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INDIA'S GAS CYLINDERS RULES (GCR) AMENDMENT 2025: PAVING THE WAY FOR A HYDROGEN-READY FUTURE

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Gas Cylinders Rules (GCR) Amendment 2025

The Gas Cylinders Rules in India have seen progressive updates since their comprehensive revision in 2016, aimed at aligning with global safety norms and emerging technologies. The 2016 rules standardized manufacturing, storage, and handling processes. In 2018, three amendments focused on enhancing safety, updating technical standards, and clarifying procedures. The 2021 Fourth Amendment introduced Digitalization and electronic traceability. In 2022, barcoding and RFID tagging were mandated for high-pressure and cryogenic cylinders to improve identification. The latest 2025 amendment, effective April 11, emphasizes hydrogen integration with new definitions, safety norms, licensing provisions, and infrastructure requirements. It also boosts digital compliance and support for small enterprises.
Sparrow brings you a short, crisp summary of these key regulatory changes to help you stay informed and compliant with the latest Gas Cylinder Rules.

Rule 2

New definitions have been introduced to align with technological advancements in hydrogen systems and enhance safety protocols.

Definitions now cover bar codes, bulk and non-bulk hydrogen systems, compressed hydrogen gas (CHG) use, dispensing stations, and electrolyser systems. It includes important distinction between bulk (>5,000 SCF) and non-bulk (<=5,000 SCF) hydrogen storage, diameter of cylinders used for filling and storage of compressed hydrogen gas may exceed 60 cm but shall not exceed 80 cm for CHG, and permissible emissions for green hydrogen (<=2 kg CO2/kg H2). These values align with global safety norms and India's green energy goals.

Rule 4, Clause (1)(ia):

In 2025, specific valve compliance requirements for CHG cylinders were introduced, requiring conformance with CGA S-1.1/S-1.2/S-1.3 or UN R134, among other approved international standards. This ensures safe and compatible valve usage in high-pressure hydrogen environments.

Rule 4, Clause (2):

The existing requirement for CO_2 valves to have a bursting disc as per IS:3224 has been replaced in 2025 with a performance-based standard. Now, CO_2 valves must conform to codes approved by the Chief Controller, and the disc must rupture between 90% of the rated burst pressure and not exceed the test pressure. This update ensures a higher safety margin by adopting a more rigorous and internationally aligned testing protocol for valve integrity.

Rule 5, Clause (1A):

A new clause was inserted in 2025 requiring all CHG (Compressed Hydrogen Gas) cylinders with pressure relief devices to conform to IS:5903, CGA S-1.1/S-1.2/S-1.3, UN R134, or other approved codes. This addition specifically targets the unique safety requirements of hydrogen gas under pressure, thereby reducing risk during abnormal operating conditions or fire scenarios.

Rule 6, Clause (2)(c):

In 2016, there was no mandate for digital identification of gas cylinders. The 2025 amendment makes barcoding/QR coding/RFID mandatory for all non-toxic, non-flammable cylinders and cryogenic containers. The rule also provides retroactive timelines: six months for oxygen and one year for others, promoting universal traceability. This is crucial for tracking usage cycles, identifying faulty equipment, and ensuring standardization.

Rule 6, Clause (4):

The 2025 rule introduces a mandatory requirement for permanent QR code, barcode, or RFID marking on cylinders used for fuels like Auto-LPG, LNG, CNG, CBG, and CHG. This change significantly enhances traceability, inventory control, and operational safety by linking cylinders to a digital tracking system.

Rule 6, Clause (5):

The rules now state that cylinders with invalid or unreadable digital identifiers must not be refilled, and such cases must be reported to the relevant authority within 48 hours. This provision enforces a strict *traceability mechanism*, preventing unsafe cylinders from re-entering circulation and allowing rapid regulatory action.

Rule 12, Clause (1)(a):

The scope of reconditioning approvals for LPG cylinders with welded construction has been extended in 2025 to include composite cylinders. Now, hydrostatic testing must follow ISO 11623/ISO 19078 standards, with leak testing limited to ≤6 ml/h, and barcoding and condemnation tagging made mandatory. This change is essential for embracing newer, lightweight cylinder technologies and ensuring their safe lifecycle management.

Rule 14, Clause (1):

The amendment mandates digital traceability for records of manufacturing, testing, fittings, dispatch, etc. All relevant data must now be linked to a QR code, barcode, or RFID as specified in Rule 6. This digital recordkeeping requirement supports transparent audits, swift recalls, and data-driven regulatory oversight.

Rule 15, Clause (1):

Repair of valves, regulators, and fittings has been expanded in scope to explicitly include fittings used in CHG applications. Further, barcode identification and traceability have become compulsory for all such fittings. This ensures full lifecycle monitoring of safety-critical hydrogen equipment.

Rule 16, Clause (1):

Cylinder storage regulations were updated in 2025 to align the requirements for hydrogen storage with the newly defined *protected area* and *buffer zone* concepts. These expanded safety distance criteria are vital for risk management, especially given hydrogen's flammability and high diffusion rate.

Rule 17, Clause (1):

The rules now make traceability a condition for cylinder filling: cylinders can only be filled if their barcode, QR code, or RFID tag is valid and readable. Untraceable cylinders are not permitted for filling. This change further secures the supply chain against illegal or unsafe refilling practices.

Rule 18, Clause (1):

Filling and transportation restrictions for unsafe or expired cylinders were extended in 2025 to include hydrogen cylinders, requiring compliance with CGA H-5, ISO 19880, or equivalent standards. This ensures global best practices are followed for hydrogen cylinder safety and logistics.

Rule 19, Clause (1):

A new licensing form (Form H) was introduced for CHG dispensing stations, and Schedule V was revised to reflect the relevant fee structure for hydrogen infrastructure. This streamlines the legal pathway for hydrogen refuelling station operators and encourages formal sector entry.

Rule 20, Clause (1):

Licensing authorities have been empowered in 2025 to require submission of a safety zone layout, including buffer distances from protected works for CHG stations. This extends regulatory enforcement to the planning stage and ensures that new hydrogen facilities are located in accordance with strict safety zoning.

Rule 21, Clause (1):

Although the procedural requirements remain unchanged, the 2025 amendment implicitly includes hydrogen-related incidents under the scope of reportable accidents. Now, any incident involving hydrogen cylinders must be reported immediately to the Chief Controller, Magistrate, and Police. This broadens the safety net to accommodate emerging hydrogen technologies and ensures prompt action in case of hydrogen-related emergencies.

Rule 22, Clause (3):

A new clause was inserted in 2025 mandating that electrical installations for CHG (Compressed Hydrogen Gas) and LNG systems comply with IS/IEC 60079 standards and include static discharge control measures. This addresses the critical risks posed by electrostatic ignition in hydrogen handling and storage environments and ensures installations are explosion-proof and effectively earthed.

Rule 22, Clause (4):

The 2025 draft introduced a mandatory requirement for *equi-potential bonding* and prevention of electrostatic charge accumulation at CHG installations. This is a hydrogen-specific safety measure to mitigate ignition risks due to electrostatic discharges, which is especially crucial for high-pressure and cryogenic hydrogen systems.

Schedule I – General:

Originally based on standards like IS:3196 and IS:7285, Schedule I was expanded in 2025 to include international codes such as CGA S-1.1/S-1.2/S-1.3, ISO 19880, NFPA-2, and UN R134 for hydrogen valves, vessels, and dispensers. This aligns Indian safety practices with global benchmarks for hydrogen systems and supports safe technology adoption.

Schedule III – Manufacturer Approvals:

The updated 2025 version of Schedule III requires manufacturers to include detailed tables for raw material specifications, component traceability, and barcode/RFID mapping for CHG components. This ensures that hydrogen equipment undergoes rigorous quality assurance and enables backward traceability in case of safety issues or recalls.

Schedule IV – Leak Test Table:

Previously lacking structured requirements for composite cylinders, Schedule IV was updated in 2025 to specify that such cylinders must undergo a leak test at two-thirds of their test pressure, with a ≤6 ml/h leak rate observed over 10 minutes. Failure results in automatic condemnation. This strengthens safety assurance for lightweight hydrogen-compatible cylinders.

Schedule IV – Degassing Platform:

2025 amendments inserted structured requirements for degassing platforms, including tabled specifications for platform dimensions, vent height, and a maximum of five cylinders per test. Both CHG and CNG degassing procedures are now covered, ensuring safer and more standardized handling during cylinder evacuation and servicing.

Schedule IV – Test Record Format:

This clause was undefined in 2016 but was formalized in 2025. It now mandates a standardized table including details such as the cylinder owner, manufacturer, test pressure, water capacity, valve type, and barcode. These standardized test records are essential for traceability, accountability, and audit readiness.

Schedule V – Fee Structure:

Previously, no fee structure existed for CHG facilities. The 2025 update introduced a ₹10,000 fee for obtaining a Form H license for CHG dispensing stations. It also includes reevaluation fees for foreign hydrogen equipment manufacturers. These fees are designed to fund regulatory oversight while incentivizing domestic compliance.

Form H – New Licensing Form:

Introduced in 2025, Form H serves as the official licensing form for CHG dispensing stations. It includes mandatory fields for site layout, installed equipment, safety distances, and compliance certifications. This form centralizes all licensing data for hydrogen stations and is a foundational part of the new hydrogen regulatory framework.

Form C – Checklist:

Previously, Form C required a No Objection Certificate (NOC) and lease agreement for applications under Form E, F, and G. In 2025, this was relaxed: if Form F is used for a cylinder filling plant or LPG storage and is approved by the Gram Panchayat or Urban Local Body (ULB), the NOC is no longer required. Additionally, the lease agreement requirement has been removed. This change simplifies procedural bottlenecks for small-scale facilities while maintaining oversight through local body approvals.

Form G – Conditions (b):

Earlier, there was no specific exemption clause in Form G. The 2025 update includes a provision that exempts certain applicants (especially for LPG and CHG facilities used in cylinder filling plants or temporary storage units) from requiring an NOC if they have ULB or Gram Panchayat approval. This aligns licensing with ground realities, especially in rural and semi-urban deployments, enabling faster growth of clean fuel infrastructure.

Rule 48, Clause (2):

This clause previously required all applicants under Form G to obtain an NOC. The 2025 change introduces an exemption for *CNG stations that are part of petroleum service stations licensed under the Petroleum Rules (Form XIV)*. This reflects harmonization between different regulatory frameworks and reduces redundancy for operators who are already under strict petroleum norms.

Rule 48, Clause (3):

The earlier version made NOCs mandatory for all Form F applications. The amended rule (2025) now exempts storage of flammable gases within filling plants and LPG storage facilities—provided they are approved by the Gram Panchayat or ULB. This improves regulatory agility and removes unnecessary duplication in approvals.

Rule 57, Clause (5):

A new clause added in 2025 states that a license stands *automatically cancelled* if the licensee loses possession or rights to the licensed premises. This legal safeguard is crucial to prevent unauthorized continued use of premises for gas storage, especially high-risk fuels like hydrogen.

Schedule V – New Row (CHG Licensing):

Schedule V was amended to include a new ₹10,000 license fee for issuing Form H (for CHG dispensing stations). This fee establishes a formal cost structure for hydrogen licensing, aligning it with LPG/CNG norms and ensuring regulatory funding for monitoring CHG infrastructure.

Schedule V – Evaluation Fee:

In 2025, a provision was inserted requiring periodic re-evaluation every five years for both domestic and foreign manufacturers of hydrogen equipment. This periodic evaluation ensures sustained compliance

with evolving safety standards and provides a mechanism to weed out substandard or outdated technologies from the market.

Form H – Site Plan & Safety:

This newly introduced form includes a comprehensive checklist covering site layout, safety distances (from protected works and critical assets), NOC exemptions, and adherence to hydrogen-specific codes like CGA H-5, ISO 19880, and NFPA-2. This ensures that CHG dispensing stations are designed with high fidelity to global safety protocols and zoning guidelines.

Reference Point	What's New	What's Replaced	New Requirements
1	The rules are named as the Gas Cylinders (Amendment) Rules, 2025.	N/A	Amends the Gas Cylinders Rules, 2016, effective upon publication in the Official Gazette (April 11, 2025).
2	Introduces definitions to support hydrogen systems and safety measures.	Clause (xxviii) (definition of "gas cylinder") is substituted. Clause (xxix) (definition of "gas cylinder cascade") is substituted.	- Inserted Clauses: • (iia) Bar code: Machine-readable graphical picture (e.g., RFID, QR code). • (iib) Bulk hydrogen compressed gas system: Storage >5,000 SCF, includes cascades, tube trailers, electrolysers. • (iic) Bulk hydrogen supply system: Per CGA H-5 code. • (viiia) Compressed hydrogen gas: Includes green hydrogen for automotive use, per IS 16061 or ISO 14687. • (viiib) Compressed hydrogen gas dispensing station: Per NFPA-2, ISO 19880 (Parts 1, 3, 5, 8). • (xa-xd) Defines CHG daughter booster, daughter, mother, online stations. • (xxiii) Electrolyser: Per IS 16509 or ISO 22734. • (xxva) Fitting: Valves, safety devices per codes. • (xxixa) Green hydrogen: Emissions ≤2 kg CO_2/kg H_2.

Reference Point	What's New	What's Replaced	New Requirements
			• (xxxia) Hydrogen generation system: Electrolyser, reformer. • (xxxib) Hydrogen storage system: For gaseous/liquid hydrogen. • (xlia) Non-bulk hydrogen compressed gas system: Volume ≤5,000 SCF. - Modified Clauses: • (xvi) Adds "super insulated" to insulated containers. • (xxviii) Redefines "gas cylinder" to include composite/cryogenic containers (500 ml to 3,000 liters, diameter ≤60 cm, ≤80 cm for CHG). • (xxix) Redefines "gas cylinder cascade" per BS EN-13769, BS EN-13807, ISO-10961, BS-EN 17339, with quick shut-off valves, perforated enclosures.
3	Standards for CHG cylinders and updated valve specifications.	Sub-rule (2) is substituted.	- Sub-rule (1): Adds item (ia) for CHG cylinders, requiring compliance with CGA S-1.1, S-1.2, S-1.3, R-134, Schedule-I codes. - Sub-rule (2): Carbon dioxide cylinder valves must have a bursting disc with: • Bursting pressure ≤ cylinder test pressure. • Bursting pressure > developed pressure at 65°C. • Actual burst pressure: 90% to 100% of rated burst pressure.

Reference Point	What's New	What's Replaced	New Requirements
4	Safety device standards for CHG cylinders.	N/A (new insertion).	- Sub-rule (1A): CHG cylinders with safety/pressure relief devices must comply with IS 5903, CGA S-1.1, S-1.2, S-1.3, UN R-134, or Schedule-I codes.
5	Enhanced marking and filling protocols, including bar codes.	Clause (c) of sub-rule (2) is substituted.	- Sub-rule (2): • Item (ix) of clause (a): Adds "liquefied natural gas, compressed bio gas, compressed hydrogen gas" to on-board cylinder markings. • Clause (c): Requires permanent, tamper-proof bar code markings on cylinders and cryogenic containers. • Transition Period: Cylinders manufactured before April 11, 2025, must comply within 365 days. - New Sub-rules (3-5): • (3) Bar code details submitted in physical/digital formats within 48 hours upon request. • (4) Auto-LPG, LNG, CBG, CHG, CNG dispensed into approved, tested cylinders. • (5) Bar codes scanned before filling; unreadable/invalid bar codes prevent filling.

Reference Point	What's New	What's Replaced	New Requirements
6	Clarifies hydrogen handling.	N/A (modification).	- Sub-rule (3): Adds "compressed hydrogen gas" after "hydrogen" for specific handling protocols.
7	Updated electrical standards for flammable gas facilities.	Entire rule is substituted.	- Sub-rule (1): Electrical components comply with IEC or IS/IEC 60079 standards, earthed. - Sub-rule (2): CNG dispensing station components meet Chief Controller-approved standards. - Sub-rule (3): CHG systems (bulk/non-bulk, generation, compression, dispensing) require approved components. - Sub-rule (4): Components bonded and grounded to prevent electrostatic charge.
8	Cascade identification plates.	N/A (new insertion).	- Clause (vi): Cascades require tamper-proof identification plates with manufacturer details, cylinder dates, serial numbers, calibration, retesting records.
9	Testing frequency for specific cylinders.	N/A (new proviso).	- Proviso: CBG, CNG, onboard CHG cylinders require hydrostatic or hydrostatic stretch tests every 3 years, per Schedule IV.

Reference Point	What's New	What's Replaced	New Requirements
10	Updated condemnation and service life for CHG cylinders.	Sub-rule (1): Replaces "specified in IS: 8198" with proviso. Explanation: Updates service life.	- Sub-rule (1): Composite cylinders failing tests or reaching service life condemned per ISO 11623, crushed, cut into irregular pieces. - Explanation: • Onboard CHG cylinders: 15 years. • CHG cylinders in cascades: 20 years.
11	Additional documents for CHG dispensing stations.	N/A (new proviso).	- Proviso: CHG dispensing station licenses require: • Layout of 500 meters surrounding area with hazard and operability study, risk assessment. • Detailed layout drawings (sectional views, materials, capacities). • Emergency response plan per ISO 14001. • Piping and instrumentation diagram. • Safety interlocks with hydrogen leak detection. • Other documents as required.
12	Online payment and document submission.	N/A (new rules).	- Rule 47A: Fees paid online, credited to Consolidated Fund of India. - Rule 47B: Documents submitted online; physical submission if required for verification.

Reference Point	What's New	What's Replaced	New Requirements
13	Online processes and CHG-specific forms.	N/A (modifications and insertions).	- Sub-rule (2): Adds "in FORM 'H' for CHG dispensing station". - Sub-rules (7-8): • (7) No objection certificates issued online. • (8) Site plan endorsed by district authority uploaded online. - Form H: Newly introduced for CHG dispensing. Previous rules only referenced Forms E, F, G.
14	Training certificate for composite cylinder testing stations.	N/A (new proviso).	- Proviso: Composite cylinder testing stations must submit training certificate per ISO 11623, issued by recognized manufacturer or institute.
15	Inclusion of Form H.	Sub-rule (4): "or G" replaced with "G or H".	- Licenses for CHG dispensing stations (Form H) included. - Form H: New form. Previously, Rule 50 only covered Forms E, F, G.
16	Inclusion of Form H.	Sub-rule (2): "or G" replaced with "G or H".	- License amendments for CHG dispensing stations (Form H) included. - Form H: New form. Previously, Rule 51 only referenced Forms E, F, G.

Reference Point	What's New	What's Replaced	New Requirements
17	Inclusion of Form H.	Sub-rules (3) and (4): "or G" replaced with "G or H".	- License renewals for CHG dispensing stations (Form H) included. - Form H: New form. Previously, Rule 54 only covered Forms E, F, G.
18	Inclusion of Form H and quality management clarification.	Sub-rule (2): "and G" replaced with "G or H". Sub-rule (9), item (iii): Adds "for quality management system".	- Form H licenses included. - Explicit requirement for quality management system certification. - Form H: New form. Previously, Rule 55 only referenced Forms E, F, G.
19	Updated applicant and design document requirements.	Serial number 1 is substituted.	- Serial Number 1: Applicant's name, contact details (phone, email), manufacturing premises address. - Serial Number 12: • (iii) List of raw materials with chemical, mechanical, physical properties. • (iv) Design documents per relevant codes/standards. - Previous Schedule III (2016): Less detailed applicant details, no raw material/design docs.

Reference Point	What's New	What's Replaced	New Requirements
			- Changes: Enhanced traceability, transparency for hydrogen, composite cylinders.
20	Detailed requirements for testing stations, especially for composite and CHG cylinders.	Entire Schedule IV is substituted.	- Facilities: • Degassing platform: 3x3 meters, 2-meter-high fencing. • Safety distances: 15 meters (CNG, CHG, flammable except LPG); 30 meters (LPG). • Entry gate: ≤1.2 meters wide. • Vent stack: ≥6 meters high. • Max cylinders degassed: 5. • Hydrogen cylinder venting: Nitrogen gas purging. - Management: Safe operations, reject non-compliant cylinders; composite stations need 10 years testing experience, 2 years with composites. - Personnel: • Manager: Engineering degree, 2 years composite experience, PESO-approved training. • Supervisor: Diploma/degree, 2 years examination, ≥21 years, approved training.

Reference Point	What's New	What's Replaced	New Requirements
			- Equipment: Hydrostatic test per IS 5844, ISO 11623, ISO 19078; gauges 15 cm; calibration (1 month working gauge, 6 months master gauge, 2 years test weights); CCTV retention 1 year; leak test at 2/3 pressure, 2 hours, 10 minutes, ≤6 ml/h. - Testing Protocols: Volume accuracy 1/20,000; errors (weighing ≤0.1%, working gauge ≤1%, master gauge ≤0.25%). - Validity: Approvals for 1 year, extendable to 10 years with ISO accreditation. - Previous Schedule IV (2016): Basic, less focus on composites, hydrogen; no platform sizes, nitrogen purging, CCTV, ISO accreditation. - Changes: Detailed specs for hydrogen, composites; stricter personnel, equipment, testing protocols.
21	New license fee for CHG storage/dispensing, foreign manufacturer evaluations.	N/A (new insertion and modification).	- Serial Number 5: Form H license for CHG storage/dispensing, fee ₹10,000. - Paragraph B, Serial Number 2: Foreign manufacturer evaluations every 5 years.

Reference Point	What's New	What's Replaced	New Requirements
			- Previous Schedule V (2016): Fees for Forms E, F, G; no Form H, no periodic evaluations. - Changes: Added Form H fee, periodic evaluations for foreign manufacturers.
22	Inclusion of CHG dispensers, updated document requirements.	References to "Forms 'E', 'F' & 'G'" replaced with "Form E, or E and D or F or G or H". Serial number 7 substituted.	- Serial Number 7: Particulars of CNG/CHG dispensers, cascades, compressors for Form G/H licenses. - Documents: • (iv) Adds registered sale deed or lease. • (vi) Includes Form H for CHG dispensing. - Previous Form C (2016): Covered Forms E, F, G; Serial 7 focused on CNG, no CHG; less specific documents. - Changes: Expanded to Form H, CHG specifics, clarified ownership docs.
23	Bar code requirement for imported cylinders.	N/A (new condition).	- Condition 4: Importers ensure permanent, tamper-proof bar codes on imported cylinders.

Reference Point	What's New	What's Replaced	New Requirements
24	Safety distances for gas storage.	N/A (new condition).	- Condition 18: Inter-distances for toxic, corrosive, flammable gas storage: • Up to 4,500 liters: 3.0 meters. • 4,501 to 10,000 liters: 5.0 meters. • 10,001 to 100,000 liters: 10.0 meters. • Inter-cascade distance: 1 meter.
25	Corrected capacity ranges in Table 1-A.	"4500 to 10000" replaced with "4501 to 10000". "10000 to 100000" replaced with "10001 to 100000".	- Updated Table 1-A for accurate safety distance ranges.
26	Comprehensive license form for CHG systems.	N/A (new form).	- License Details: • Valid until September 30, renewable for 10 years. • Fee: ₹10,000. • Premises include hydrogen generation, storage, chillers, compressors, dispensers. - Conditions: • RCC platform, ventilated sheds (light roof, louvers, two open sides).

Reference Point	What's New	What's Replaced	New Requirements
			• Firefighting: Flooding system, extinguishers (2x10 kg DCP, 2x70 kg DCP, 2x4.5 kg CO_2 per 25 m^2). • Safety studies: Risk assessment, HAZOP per IEC 61882. • CCTV retention: 15 days. • Emergency stop buttons: Minimum 3. • Safety distances (Tables IA-ID): Pressure ranges (1.03-1034 Bar), pipe sizes (0.20-2.00 inches), distances (0.5-68 meters), H2 dispenser ≥6 meters from walls, ignition sources. • Standards: CGA PS-46, G 5.5, ISO 15649, ISO 21012. • Vehicles: Approved CHG kits, no dispensing with running engines/passengers. • Warning signs, no alterations, trained operators, emergency contacts, accident reporting. - Previous Forms (2016): No Form H; only E, F, G. - Changes: Form H new for CHG, with detailed conditions, safety tables (IA-ID).