

GRIHA CERTIFIED PROFESSIONAL

GRIHA CP FLASH CARDS

170+ key terminology flash cards!



BEYOND
SMART CITIES

[LEARN.BEYONDSMARTCITIES.IN](https://www.learn.beyondsmartcities.in)

Basis of Design



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Info to achieve owner's proj.
reqs. including system
descriptions, applicable code
references, design
assumptions, and indoor env.
quality criteria



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Biobased Material



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Products made of biological
products, renewable agr
materials, or forestry
materials. Meets Sustainable
Agr Standard



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Criteria 8: Energy Efficiency
When determining the
luminous efficiency of lamps,
the ballast loss is factored
into the lamp wattage.
Luminous efficacy = (light
output including ballast
loss/electric input)



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False



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If the total waste water
generated on site is 9 kLD,
then the project is exempt
from this credit.



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True



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Criteria 9: Renewable energy utilization
As per GRIHA V 2015, on-site renewable
energy system installation is required to
offset a part of the annual energy
consumption of internal artificial lighting
and HVAC systems.

For daytime commercial buildings and
institution buildings, 2.5% is mandatory.
for 24 x 7 occupied buildings: 0.5%
mandatory



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True



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GRIHA v.2015 awards one
point for the project which
replaces 15% OPC with fly
ash by weight of cement used
in structural concrete.



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True



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The Solar Reflectance Index, or SRI, is a measurement of how well something reflects solar radiation.



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True



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SHGC refers to the ratio of the solar heat that passes through the glazing to the total incident solar radiation.



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True



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The project incorporates design measures for universal accessibility, as recommended in NBC 2005.



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True



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Criteria 23: Treat organic waste on site.
If the total waste generation on site is less than 100 kg/day, then the project is exempt from Criteria 23: Treat organic waste on site.



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False



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If the CGWB norms suggest that the ground water table is high and ground water recharging should not be done, then the project is exempt from Criteria 18: Rainwater Recharge.



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True



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Criteria 11: Achieving Indoor Comfort
In daylighting analysis, the daylight factor is calculated at working plane level.



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False



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Criteria 9: Renewable energy utilization

For residential buildings, it is not mandatory to install renewable energy systems to offset the annual energy consumption of the building's internal artificial lighting and HVAC systems.



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False



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Criteria 8: Energy Efficiency
The project team should demonstrate that building EPI is below the GRIHA benchmark



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False



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Criteria 19: Utilization of BIS-recommended waste materials in building structures

According to GRIHA, a minimum 40% composition of bricks by fly ash by volume for 100% load-bearing and non-load-bearing masonry walls will be awarded 2 points.



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False



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Criterion 16: Water Quality
The STP installed on site, which meets the CPCB norms, helps the project achieve a maximum of 2 points as per GRIHA V 2019.



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True



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**Criterion 7: Construction
Management Practices**

As per GRIHA V 2015, the use of gunny bags for curing is not a mandatory requirement. This strategy can help the project team achieve 1 point by adopting two more measures to manage water during construction.



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False



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Criteria 8: Energy Efficiency
Energy performance index
(EPI),

$$\text{EPI} = [(\text{internal lighting} + \text{HVAC load} + \text{fan load}) / \text{total built-up area}]$$



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True



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Criteria II: Achieving indoor comfort requirements (visual, thermal, and acoustic)

Artificial lighting design should fall within the limits of recommended space- or task-specific lighting levels as per NBC and meet a minimum uniformity ratio of 0.4.



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False



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In case of a project with multiple buildings, it is mandatory for each building to meet the minimum mandatory requirements of various Criteria of GRIHA.



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True



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A high level of imperviousness on the site causes rapid runoff of rainwater, which in turn reduces the amount of urban rainwater recharge and contributes to conditions that lead to urban flooding.



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True



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The indoor noise levels should be within the acceptable limits as specified in NBC 2005, and the key noise sources on site (such as DG sets, chiller plants, and so on) should have sufficient acoustic insulation in accordance with the norms of NBC 2005 in order to earn two points.



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True



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All faucets that are installed in spaces with water head heights less than 5 m (17 feet) in gravity-fed systems (without pressure reduction) are exempt from calculations in Criteria 14: Use of low-flow fixtures and systems



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True



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It is essential to ensure that water that is used in the operation of the building is of a high quality from two points of view: first, to ensure the general hygiene of the people who live in the building, and second, to ensure the durability of the plumbing systems.



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True



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Water that is used for various purposes, such as drinking, irrigation, and so on, is required to conform to the standards set by the BIS.



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True



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A standard that is based on an adaptive thermal comfort model can play a significant role in lowering overall energy consumption while simultaneously maintaining occupants' levels of comfort, productivity, and overall well-being.



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True



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It is possible to achieve optimization while maintaining comfort by using a passive design strategy when creating the envelope, which is consistent with the conventional wisdom of our culture.



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True



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Ensure that the minimum requirements of the CPCB (National Ambient Air Quality Standards [NAAQS]) for assessing the quality of fresh air are fulfilled.



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True



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Bioremediation



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Use of living organisms to
remove pollutants from water



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Blackwater



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Wastewater from
toilets/urinals



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Brownfield



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**A property that was
previously developed and
may contain pollutants**



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BUG Rating



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**Light fixture classification
system.
Backlight, Uplight, Glare**



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Chain of Custody (COC) Certificate



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Companies earn the right to
market/sell products as FSC
Certified and to affiliate with
the FSC



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Construction Carbon Calculator



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Measures carbon from the
construction process



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Cradle to Gate



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"analysis of a product's
partial life cycle, from
"cradle" to "gate" (factory)
before it is transported for
distribution and sale"



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Densely Occupied Space



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25 ppl+ per 1000 SF
(aka 40 sf or less per person)



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Emissivity



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Ratio of radiation emitted. 0
to 1 scale with 1 being a
blackbody.



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Emittance



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Shed thermal radiation on
scale of 0 to 1 with 1 being a
perfect emitter.



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Eutrophication



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Ecosystem's response to
excess nitrates or phosphates
from fertilizers/sewage



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Evapotranspiration



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Loss of water via evaporation
and transpiration of plants



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Floor Area Ratio



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Ratio of building footprint to
the lot size of the site.



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Graywater



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Wastewater from bathtubs,
showers, bathroom, sinks,
laundry machines.



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Green Guard



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Standard for low VOC
furniture



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Green Rater



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Provides verification of Leed
home projects



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Green Homes Certification Providers



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Manage and audit work of Green Raters



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Green—e Certified



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Off—site renewable energy certified by Center for Resource Solutions



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Hard Cost



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Purchase price of a hard asset that is a direct construction cost. E.g. Land, equipment



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Infill Site



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75%+ area within 1/2 mile is developed. Means filling in a dense area with a better building



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Project Boundary



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**Site area affected by
construction including
parking**



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Non—potable Water



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**Does NOT meet drinking
standards**



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Non—Process Energy



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Lighting, HVAC, water
heating, chillers, etc.



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Non—regularly occupied
spaces



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Corridors, hallways, lobbies,
bread rooms, kitchens,
restrooms, etc.



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Open Grid Paving System



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A grid of material that
supports loose filling such as
grass or gravel



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Open Space



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Project's property area –
development footprint



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Place of Respite



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**Area that connects occupants
to natural environment**



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**Pre—consumer Recycled
Content**



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**Material from manufacturing
process that is not wasted.
Exs: shavings, sawdust, fly
ash, over—issue publications,
textile clippings, obsolete
inventories**



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Prius Effect



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Response to real time
feedback regarding energy
use that further decreases
consumption.



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Post—Consumer Recycled Content



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Waste generated by end—
users. e.g. Newspapers,
Construction debris.



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Process Energy



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Energy used by manuf.,
indust., or commercial
products. Includes office
equip., computers, laundry,
kitchen cooking.



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Process Water



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Water used in industrial
processes and building
systems such as cooling
towers.



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Project Boundary



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**Building plus entire area
being developed like parking
and landscaping.**



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Property Boundary



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**Property's legal area.
(Includes undeveloped
areas)**



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PUE



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Power Utilization
Effectiveness in data centers.
Power used by computing
equipment rather than
overhead like HVAC.



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Rapidly Renewable



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Bldg materials made from
plants with harvest in 10
years or less



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Regularly Occupied Spaces



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Areas where people are seated or standing as they work inside a building.



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Soft Cost



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Expense costs not from direct construction. E.g. engineering fees, legal, architect



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Solar Reflectance Index



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"0 to 100 scale. 100 is perfect
reflectance. Combo of
Reflectance and Emittance.
"Ability to reject solar heat""



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Tertiary Treatment



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Highest form of water tx.
Removes ph and nitr from
wastewater



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Total Suspended Solids (TSS)



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Msmt of stormwater quality



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Xeriscaping



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landscaping so that routine
irrigation is unnecessary



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Preferred Parking



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Includes designated spaces
close to building, designated
covered spaces, parking
passes with 20%+ discount



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Which refrigerants have
highest ODP?



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CFCs



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List the greenhouse gases (4)



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CO₂, Methane, NO, Ozone



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High Priority Sites Include...
(3)



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Historic district, Federal/Local
designation, Brownfield



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Pilot Credit



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A Credit not yet balloted and introduced to GRIHA Green but can be used for an Innovation in Design credit.



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Site Boundary



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Usually the same as the GRIHA Green Project (site area including parking and open space).



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Construction and Demolition
Waste Management does not
include... (3)



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Soil, nonhazardous
materials, and Alternative
Daily Cover.



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Natural Refrigerants
include... (3) aka
Hydrocarbons



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Water, CO2, Ammonia



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Source Reduction



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Decreasing the amount of
materials used in the
manufacturing process



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Triple Bottom Line



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People, Planet, Profit



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Green buildings can have
what percentage reduction in
solid waste? (Solid Waste
Management Credit)



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70%



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Montreal Protocol



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Phase out CFCs by 2010 and
HCFCs by 2030



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Renewable Energy Certificates (Green Power and Carbon Offsets)



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Reduces greenhouse gas emissions by supporting renewable energy that is produced elsewhere. Does not directly contribute to buildings energy supply.



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Project Boundary



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Same as building footprint



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Why are some GRIHA Green
credits worth more points?



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Based on environmental
impact



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If a GRIHA project no longer
meets MPRs OR Mandatory
Requirement
, what happens?



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Certification could be
revoked.



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What/Who becomes GRIHA
CP accredited?



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People!



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GRIHA can be written as:



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GRIHA (Green Rating for
Integrated Habitat
Assesimet) is the national
rating system of India. It is
an evaluation tool for
measuring and rating a
building's environmental
performance."



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GRIHA Green claims that
Integrated Design Approach
can reduce higher green
building costs.



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True.



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Energy Star is a program
developed by...



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EPA and DOE



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Compared to invasive plants,
native plants require less (2)



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Water, Fertilizer



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GRIHA Green stands for...



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GRIHA (Green Rating for
Integrated Habitat
Assesimet)



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To reduce heat island effect,
do you want a roof with a
high or low Solar Reflective
Index?



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High! So material does not
absorb extra heat.
Vegetation also reduces heat
island effect.



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What percentage of time do
people spend in indoors?



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90%



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Who publishes GRIHA
reference guides OR manual ?



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GRIHA council



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Who administers GRIHA CP
exams and building
certification?



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GRIHA council



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What/Who can become
GRIHA national members?



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Organizations



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Average Housing Density
measured by...



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Housing units per acre of
buildable land



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Largest energy users in
buildings are? (2)



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Lighting, Space Heating



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ENERGY STAR label is based
on:



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Less energy, less expensive to
operate, less greenhouse
gases



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The Uniform Plumbing Code
governs what?



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Graywater



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Sedimentation



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Particles from natural OR
humans are added to water
bodies.



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What type of water is laundry
machine water?



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Graywater



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"What minimum mileage is
needed for "fuel efficient
vehicles""



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45 MPG



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How many points are
required for 5 Star?



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86 or more



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How many points are
required for 1 star?



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25-40



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For Surrounding Density and
Diverse Uses credit, what is
considered diverse uses?



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Food retail, community retail,
services, civic facilities. NO
HOUSING OR BIKE RACKS



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Who determines low
emitting/fuel efficient
vehicles?



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Zero Emission Vehicle
standard by California Air
Resources Board



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Drip Irrigation



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Delivers water directly to roots (less water is lost)



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GRIHA will recognise Green New Buildings that achieve one of the rating levels with a formal letter of certification and a mountable plaque.



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TRUE



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Development density



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Based on Floor Area Ratio
(floor area of bldg to lot size
of site)



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Daylight Harvesting System



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Adjusts light levels in the
building based on the
amount of daylight



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Which refrigerant has
greatest GWP? HCs, HFCs,
CFCs, or HCFCs



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HFCs



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Who determines zoning
requirements?



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Local gov



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Equivalent standards to
Green—e products must (3):



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Verify Chain of Custody,
Track GhG reductions, Verify
renewable energy



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Which GRIHA Green Criterion
has the greatest number of
points to earn?



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Energy Efficiency



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Green New buildings can have tremendous benefits, both tangible and intangible. The most tangible benefits are the reduction in water and energy consumption right from day one of occupancy. The energy savings could range from 20 - 30 % and water savings around 30 - 50%.



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True



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Bioswale



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A shallow depression in the earth for stormwater runoff



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VOC budget



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Based on msmt of total VOC
concentration for indoor air



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Is an auditorium considered
an occupied or unoccupied
space?



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Occupied!



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Combined Density



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The total density of
residential and non—
residential areas



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For Surrounding Density and
Diverse Uses, what distance
must be used?



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1/2 mile for walking distance



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Which standard addresses
MERV filters?



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ASHRAE 52.2



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Who verifies GRIHA for Affordable
Housing?



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GRIHA Council



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What does ASHRAE 55 refer
to?



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Thermal Comfort



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EPD stands for



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Environmental Product
Declaration



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Green—e Certified



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**From the Center of Resource
Solutions for renewable
sources in renewable energy
contracts.**



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**Where do you send a Credit
Interpretation Request?**



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**Through GRIHA online
Support**



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- GRIHA logo can be used for
- 1) a product that meets GRIHA reqs
 - 2) a business that is a GRIHA member
 - 3) A Building that is GRIHA certified
 - 4) a bldg anticipating GRIHA certification



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2 and 3



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Uniform Plumbing Code does
(2):



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Graywater and defining
water use baseline



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Baseline for urinal water use
(GPF)?



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1.0 GPF



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Baseline water use in toilets
(GPF)?



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1.6 GPF



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Who can upload supporting
docs onto GRIHA online? (2)



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Project team Admin and
Project Team Member
assigned to credit.



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Best method for HVAC
efficiency? SEER, EER, COP, or
Kw/ton.



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SEER



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Can all GRIHA buildings be
re—certified under GRIHA for
Exisitng Buildlings?



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YES



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Who is not considered FTE?
(4)



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Retail customers, outpatients,
periodical volunteers, high—
ed students



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ASHRAE 62.1 is for?



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Ventilation for indoor air
quality



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What must be commissioned
for Fundamental
Commissioning Prereq? (4)



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MEP, and renewable energy
systems



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Expected men's bathroom
trips?



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1 watercloset and 2 urinals



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What is required for
Innovation in Design credit?
(3)



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Intent of credit, Proposed
submittals for credit, Design
approach to achieve credit



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ASHRAE 90.1 addresses?



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Energy and Lighting



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A Low Emitting and Fuel
Efficient Vehicle must meet
what requirement?



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Min green score of 45 from
American Council for an
Energy Efficient Economy
Guide



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What contributes to
landscape coefficient
(amount of water lost via
transpiration)? (3)



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Plant species factor, Plant
density factor, microclimate
factor



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What standards determine how
many points a res bldg will achieve
for Annual Energy Use?
1) ASHRAE 62.1, 2) Energy Star, 3)
ASHRAE 52.2, 4) HERS index, 5)
NAHB Green Homes STandard, 6)
ASHRAE 90.1



CHOOSE 2

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2 and 4



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How many points are in
GRIHA Green rating system?



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100 points, plus bonus points



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For a blighted building, what
percentage of SA can be
excluded from the calcs due
to damage?



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25%



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Who can act as the CxA?



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An owner's employee or a
subconsultant of the arch
team



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EPDs must meet what
environmental requirements?
(5, ISO and EN)



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ISO 14025, 14040, 14044,
EN 15804, ISO 21930



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A design charrette should
include the owner and how
many members of the project
team?



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4



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When should a design
charrette be held?



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Before even schematic
design.



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What are Scope 1 emissions?



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Direct greenhouse gas
emissions from sources
owned or controlled by the
entity



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Scope 2 emissions



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Indirect greenhouse gas
emissions associated with the
generation of purchased
electricity, heating/cooling,
and steam off site.



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What are PBTs?



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Persistent, Bioaccumulative,
and Toxic chemicals



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GRIHA Council promotes building and habitat development in India. GRIHA Council is an independent forum for scientific and administrative discussions on sustainable habitats in India. TERI (The Energy and Resources Institute, New Delhi), MNRE (Ministry of New and Renewable Energy, Government of India), and a few built environment sustainability experts from across the country founded it.



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True



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Give a few examples of
inherently nonemitting
products.



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Stone, ceramic, powder—
coated metals, glass,
concrete, clay brick,
untreated wood



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What are the PBTs? (4)



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Mercury, Lead, Cadmium,
Copper



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A product with a life cycle
assessment that conforms
to 14044 but is not
performed by a third party is
valued at ___ of a product?
(1/4, 1/2, 3/4, 1, 2)



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1/4



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Wet Applied adhesives must
meet which:
1) CA Air Resources Board
2) South Coast Air Quality
Mgmt District
3) ANSI Std S12.60
4) ANSI/BIFMA e3–2011



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2)



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Green Vehicles Credit for buses limits what two things?
(gasoline per mile, nitrogen oxide, particulate matter emissions, carbon dioxide)



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nitrogen oxide and
particulate matter emissions



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GRIHA Council conducts awareness workshops on Green Buildings and GRIHA rating system to all the registered project teams. The online certification tool at www.grihaindia.org further helps the project team to educate themselves on their specific roles in developing project specific documentation.



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TRUE



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ANSI Standard SI2.60
addresses what?



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Accoustics



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ASTM E1980 refers to ?



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Solar Reflectance Index



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ASTM Phase I Environmental Site Assessment



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Determines if the site is a
brownfield site.



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ASTM Phase II Environmental Site Assessment



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A more detailed test after the
site has already had phase I
testing and was determined
to be a brownfield site.



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CDPH Standard Method v1.1



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Testing for VOC emissions



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CRI Green Label Plus



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VOCs for carpets and adhesives



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EPAct 1992



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Water Conservation with
fixtures/appliances (but a
lot of other stuff too)



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Green Seal—36



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VOC of adhesives



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Green Seal—II



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VOC for paints



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What part of concrete can
ashfly replace?
limestone, cement, or
aggregate?



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cement



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