can be calculated to demonstrate that the weighted average VOC of all products (based on litres of each applied) is below the allowed limit, by each type.*

❖ **Carpets:** ***(1 point)***

All carpets installed in the building interior must comply with CRI Green Label Plus Carpet Programme.

Notes:

- *Project is eligible for this credit point only if, the carpet is installed in at least 10% of the total project built-up area (excluding parking and service areas such as chiller plant room, electrical plant room, AHU rooms, etc.,).*
- *Carpets certified by CII - GPSC / GreenPro can be used by the project to show compliance, as and when the certified materials are available.*

❖ **Composite Wood:** ***(1 point)***

Composite wood and Agri-fiber materials used in the building must not contain added urea-formaldehyde resins.

Notes:

- *Composite wood consists of wood or plant particles or fibers bonded together by a synthetic resin or binder. Examples include plywood, particle-board, and medium-density fiberboard (MDF).*
- *Composite wood certified by CII - GPSC / GreenPro can be used by the project to show compliance, as and when the certified materials are available.*

Documentation Required:

1. List of low VOC content materials in interiors i.e. paint & coatings, adhesives, carpets, composite wood & new wood furniture.
2. Manufacturer brochures/ cut-sheets/ Material Safety Data Sheet indicating the VOC content of the all materials used in the project.
3. Purchase invoice/ payment receipts of all the low VOC content materials / Certified Carpet / Composite wood sourced in the project.

Exemplary Performance:

This credit is not eligible for exemplary performance.

Indoor Air Quality Management, During Installation

Not applicable for existing interiors

IE Credit 11 **Points: 2**

Intent

Reduce indoor air quality problems resulting from construction activities, and promote comfort and well-being of construction workers and building occupants.

Compliance Options:

Develop and implement an Indoor Air Quality (IAQ) management plan during construction and pre-occupancy phase, addressing the following measures, as applicable:

(1point for two measures, max points :2)

Note: *Consider 'During Construction Indoor Air Quality Management Guidelines' from National Building Code (NBC) of India, Part 7 - Constructional Practices and Safety.*

❖ **Scheduling**

- Coordinate construction activities to minimise disruption of occupied spaces.
- Carefully sequence construction activities to minimise IAQ issues.
- Protect stored on-site and installed absorptive materials from moisture damage. Do not install moisture-damaged materials unless they have been properly dried.

❖ **Electrical & Mechanical Equipment & Systems Protection**

- Store equipment & systems in a clean, dry location.
- Protect ducts and equipment by sealing openings.
- Clean air plenums before use.

❖ **Housekeeping**

- Provide protective dust masks for workforce
- Implement practices to ensure a clean job site to control potential contaminants such as dirt, dust and debris.
- Clean up spills, and keep work areas dry.

❖ **Isolate Clean Areas**

- Isolate areas to prevent contamination of clean or occupied spaces using physical separation.
- Debris Management plan should be integral part of interior construction, manage the debris generated on during installation.

❖ **Source Control**

- Avoid use of finish materials with high VOC and formaldehyde levels.
- Isolate and ventilate, as appropriate, when using any toxic materials or creating exhaust fumes.
- Implement measures to avoid the tracking of pollutants into the work area and occupied portions of the building.

Documentation Required:

Submit photographs taken at different stages of interior installations addressing the compliance options

Exemplary Performance:

This credit is not eligible for exemplary performance.

Interior Flush out

Not applicable for existing interiors

IE Credit 12 **Points: 1**

Intent:

Avoid occupant's exposure to indoor airborne contaminants before occupying the premises, so as to reduce the adverse health impacts on building occupants

Compliance Options:

Perform a building flush-out for ten days by keeping all windows open before the building is occupied. Flushing is to be carried out after installing interior fit-outs and applying paints & coatings.

(Or)

If the Project team prefers to carry out the flush-out using forced ventilation systems, the flush-out can be carried out for five days.

Documentation Required:

1. Narrative stating the flush-out procedure followed.
2. Declaration letter from the owner/ developer indicating the dates and number of days for completing flush-out.

Exemplary Performance

This credit is not eligible for exemplary performance

Occupant Well-being Facilities

IE Credit 13 Points: 2

Intent:

Promote occupant well being so as to enhance physical, emotional and spiritual well-being of building occupants

Compliance Options:

Have recreational facilities such as gymnasium, yoga, meditation, or any indoor games catering to atleast 5% of building occupants.

Points are awarded as below

Recreational Facilities For Building Occupants	Points
5%	1
10%	2

Documentation Required:

1. Calculations showing the recreational facilities provided based on the number of occupants.
2. Floor plans of the recreational facilities provided.
3. Photographs of the proposed recreational facilities

Exemplary Performance

This credit is not eligible for exemplary performance

Dedicated Dining Spaces

Not applicable for new interiors

IE Credit 14 Points: 1

Intent:

Encourage people not to dine in working areas so as to avoid contamination of indoor spaces, thereby enhancing health and hygiene

Compliance Options:

Provide a dedicated dining space for the employees / occupants within the interior space.

Documentation Required:

Submit photographs of the dedicated dining space

Exemplary Performance

This credit is not eligible for exemplary performance under innovation in interiors.

Innovation in Interior Design

Innovation in Interior Design

IID Credit 1 Points: 1- 4

Intent:

Provide design teams an opportunity to innovate and implement measures that demonstrate reduced environmental impacts.

Compliance Options:

Credit 1.1: Innovation in Interior Design

Option 1:

Implement measures that are not addressed in the rating system but have significant reduction in environmental impacts.

(Or)

Option 2: Exemplary performance

Implement measures that far exceed the credit requirements of this rating system.

Note: Credits that are eligible for exemplary performance are highlighted in the respective credit categories.

Credit 1.2: Innovation in Interior Design

Same as credit 1.1

Credit 1.3: Innovation in Interior Design

Same as credit 1.1

Credit 1.4: Innovation in Interior Design

Same as credit 1.1

Notes:

- *Measures implemented should have quantitative and measurable impacts*
- *Measures that are mandated by the local bye-laws and not addressed in the rating system, are not eligible for Innovation.*

Documentation Required:

1. Submit a narrative describing the following:
   - Intent
   - Measures implemented
   - Potential reduction in environmental impacts
2. Supporting documents such as drawings, illustrations, cut-sheets, test reports as applicable.

IGBC Accredited Professional

IID Credit 2 Point: 1

Intent:

Encourage involvement of a green design professional to facilitate incorporating sustainable measures and thereby reduce environmental impacts.

Compliance Options:

Atleast one participant in the project team shall be an IGBC Accredited Professional.

Documentation Required:

A copy of IGBC Accredited Professional certificate of the participant.

Annexures

Annexure – A

Indoor Plants				
S No.	**Botanical Name**	**Common name**	**Photo**	**Benefits**
1	Dypsis lutescens	Bamboo palm/ Areca palm		1. Cleans air borne toxins 2. Removes formaldehydes, benzene, trichloroethylene
2	Raphis excelsa	Lady Palm		1. Improves Indoor air Quality 2. Resistant to pathogens
3	Ficus elastica	Rubber Plant		1. Emits high oxygen 2. Removes formaldehydes, benzene, trichloroethylene

Annexure - A : Indoor Plants

4	Spathiphyllum wallisii	Peace Lily		1. Removes air pollutants 2. Removes formaldehydes, benzene, trichloroethylene 3. Removes household chemicals & carcinogens
5	Ficus Alii	Ficus A1 Gold		1. Overall air purifier 2. Resistance to insects
6	Chlorophytum comosum	Spider Plant		1. Removes formaldehydes, and xylene
7	Gerbera daisy	Daisy plant		1. Absorbs Carbon dioxide 2. Gives off Oxygen during night 3. Removes benzene

8	Epiremnum aureum	Money plant		1. Removes formaldehydes, benzene, benzene
9	Howea forsteriana	Kentia palm		1. Removes VOC concentrations 2. Removes benzene and n- hexane from indoor air
10	Schefflera actinophylla	Queensland Umbrella		1. Removes benzene and carcinogenic substances from air
11	Dracaena deremensis	Janet Craig		1. Removes trichloroethylene from the air, emitted by photocopier 2. Absorbs VOC concentrations
12	Nephrolepis exaltata	Boston fern		1. Removes formaldehydes 2. Adds humidity to indoor environment

Annexure - A : Indoor Plants

13	Sansevieria trifasciata	Snake Plant/ Mother in law's tongue		1. Absorbs toxins such as nitrogen oxides & formaldehyde
14	Aloe barbadensis	Aloe Vera		1. Sun loving succulent helps clear formaldehyde & benzene
15	Aglaonema sp	Chinese Evergreen		1. Emits high oxygen & purifies indoor air 2. Removes formaldehydes, benzene
16	Epipremnum aureum syn. Scindapsus aureus	Golden Pothos		1. Removes formaldhyde 2. Removes Carbon monoxide and increases indoor air quality
17	Dracaena marginata	Marginata or Dragon tree		1. Purifies air from carcinogen, benzene 2. Removes formaldehyde, xylene from paints & varnishes

18	P. cordatum, P.scandens or P. selloum	Philodendron		1. Removes formaldehydes especially higher concentrations
19	Chrysanthemum sp. or Chrysanthemum morifolium	Mums		1. Removes benzene and carcinogenic substances from air
20	Gerbera sp. or Gerbera jamesonii	Gerbera Daisy		1. Removes benzene 2. Absorbs Carbon dioxide and gives oxygen during night - helps in improving sleep
21	Hedera helix	English Ivy		1. Removes benzene, pesticides and off-gasing of other synthetic materials 2. Fantastic for Asthma & allergies 3. Removes formaldehyde

Annexure - A : Indoor Plants

22	Philodendron oxycardium	Heart leaf philodendron		1. Removes all kinds of VOCs, particularly from particle board
23	Ficus benjamina	Weeping fig		1. Filters pullutants from carpeting, furniture
24	Dracaena deremeusis or Dracanea deremensis warneckei	Warneckii or Dracanaena warneckei		1. Removes trichloroethylene from the air, emitted by photocopier
25	Phoenix roebelenii	Pygmy date, miniature date palm		1. Removes formaldehyde, xylen and tolune
26	Dracaena fragrans	Corn or cornstalk plant		1. Removes benzene, formaldehyde, xylene 2. Purifies environment

27	Gerbera Jamesonii	Gerbera Daisy		1. Removes tricholorethylene, benzene from air
28	Dracaena Marginata	Dragon Tree		1. Reduces benzene, formaldehyde, xylene and toluene from air

Annexure – B

1. Projects using Centralized Air Conditioning System

Equipment Class	Minimum COP	Minimum IPLV	Test Standard
Air Cooled Chiller <530kW (<150 tons)	2.90	3.16	ARI 550/590-1998
Air Cooled Chiller ≥530 kW (≥150 tons)	3.05	3.32	ARI 550/590-1998
*Centrifugal Water Cooled Chiller < 530 kW (<150 tons)	5.80	6.09	ARI 550/590-1998
*Centrifugal Water Cooled Chiller ≥ 530 and < 1050 kW (≥150 and < 300 tons)	5.80	6.17	ARI 550/590-1998
Reciprocating Compressor, Water Cooled Chiller all sizes	4.20	5.05	ARI 550/590-1998
Rotary Screw and Scroll Compressor, Water Cooled Chiller <530 kW (<150 tons)	4.70	5.49	ARI 550/590-1998
Rotary Screw and Scroll Compressor, Water Cooled Chiller ≥530 and < 1050 kW (≥150 and < 300 tons)	5.40	6.17	ARI 550/590-1998
Rotary Screw and Scroll Compressor, Water Cooled Chiller ≥ 1050 kW (≥ 300 tons)	5.75	6.43	ARI 550/590-1998

Source: Table 5.2 ECBC User Guide 2009

2. Projects using packaged Air-conditioning system

Cooling Capacity		Maximum Power Consumption in Watts	
Watts	**Tons of Refrigeration**	**Water Cooled**	**Air Cooled**
10,000	3	3,750	4,750
17,500	5	6,000	7,000
26,250	7.5	9,000	10,000
35,000	10	11,500	13,500
52,000	15	17,000	20,000

Source: ECBC user guide 2009;
Code No.: IS 8148: 2003

3. Projects using Unitary and Split system

Rated Cooling Capacity		Maximum Power
(kcal/h)	**kW**	**Consumption (kW)**
1,500	1.7	1.1
2,250	2.6	1.4
3,000	3.5	1.6
4,500	5.2	2.4
6,000	7.0	3.2
7,500	8.7	4.25
9,000	10.5	5.2

Source: ECBC user guide 2009 table 5.3 & 5.4
Code No.: IS 1391 (Part-1): 1992 (amendment No. 2 Dec.2006)

Annexure-C

1. Interior Lighting Power – Building Area Method (ECBC Table 7.1)

Table 7.1: Interior Lighting Power- Building Area Method (ECBC Table 7.1)

Building Area Type	LPD (W/m²)	Building Area Type	LPD (W/m²)
Automotive Facility	9.7	Multifamily Residential	7.5
Coervention Center	12.9	Museum	11.8
Dining: Bar Lounge/Leisure	14.0	Office	10.8
Dining: Cafeteria/Fast Food	15.1	Parking Garage	3.2
Dining: Family	17.2	Performing Arts Theater	17.2
Dormitory/Hostel	10.8	Police/Fire Station	10.8
Gymnasium	11.8	Post Office/Town Hall	11.8
Health care-Clinic	10.8	Religious Building	14.0
Hospital/Health Care	12.9	Retail/Mall	16.1
Hotel	10.8	School/University	12.9
Library	14.0	Sports Arena	11.8
Manufacturing Facility	14.0	Transportation	10.8
Motel	10.8	Warehouse	8.6
Motion Picture Theater	12.9	Workshop	15.1

2. Lighting Power – Space Function Method (ECBC Table 7.2)

Table 7.2: Interior Lighting Power- Space Function Method (ECBC Table 7.2)

Space Function	LPD (W/m²)	Space Function	LPD (W/m²)
Office-enclosed	11.8	• For Reading Area	12.9
Office-open plan	11.8	Hospital	
Conference/Meeting/Multipurpose	14.0	• For Emergency	29.1
Classroom/Lecture/Training	15.1	• For Recovery	8.6
Lobby*	14.0	• For Nurse Station	10.8
• For Hotel	11.8	• For Exam Treatment	16.1
• For Performing Arts Theater	35.5	• For Pharmacy	12.9
• For Motion Picture Theater	11.8	• For Patient Room	7.5
Audience/Seating Area*	9.7	• For Operating Room	23.7
• For Gymnasium	4.3	• For Nursery	6.5
• For Convention Center	7.5	• For Medical Supply	15.1
• For Religious Buildings	18.3	• For Physical Therapy	9.7
• For Sports Arena	4.3	• For Radiology	4.3
• For Performing Arts Theater	28.0	• For Laundry – Washing	6.5
• For Motion Picture Theater	12.9	Automotive – Service Repair	7.5
• For Transportation	5.4	Manufacturing Facility	
Atrium-first three floors	6.5	• For Low Bay (<8m ceiling)	12.9
Atrium-each additional floor	2.2	• For High Bay (>8m ceiling)	18.3
Lounge/Recreation*	12.9	• For Detailed Manufacturing	22.6
• For Hospital	8.6	• For Equipment Room	12.9
Dining Area*	9.7	• For Control Room	5.4
• For Hotel	14.0	Hotel/Motel Guest Rooms	11.8
• For Motel	12.9	Dormitory – Living Quarters	11.8
• For Bar Lounge/Leisure Dining	15.1	Museum	
• For Family Dining	22.6	• For General Exhibition	10.8
• Food Preparation	12.9	• For Restoration	18.3
Laboratory	15.1	Bank Office – Banking Activity Area	16.1
Restrooms	9.7	Retail	
Dressing/Locker/Fitting Room	6.5	• For Sales Area	18.3
Corridor/Transition*	5.4	• For Mall Concourse	18.3
• For Hospital	10.8	Sports Arena	
• For Manufacturing Facility	5.4	• For Ring Sports Area	29.1
Stairs-active	6.5	• For Court Sports Area	24.8
Active Storage*	8.6	• For Indoor Field Area	15.1
• For Hospital	9.7	Warehouse	
Inactive Storage*	3.2	• For Fine Material Storage	15.1
• For Museum	8.6	• For Medium/Bulky Material Storage	9.7
Electrical/Mechanical Facility	16.1	Parking Garage – Garage Area	2.2
Workshop	20.5	Transportation	

Annexure - D

Standards referred in IGBC Rating system for Green Interiors

- IGBC – Indian Green Building Council
- NBC – National Building Code 2005
- The BEE – Bureau of Energy Efficiency
- ECBC – Energy Conservation Building Code
- UPC-I : Uniform Plumbing Code of India
- IAPMO - The International Association of Plumbing and Mechanical Officials: Developed Plumbing Code of India along with Indian Plumbing Association
- GPSC - Green Products and Services Council, part of CII (GreenPro encourages the product manufacturers to implement green measures in areas including product design, raw materials, manufacturing process, product performance during use, recycling/ disposal, etc. Focus areas of GreenPro include - green building products, industrial products, technologies, consumer products and services)
- Green Guard: Certification to verify air contaminants for furniture and seating
- BIFMA – Standard to verify indoor air contaminants for furniture and seating
- MNRE : Ministry of New and Renewable Energy
- ASHRAE: American Society of Heating, Refrigerating, and Air-Conditioning Engineers
- ASHRAE 62.1.2010:– standard for Fresh Air Ventilation
- ASHRAE 90.1.2010: - standards for Energy Efficiency
- Green Seal Standard 36 (GS-36) : Regulates VOC content for Commercial adhesive
- Green Seal Standard 11 (GS -11): Regulates VOC content for architectural paint
- Green Seal Standard 3 (GS -03): Regulates VOC content for anti-corrosive paint and anti-rust paint
- South Coast Air Quality Management District (SCAMQMD) Rule 1168: Regulates VOC content for : adhesives, sealants, sealant primers, tile setting adhesive and grout.
- Carpet and Rug Institute Green Label Plus: Regulates indoor air contaminants for carpet

NOTES

NOTES

About CII

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry led and industry managed organization, playing a proactive role in India's development process. Founded over 120 years ago, India's premier business association has over 7900 member organizations, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 2,00,000 enterprises from around 240 national and regional sectoral associations.

CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialised services and global linkages. It also provides a platform for consensus-building and networking on diverse issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with over 120 NGOs across the country carry forward our initiatives for integrated and inclusive development, in affirmative action, healthcare, education, livelihood, diversity management, skill development, empowerment of women, and water, to name a few.

The CII Theme for 2013-14 is Accelerating Economic Growth through Innovation, Transformation, Inclusion and Governance. Towards this, CII advocacy will accord top priority to stepping up the growth trajectory of the nation, while retaining a strong focus on accountability, transparency and measurement in both the corporate and social eco-system, building a knowledge economy, and broad-basing development to help deliver the fruits of progress to many.

With 66 offices including 10 Centres of Excellence in India, and 8 overseas offices in Australia, China, France, Singapore, South Africa, UK, and USA, as well as institutional partnerships with 312 counterpart organizations in 106 countries, CII serves as a reference point for Indian industry and the international business community.

About IGBC (Indian Green Building Council)

The Indian Green Building Council (IGBC), part of Confederation on Indian Industry (CII) was formed in the year 2001. The vision of the Council is to enable sustainable built-environment for all and facilitate India to be one of the global leaders in sustainable built-environment by 2025.

IGBC is strong with a membership base of more than 2,100 members which is progressively increasing over the years. Members comprise of all stakeholders of the construction industry viz. Architects, Interior Designers, Landscape Consultants, MEP Consultants, Builders, Developers, Product and Equipment Manufacturers, Corporate, Institutions and Government agencies.

The Council presently has 20 Chapters spread all over the country to cater to the aspirations of various states and regions. These chapters are headed by eminent Architects and Developers.

To seed the ideas of green building concepts in the minds of young people, IGBC has started Student chapters in various architectural and engineering colleges.

The council has in the past 14 years facilitated 3,356 Green Building Projects in the country with a footprint of 3.12 Billion sq.ft. covering the varied building types viz. commercial, residential, hospitals, airports, retail, factory buildings, townships and SEZs.

The council closely works with State and Central Governments, World Green Building Council, bilateral and multi-lateral agencies in promoting green building concepts.

National by Choice

Global in Performance

Indian Green Building Council

Greening India since 2001

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