



GRIHA Version 2015

A bridged Document

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GRIHA is an evaluation tool to help design, build, operate, and maintain a resource-efficient built environment. Since 2007, GRIHA rating has managed to implement a vision for green buildings in India through a rating system designed for the Indian construction sector.

GRIHA V 2015 Rating Thresholds	GRIHA Rating
25-40	★
41-55	★★
56-70	★★★
71-85	★★★★
86 or more	★★★★★

Evaluation system of GRIHA criteria			
S.no	Description	Points	
Criterion 1	Site Selection	1	Partly mandatory
Criterion 2	Preserve and protect landscape during construction/compensatory depository forestation.	5	Partly mandatory, if applicable
Criterion 3	Soil conservation (post construction)	2	
Criterion 4	Design to include existing site features	4	
Criterion 5	Reduce hard paving on site	2	Partly mandatory
Criterion 6	Enhance outdoor lighting system efficiency	3	
Criterion 7	Plan utilities efficiently and optimize on-site circulation efficiency	3	
Criterion 8	Provide, at least, minimum level of sanitation/safety facilities for construction workers	2	Mandatory
Criterion 9	Reduce air pollution during construction	2	Mandatory
Criterion 10	Reduce landscape water requirement	3	
Criterion 11	Reduce building water use	2	
Criterion 12	Efficient water use during construction	1	
Criterion 13	Optimize building design to reduce conventional energy demand	8	Mandatory
Criterion 14	Optimize energy performance of building within specified comfort limits	16	Partly mandatory
Criterion 15	Utilization of fly-ash in building structure	6	
Criterion 16	Reduce volume, weight, and time of construction by adopting efficient technology for example, pre-cast systems, ready-mix concrete, and so on)	4	
Criterion 17	Use low-energy material in interiors	4	
Criterion 18	Renewable energy utilization	5	Partly mandatory
Criterion 19	Renewable energy based hot- water system	3	
Criterion 20	Waste water treatment	2	
Criterion 21	Water recycle and reuse (including rainwater)	5	
Criterion 22	Reduction in waste during construction	1	
Criterion 23	Efficient waste segregation	1	
Criterion 24	Storage and disposal of wastes	1	
Criterion 25	Resource recovery from waste	2	
Criterion 26	Use of low VOC paints/adhesives/sealants	3	
Criterion 27	Minimize ozone depleting substances	1	Mandatory
Criterion 28	Ensure water quality	2	Mandatory
Criterion 29	Acceptable outdoor and indoor noise levels	2	
Criterion 30	Tobacco and smoke control	1	Mandatory
Criterion 31	Universal accessibility	1	
Criterion 32	Energy audit and validation		Mandatory
Criterion 33	Operations and maintenance protocol for electrical and mechanical equipment	2	Mandatory
Criterion 34	Innovation (beyond 100)	4	
		104	

Paint may contribute under criterion 5 (with 1 point) and criterion 26 (with 1 point)

Criterion 5 Reduce hard paving on-site and/or provide shaded hard-paved surfaces

Objective

To reduce hard paving on-site (open areas surrounding building premises) and/or provide shade on hard-paved surfaces to minimize the heat island effect and imperviousness of the site.

5.1 Commitments

5.1.2 Total surface parking not to exceed the area as permissible under the local bylaw and more than 50% of the total paved area to have pervious paving/open grid pavement/ grass pavers, or

- a minimum 50% of the total paved area (including parking) to have shading by vegetated roof/ pergola with planters, or
- a minimum 50% of the total paved area (including parking) to be topped with finish having **solar reflectance of 0.5 or higher**.

Combination

Minimum 50% of total paved area to have any combination of above mentioned strategies for pervious paving shaded paved area or area with SRI (solar reflectance index) > 50% where common area having 2 or more strategies shall be calculated only once.

5.3 Appraisal (maximum points - 2) partly mandatory

5.3.2 Total surface parking not to exceed as permitted by local bylaw (mandatory) and

- more than 50% of the total paved area to have pervious paving/open grid pavement/grass pavers (equation 4), or
- minimum 50% of the total paved area (including parking) to have shading by vegetated roof/ pergola with planters (equation 4), or
- **minimum 50% of the total paved area (including parking) to be topped with finish with solar reflectance of 0.5 or higher (equation 4)**. (Reference documents: 5.2.1 and 5.2.2)
- Minimum 50 % of total paved area (including parking) to have any combination of the above mentioned strategies where common area having two or more strategies shall be calculated only once (equation 4). **(1 point)**

Health and well-being

Building construction and its operation affects the health and well-being of people in many ways. Green building practices and measures should be integrated into the design process to ensure the health and well-being of the occupants.

Criterion 26 Use low-VOC paints/adhesives/sealants

Objective

To select and use paints, adhesives and sealants with low quantities of chemical substances and VOCs (especially formaldehyde, urea formaldehyde and urethanes).

26.1 Commitment

26.1.1 Use only zero/low VOC paints. All paints used in the interior of the building (defined as inside of the weather proofing systems and applied onsite) must be certified to contain zero VOC or less than the limits specified in GRIHA.

26.1.2 Prefer water-based acrylics over solvent-based oil paints.

26.2 Compliance

The following documents should be submitted

26.2.1 Cut sheets, specification sheets, and commercial brochures of the low VOC-emission finishes or products used.

26.2.2 A certificate from the manufacturer for each of the category as applicable to the applicant, clearly stating that the materials used have zero VOCs or low VOCs (gms/litre) as specified under limits.

26.2.3 The bill of quantity for each of the category, as applicable, clearly demonstrating that 100% of all the interior paints, sealants, adhesives, and composite wood/agri-fibre products meet the mentioned criteria.

26.3 Appraisal (maximum points - 3)

26.3.1 Zero/low – VOC paints: Zero/low-VOC paints for 100% of all paints used in the interior of the building (1 point), as per clauses 26.2.1 26.2.2 and 26.2.3. **(1 point)**

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3.1 Limits for low-VOC content in interior paints

Table 16: Allowable limit for VOC content in interior paints

Paint applications	VOC limits (grams of VOC per litre)	
Interior coatings	Flat	<50
	Non-flat	<150
Exterior coatings	Flat	<200
	Non-flat	<100
Anti-corrosive	Gross/semi-gloss/flat	<250