

TÜV NORD CERT GmbH
Am TÜV 1
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TN-H2 001 Criteria catalog

for testing generation characteristics, transport and storage of
Hydrogen, Hydrogen derivatives and Industrial gases

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1. NOTICE

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This criteria catalog is based on laws, standards, regulations, etc. at the time of 04/2023. Legislation on the subject is currently very volatile and in constant development.

Any changes to legal requirements, standards, technical regulations or other fundamentals relevant to testing and/or assessment as part of the certification must be taken into account accordingly and will be promptly included in an updated version of this standard.

In such a case, certificates that have already been issued remain valid, because the assessment statement was based on the applicable and most current version of the standard at that time.

1.1. Revision history

Revision Date	Description of the changes
00 04/23	Translation from German into English

2. FOREWORD

In the future global energy supply, Hydrogen and Hydrogen derivatives such as Ammonia or Methanol will play an important role. For this purpose, it is possible to use Hydrogen and Hydrogen derivatives as energy storage in order to synchronize the volatile production from renewable energy sources with the actual demand. The possible uses of Hydrogen, Hydrogen derivatives and Industrial gases are diverse. These can be used as fuel or raw material. As a result, hydrogen technology is considered the key to success of the energy transition. In addition, Hydrogen and Hydrogen derivatives can be transported over long distances and facilitate the import and export of climate-friendly energy.

In order to achieve the climate goals and the associated reduction in CO₂ emissions, Hydrogen and Hydrogen derivatives are to be produced, transported and stored in a more climate-friendly manner. Furthermore, sustainability aspects are increasingly coming into focus of the global society. In addition to the political interest in producing Hydrogen and Hydrogen derivatives in a climate-neutral manner, it is also important for interested groups in a company, such as customers and shareholders, to provide evidence of climate and sustainability aspects.

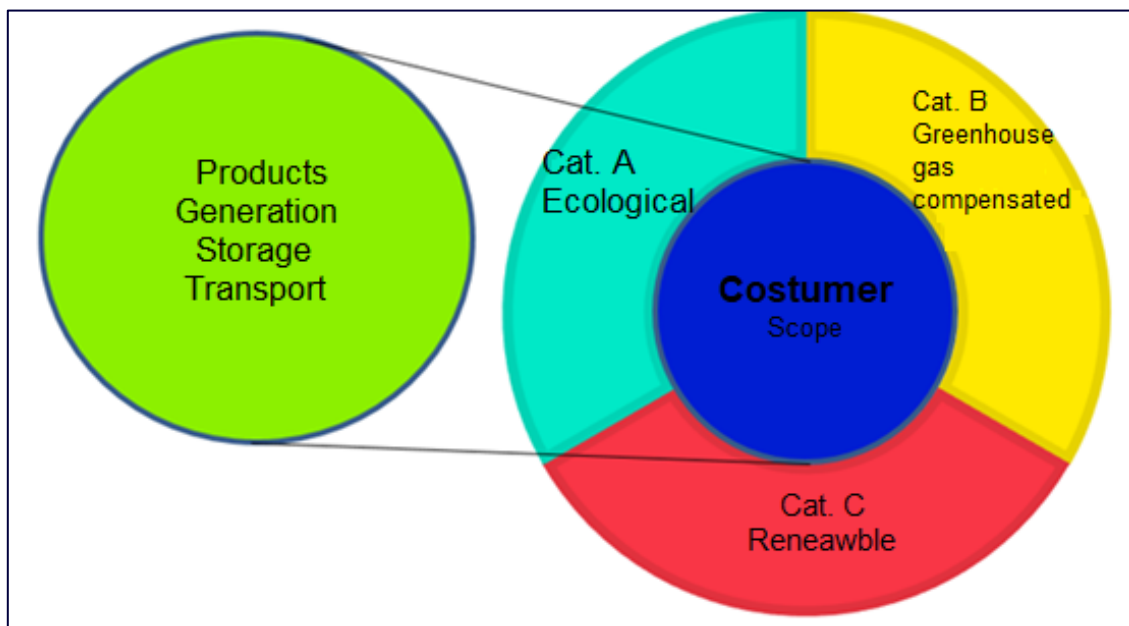
This criteria catalog was developed to provide objective evidence. This enables the user to receive a report and, after successful assessment, to receive a certificate that entitles the user to use a label in the area of application. Thus, the user can provide evidence to his interested groups. The certificate issued is valid for three years and is monitored annually. In the following, only the TÜV NORD-H₂-label is mentioned, which always includes a certificate.

The procedure for obtaining the TÜV NORD-H₂-label is based on this criteria catalog, various services provided by the TÜV NORD Group or equivalent evidence. When services from the TÜV NORD Group are used, these are carried out according to criteria defined in individual norms and TÜV NORD standards, as well as the required norms, standards and guidelines that are referenced by the standard. Further details on the procedure are described in the individual chapters. The TÜV NORD-H₂-label applies to Hydrogen and Hydrogen derivatives as well as to Industrial gases that are generated during the production of hydrogen or that are required for the production of hydrogen derivatives (according to Table 1). Depending on the area of application, it confirms objective evidence of climate friendliness or on sustainability aspects.

The three variants of the label (Ecological, Greenhouse gas compensated and Renewable) offer the customer the best possibility to the process of obtaining objective evidence for the regulated and voluntary market.

The scope of application is defined and requested by the customer. The application is confirmed by the certification body. In the application, the customer has the option of choosing whether only the generation or the entire chain, consisting of generation, transport and storage, should be within the scope of the TÜV NORD-H₂-label. Furthermore, the customer can choose which category to aim for, depending on the regulatory basis. The individual categories of the TÜV NORD-H₂-label are not progressive, rather they are individualy completed services. The following figure should clarify this:

Figure 1: Area of application of the TN-H₂-label



The criteria catalog is limited to the production process of hydrogen from electrolyzers (see point 6.1.4) as well as storage and transport. All other industrial gases that are required for the production of hydrogen derivatives must be generated or obtained with renewable electrical energy.

Example: By-products from upstream industrial processes such as CO₂ separation from flue gases do not meet the requirements. On the other hand, separating CO₂ from the ambient air using electrical energy and taking into account the criteria catalog TN-H2 001 can meet the requirements.

3. EXTENDED DESCRIPTION OF THE PROCEDURE

3.1. General

The testing or certification and the associated issuance of the TÜV NORD- H₂-label are based on various criteria in this catalog and on the basis of various services provided by the TÜV NORD Group or equivalent evidence. The listed criteria define the minimum requirements and differ depending on the category of the desired TÜV NORD-H₂-label. Certification is currently mandatory in the fuel market. In other areas, certification is voluntary. The target groups are manufacturers, importers and exporters as well as marketers of hydrogen, hydrogen derivatives, or industrial gases.

3.2. Structure of the TÜV NORD- H₂-label

The TÜV NORD-H₂-label includes three different categories **A** (Ecological), **B** (Greenhouse gas compensated) and **C** (Renewable). Category A is the most comprehensive level of the TÜV NORD-H₂-label. The area of application (generation, storage and transport) is defined by the customer and recorded within the label. The TÜV NORD-H₂-label can be sought for hydrogen or for hydrogen derivatives and industrial gases. The use (fuel, combustible fuel, etc.) of the manufactured products must be specified by the customer so that classification into voluntary or mandatory certification can take place.

The main differences within the TÜV NORD-H₂-label are the products (hydrogen, hydrogen derivatives and industrial gases), as well as the area of application in the implementation and evaluation of the CO₂ footprint and the energy used to produce the individual products. In addition to the mandatory criteria, there are different criteria in this catalogue, which are to be implemented depending on the desired category of the TÜV NORD-H₂-label. Further details can be found in Chapter 6. The fulfillment of mandatory criteria as well as the area of application and the manufactured products are clearly recognizable from the TÜV NORD-H₂-label. The TÜV NORD-H₂-label is structured according to the following table:

Table 1: Overview of the different labels

Description		TÜV NORD-H ₂ -label			
		Ecological (Category A)	Greenhouse gas compensated (category B)	Renewable (Category C)	
Name of the label		Ecological X ¹ for the scope X ²	Greenhouse gas compensated X ¹ for the scope X ²	Renewable X ¹ for the scope X ²	
Scope	X ¹ products –	Hydrogen			
		Hydrogen derivatives = Ammonia, Methanol, Synthetic methane			
		Industrial gases = Oxygen, Nitrogen, Carbon dioxide			
	X ² scope	Generation, Storage, Transport			
	Legal basis	Regulated under RED II and Voluntary	Voluntarily	Regulated according to RED II	
Essential test criteria:		General criteria according to chap. 6.1			
		CO₂ footprint according to Chap. 6.2			
		Determination according to DA II	Determination according to GHG, DA II ISO 14067	Determination according to DA II	
		Compliance with the limit values according to RED II	0 g CO _{2e} per MJ possibly compensated according to (TN-CC 020)	Compliance with the limit values according to RED II	
		Electrical energy according to chap. 6.3			
		Early fulfillment of all requirements of DA I	Fulfillment of the requirements from chap. 6.3	Fulfillment of the applicable requirements of DA I	
		Extended requirements according to chap. 6.4			
		Fulfillment of the requirements from chap. 6.4	---	---	
Voluntarily test criteria:		Fulfillment of voluntarily criteria according to chap. 6.1 - 6.4			
RED II= Renewable Energy Directive DIRECTIVE (EU) 2018/2001 DA= DELEGATED ACT based on (EU) 2018/2001 X ¹ , X ² = Is defined by the customer see chap. 2 and 3.2					

3.3. Necessary assessments to obtain the TÜV NORD-H₂-label

Within each category, the individual CO₂ Footprint is first evaluated depending on the area of application of the generated hydrogen, hydrogen derivatives and industrial gases from each location and an evaluation report including a certificate is created. An assessment and technical review is carried out on the basis of this list of criteria and the documents submitted. The area of application of the TÜV NORD-H₂-label includes all the equipment required for the respective process step (generation, storage and transport) for the manufacturing of the respective product.

Furthermore, depending on the category of the TÜV NORD-H₂-label, the raw materials, energy and products used are evaluated. The customer must define the area of application for the TÜV NORD-H₂-label and notify TÜV NORD CERT (TNC) of all equipment, including technical details. A project description will be necessary.

The result of the assessment and the technical review is summarized in an assessment report. The category in which the certificate will be issued is determined by the scope of the offer, the area of application and the evaluation of the CO₂ footprint and it is based on the successful assessment and technical review of the criteria in this catalog. The certificate is valid for three years and is monitored annually.

4. APPLICABLE DOCUMENTS

Table 2: Overview of the applicable documents

No.	Description
1	ISO/IEC 17065:2012 <i>Conformity assessment - Requirements for bodies that certify products, processes and services</i>
2	A75-S041-VA-001 <i>Certification procedure for the criteria catalog A75-S041-MU-001</i>
3	A75-S041-VA-002 <i>Procedural instructions for the project process for the criteria catalog A75-S041-MU-001</i>
4	TN-CC 020 <i>Verification of greenhouse gas declarations and climate neutrality</i>
5	DIN EN ISO 14064-1:2019-04 <i>Greenhouse gases - Part 1: Specification with guidance for quantifying and reporting greenhouse gas emissions and removals at the organizational level</i>
6	DIN EN ISO 14064-2:2020-05 <i>Greenhouse gases - Part 2: Specification with guidance for quantifying, monitoring and reporting reductions in greenhouse gas emissions or increases in removals at the project level</i>
7	DIN EN ISO 14064-3:2020-05 <i>Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas statements</i>
8	DIN EN ISO 14067:2018 <i>Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification</i>
9	TNI-QP-(IND-MD-01) <i>PROCEDURE FOR THE ASSESSMENT OF PRODUCTS AND PRODUCTION ACCORDING TO 2006/42/EC MACHINERY DIRECTIVE</i>
10	Directive (EU) 2018/2001 (recast) <i>on the promotion of the use of energy from renewable sources. Current consolidated text: 21/12/2018</i>
11	DRAFT 02/10/2023 <i>Delegated regulation on Union methodology for RFNBOs</i>
12	DRAFT 02/10/2023 <i>Delegated regulation for a minimum threshold for GHG savings of recycled carbon fuels</i>
13	DRAFT 02/10/2023 <i>Delegated regulation for a minimum threshold for GHG savings of recycled carbon fuels - annex</i>
14	A75-S026-1 <i>"Certified green electricity" criteria catalog according to TÜV NORD CERT</i>
15	Directive 2011/92/EU <i>of the European Parliament and of the Council of December 13, 2011 on the environmental impact assessment of certain public and private projects</i>
16	TFS <i>The Product Carbon Footprint Guideline for the Chemical Industry Version 2.0 - November 2022</i>

5. DEFINITIONS

TÜV NORD-H ₂ -label	The TÜV NORD-H ₂ -label is proof that the requirements of the TN-H2 001 criteria catalog are met. The verification is based on assessment and evaluation. If the evaluation/technical review is positive, certification is granted according to the requirements referenced in the criteria catalog.
CO ₂ -Footprint / GHG-footprint	Carbon footprint according to Delegated regulation <i>for a minimum threshold for GHG savings of recycled carbon fuels</i> , DIN EN ISO 14067:2019-02 or DIN EN ISO 14064-3 depending on the application according to Chap. 6.2.1.
Scope of application	The scope defines whether a customer produces, stores or transports hydrogen, hydrogen derivatives or industrial gases. Furthermore, the use of the manufactured product must be disclosed.
Generation	<p>Hydrogen and oxygen are generated in an electrolyser. The system boundary begins with the raw materials used and ends with the hydrogen generated by the electrolyser, depending on the pressure rating of the electrolyser.</p> <p>This also applies to the production of hydrogen derivatives and industrial gases. The production also includes the preparation of the product.</p> <p>Note: This is a product that can be stored and transported.</p>
Storage	The system boundary begins after production or transport to storage and ends with the start of further transport. This process also involves compression or expansion of the product for storage purposes.
Transport	The system boundary begins after generation or storage and ends with the customer who has received the finished product. This process involves, if necessary, the compression or expansion of hydrogen, hydrogen derivatives or industrial gases for transport.
Equivalent Evidence	Evidence N provided by the customer that initially does not meet the precise requirements A . A GAP analysis can be used to check whether all relevant requirements demanded by A are contained in N . If all relevant requirements of A are present in N , equivalent evidence can be used for an assessment.

6. NOTE ON THE INDIVIDUAL REQUIREMENTS

The following chap. 6.1 to 6.4 specify the criteria and requirements that must be met in order to use a TÜV NORD-H₂-label. It describes which requirements are to be met for which category of the TÜV NORD-H₂-label. There are mandatory and optional requirements. The individual symbols for mandatory, optional or not applicable requirements can be found in the table below:

Table 3: Overview of the different requirements

Description	Symbol
<p>Requirement must be implemented The requirement is mandatory and the necessary evidence must be provided.</p>	<p>X</p>
<p>Requirement should/can be implemented There is no obligation</p>	<p>O</p>
<p>Not applicable This requirement is not applicable.</p>	<p>--</p>

6.1. General criteria for fulfilling the TÜV NORD-H₂-label

Table 4: General criteria for fulfilling the TÜV NORD-H₂-label

No.	Description	category of the label		
		A	B	C
6.1.1	<p>Pre-condition</p> <p>The client grants the inspector access to the documents affected by the scope of application and, if necessary, access to the production sites and all system parts within the scope of the TÜV NORD-H₂-label. The client is responsible for ensuring that the TÜV NORD-H₂-label and the certificate are only used in such a way that a statement corresponding to the certification is made about the certified scope, such as area of application, category, production site, etc. of the client .</p>	X	X	X
6.1.2	<p>Basic requirements</p> <p>If the data has not yet been provided by other applicable standards, the following information must be provided for each individual location (production facility, storage, transport) of the area of application:</p> <p>Organization name Commercial register extract Number of locations Products (depending on the area of application) including the quality of the products Technical data of the locations Address and, if applicable, GPS coordinates of the locations Persons in charge of the locations Description of the system concept Network connection point (electricity and gas) Operating license of the sites</p> <p>If required: Changes to Locations Evidence that the state of the art is maintained for the locations.</p> <p>The standard can be applied worldwide, taking country-specific requirements into account.</p>	X	X	X
6.1.3	<p>Defining the scope and category</p> <p>The customer must inform TNC which application area and category of the TÜV NORD-H₂-label is desired. A distinction is made between the areas of generation, storage and transport, the category and the legal basis. Within the area of application, all equipment used for the</p>	X	X	X

	<p>process step must be mentioned by the customer. The technical data sheets must be submitted for each individual equipment.</p> <p>Note: Depending on the application of the product (e.g. fuel, combustible fuel...) only a certain category of the criteria catalog can be used. As part of the offer, the customer will be confirmed whether the selected category can be used.</p>			
6.1.4	<p>Manufacturing process and quantities produced</p> <p>The hydrogen must be produced by electrolysis. The additional industrial gases required to produce hydrogen derivatives must be produced or separated by electrical systems.</p> <p>There is no minimum size of the production plant (Electrolyser) or minimum amount of gas generated or a limit of maximum operating hours to strive for a TÜV NORD-H₂-label.</p>	X	X	X
6.1.5	<p>Definition of the observation period</p>	See 6.1.5A 6.1.5B		
6.1.5A	<p>The period under consideration is based on the evidence from Chap. 6.2.1A, 6.3.2.A or/ and 6.3.2.B.</p>	X	--	X
6.1.5B	<p>The customer must specify the annual observation period, taking into account the year, month and day, and inform TNC.</p> <p>The observation period is the period in which the accounting of the raw materials used, energies and the products produced are recorded and accounted in the balance sheet. The maximum observation period is one year.</p>	--	X	--
6.1.6	<p>Use of the manufactured product within the TÜV NORD-H₂-label</p> <p>As far as possible, the customer must state the use of the generated gas. (fuel, fuel, raw material, ...) See chap. 6.1.3</p>	X	X	X
6.1.7	<p>Acquisition of the measured values</p> <p>All measured values for traw materials, energy and the product (including the quality of the product), must be recorded on the basis of the area of application.</p> <p>The customer must state the measuring units, measuring devices or counters to TNC and explain which measured values are recorded. Furthermore, the measuring mechanisms, measuring devices or counters must be verified or calibrated. Factory calibrations can be accepted if they have been carried out in accordance with ISO/IEC 17025. The measured values must be recorded with such accuracy that accounting according to the selected category is possible, e.g. monthly or annually, and in accordance with the legal requirements.</p> <p>If points 6.3.2. A and 6.3.2. C apply, a measurement and calibration law-compliant measurement of the simultaneity of generation and consumption depending on the legal requirements must also be ensured.</p>	X	X	X
6.1.8	<p>Different locations from one certificate holder</p> <p>In the year of the first certification or extension (first inspection of a location), each location is fully inspected based on the individual criteria of this catalog. If the customer uses several locations to produce hydrogen, hydrogen derivatives or industrial gases, a random sample can be used to check the partial balances as part of the surveillance or recertification assessment. This means that the</p>	X	X	X

	<p>entire balance of the quantities produced is checked first and then the partial balances according to a risk based sampling method. The following formula is used to determine the number of partial balances (sample) to be checked:</p> $TB = \sqrt{AS} + \sqrt{AG} + \sqrt{AT} + \sqrt{AP} + \sqrt{AK}$ <p>TB= Number of sub-balances that are checked for a sample AS= number of production plants AG= number of large memories AT= number of transport variants AP= number of different products AK= number of different categories of the label</p> <p>Note 1: Each calculation result must be rounded up to whole numbers and then the sum (TB) is calculated. Note 2: The simplification only applies to tests from this criteria catalog. Requirements from other standards are excluded. Note 3: Applies to generation, transport and storage. Note 4: As part of the validity of the certificate, all locations must be checked at least once.</p> <p>If the specified quantity balance of the sampled plant deviates by more than 1% from the values specified in the entire balance the random sample cannot be used.</p>			
<p>6.1.9</p>	<p>Accounting</p> <p>Taking into account the area of application, category, observation period (see 6.1.5) and the measured values, a balance of the used energy and for the products generated must be developed. This means that an entire balance is always created from the partial balances of individual generation plants, storage facilities, etc. The accounts are prepared by the customer.</p> <p>The balance must be checked on the basis of measured values and the previous year's balance to see whether it is plausible. Based on the equipment used and the data sheets submitted for the equipment, the balance sheet must be verified by means of a random sample.</p> <p>When balancing, estimates are only allowed in exceptional cases. If individual values are estimated, proof must be provided by the customer using suitable sources.</p> <p>If quantities have been produced outside the scope of the TÜV NORD-H₂-label, these must be disclosed and may not be marketed taking the TÜV NORD-H₂-label into account.</p> <p>Double sale of certified products is not permitted. In order to rule out double counting, evidence must be provided by the customer.</p> <p>The losses of manufactured products are to be shown within the balance sheet.</p> <p>Notice:</p>	<p>X</p>	<p>X</p>	<p>X</p>

	<p>1) A complete balance sheet must be created from the individual balance sheets, depending on the area of application.</p> <p>2) A double counting? of products is theoretically possible. E.g. Feeding into the gas network and recording of registers.</p>			
6.1.10	<p>Manufacturing of products outside of the TÜV NORD-H₂-label Quantities produced not under TÜV NORD-H₂-label must be recorded with sufficient accuracy and communicated to the TNC and taken into account in the balance sheet.</p> <p>The TÜV NORD-H₂-label may not be applied to mixed products.</p> <p>When storing and transporting, finished products can be stored or transported together with products that do not use the TÜV NORD-H₂-label. A balance must be drawn up for which quantities the TÜV NORD-H₂ label applies and for which it does not. Documented information must be available for this.</p> <p>Note: The application period must be observed.</p>	X	X	X
6.1.11	<p>Expansion of a location The customer may expand or add locations of the scope. The extension must be recognized by the TNC In order for the expansion to be recognized by TNC, it must be notified prior to the expansion of the site being operational, and all criteria (measuring systems, balancing) must be met.</p> <p>The expansion of the location must be approved separately by TNC and will be considered separately during the next inspection of the TÜV NORD-H₂-label.</p>	X	X	X
6.1.12	<p>Monitoring of the TÜV NORD-H₂-label The TÜV NORD-H₂-label is monitored annually. If there are several locations in the area of application, Chap. 6.1.8 will apply. Furthermore, the individual monitoring of the applicable standards and assessments must also be followed.</p> <p>Note: All required documents must be submitted annually.</p>	X	X	X
6.1.13	<p>Country-specific requirements for the production of hydrogen, hydrogen derivatives and industrial gases The standard can be applied internationally. When used in countries outside the EU, all criteria must be evaluated against country-specific requirements.</p> <p>Note: Production within the EU and importing into the EU must comply with EU requirements.</p>	X	X	X
6.1.14	<p>Retention period The required documentation to obtain the TÜV NORD-H₂-label must be kept by the customer for at least 10 years after the certificate has expired.</p>	X	X	X
6.1.15	<p>Requirements for the safe operation of the sites Safe operation of the locations of the application area is essential. The risk of damaging events can result in personal injury, financial damage and environmental damage. In order to facilitate secure operation, the customer shall ensure that the requirements for secure operation and IT security at all locations apply.</p>	See 6.1.15A 6.1.15B		

	<p>The customer can also submit equivalent proof of verification according to TNI-QP-(IND-MD-01), and ISO 27002.</p> <p>Notice: Other legal requirements must always be implemented.</p>			
6.1.15A	<p>Safe operation can be enabled if the manufacturer has successfully completed certification in accordance with the TNI-QP-(IND-MD-01) PROCEDURE FOR THE ASSESSMENT OF PRODUCTS AND PRODUCTION ACCORDING TO 2006/42/EC MACHINERY DIRECTIVE standard.</p> <p>Equivalent requirements must be implemented in the area of storage and transport.</p>	X	X	X
6.1.15B	<p>For IT security, the operator of the locations within the scope should carry out a self-assessment in accordance with ISO 27002, depending on the possible application. The identified points must be addressed to minimize a critical risk. ISO 27001 certification is recommended.</p>	X	X	X
6.1.16	<p>Marketing</p> <p>Before the products are marketed, all relevant criteria depending on the area of application and the category of the TÜV NORD-H₂-label must be met. Furthermore, TNC must have issued the certificate and the corresponding TÜV NORD-H₂-label in the area of validity.</p>	X	X	X
6.1.17	<p>Incorrect Evidence</p> <p>If the customer submits incorrect evidence, eg data gaps, the extent of the influence and impact of the individual evidence must be estimated. In the case of serious deviations, the TIC manager must decide whether the proof can be accepted.</p>	X	X	X
6.1.18	<p>Duty to cooperate</p> <p>The customer undertakes to submit to TNC only data, documents and measured values (information) that are legally binding. Should it become apparent at a later point in time that the information is incorrect, TNC must be informed immediately. Based on the new information, it must be checked whether the information has an impact on the TÜV NORD-H₂-label. The analysis and the associated expenses must be borne by the customer.</p>	X	X	X
6.1.19	<p>Allocation of the electrical energy used and the GHG footprint</p> <p>If different products are produced the allocation of the CO₂ footprint and the electrical energy is distributed on the basis of the added value.</p> <p>This does not apply to Hydrogen in cat. A and B.</p>	X	X	X

6.2. Requirements for determining the CO₂ Footprint

Table 5: Requirements for determining the CO₂ Footprint

No.	Description	category of the label		
		A	B	C
6.2.1	<p>Determination of the GHG Footprint</p> <p>The GHG footprint must be determined for each category of the TÜV NORD-H₂-label. Appropriate procedures must be applied depending on the category. The following points must be taken into account when determining:</p> <ul style="list-style-type: none"> - Scope of application - Observation period - Raw materials used including previous emissions - Locations - Manufactured products including the quality of the products - Losses of products <p>Footprint must be determined for every kilogram of the product generated, stored or transported: hydrogen, ammonia, etc. The result must be documented in an assessment report or certificate and must take into account the relevant scope.</p> <p>The calculation and verification of the GHG Footprint is not part of the criteria catalog and must be commissioned separately.</p> <p>Note: Validation is allowed for new production sites. Verification must be carried out at existing production sites.</p>	See 6.2.1A 6.2.1B		
6.2.1 A	<p>Determination of the CO₂ Footprint for cat. A & C</p> <p>On the basis of RED II [10] and DA II [12] including the appendix to DA II [13], the CO₂ Footprint for the area of application is to be determined for all locations.</p> <p>The determination must be carried out by a company that uses a procedure that has been recognized by the EU Commission. (e.g. ISCC)</p>	X	--	X
6.2.1 B	<p>Determination of the GHG Footprint for category B</p> <p>Footprint is to be determined on the basis of the calculation standards GHG Protocol, RED II [10] including appendices [12] [13], DIN EN ISO 14067 in the current version. The calculation standard can be selected by the customer. The result must be provided by an accredited certification body with the applied standard within the scope of the certificate.</p>	--	X	--
6.2.2	<p>Assessment of theGHG Footprint</p> <p>The determined GHG Footprint must be evaluated on the basis of the selected category and the area of application. The basis for the assessment can be found in the following subsections.</p> <p>(Note: Applicable by category and scope)</p>	See 6.2.2 A 6.2.2 B		

6.2.2 A	<p>GHG Footprint assessment for Cat. A & C The GHG Footprint is evaluated in accordance with the requirements of RED II [10]. The limit must not exceed 28.2g CO₂ e per MJ.</p>	X	--	X
6.2.2 B	<p>Assessment of the GHG Footprint for Cat. B The GHG Footprint is evaluated in accordance with the requirements of the criteria catalog. The value must not exceed 0g CO₂ e per MJ. If the threshold of more than 0g CO₂ e per MJ is determined when determining the CO₂ Footprint, the CO₂ Footprint must be compensated. The compensation can be done according to TN-CC-020. Compensation of the emitted CO₂ amounts for the areas of generation, storage and transport is only possible in this category on the basis of TN-CC-020. The assessments for compensation according to TN-CC-020 are not part of the list of criteria and must be conducted separately.</p>	--	X	--
6.2.3	<p>Monitoring of the CO₂ Footprint Requirements for monitoring and other standard requirements can include the in-house standard TN-CC 020, norms, etc. See chapter. 6.1.12</p>	X	X	X

6.3. Requirements for the electrical energy used

Table 6: Requirements for the electrical energy used

No.	Description	category of the label		
		A	B	C
6.3.1	<p>Determining the scope for verification</p> <p>The verification of the electrical energy used applies to the balanced energy quantities from point 6.1.9 and the area of application and must be considered on the basis of the corresponding criteria to be applied.</p>	X	X	X
6.3.2	<p>Requirements for the production of Hydrogen, Hydrogen derivatives and Industrial gases</p> <p>For the production of Hydrogen, Hydrogen derivatives and Industrial gases, 100% renewable electrical energy must be used. There are different requirements within the individual criteria. The following sub-items describe the requirements.</p>	6.3.2 A 6.3.2 B 6.3.2C		
6.3.2 A	<p>Category C Requirements for the scope</p> <p>On the basis of RED II [10] and DA I [11], a positive assessment of the criteria for the electrical energy used must be made.</p> <p>The determination must be carried out by a company that uses a procedure that has been recognized by the EU Commission. (e.g. ISCC)</p>	--	--	X
6.3.2 B	<p>Category A Requirements for the scope</p> <p>On the basis of RED II [10] and DA I [11], a positive assessment of the criteria for the electrical energy used must be made. (e.g. ISCC) Furthermore, all criteria that only have to be fulfilled at a later point in time of the DA I must be fulfilled by the time of the assessment.</p> <p>The determination must be carried out by a company that uses a procedure that has been recognized by the EU Commission.</p>	X	--	--
6.3.2C	<p>Category B (Generation) Requirements</p> <p>For the production of hydrogen, hydrogen derivatives and industrial gases, electrical energy from renewable sources must be used. The range of systems includes generation from photovoltaics, wind power, hydropower (without pumped storage power plants) or geothermal energy. The generating plants may not claim any financial support (subsidies). Evidence can be provided as follows:</p> <p>1) In the case that the amount of energy consumed was supplied to the production site via an electricity supply company.</p> <p>A) For this amount of energy, certificates of origin for renewable energies have been canceled in accordance with Article 30 of the Implementation Ordinance for Certificates of Origin and Regional Certificates and</p> <p>B) These guarantees of origin, if the plant has its production site in Germany, contain information on the optional coupling in accordance with Section 16 (3) of the Ordinance on the Implementation of Guarantees of Origin and Regions.</p>	--	X	--

	<p>2) In the event that the energy was procured via Power Purchase Agreement (PPA) and generated in a power plant that meets the above requirements, the PPAs must contain all the requirements that the balancing of the energy quantities can be verified.</p> <p>3) In the event that the amount of energy used is not routed through the transport network, a measuring device must be installed with which the balancing of the energy amounts can be verified.</p> <p>Points 1 A and B are deemed to have been met by companies that have valid certification in accordance with TÜV NORD standard A75-S026-1 and purchase 100% of the required energy there. Equivalent evidence is possible.</p> <p>The accounting period is limited to one year. This means that the energy generated was also generated within a year for the production of hydrogen, hydrogen derivatives or industrial gases.</p>			
6.3.6	<p>Network-friendly production method</p> <p>The production of Hydrogen, hydrogen derivatives and industrial gases should be geared to the supply of renewable energies from photovoltaic systems, wind turbines and hydropower. This means that when the supply of electrical energy from photovoltaic systems or wind turbines is low (dark doldrums), production should be reduced.</p>	--	O	--
6.3.7	<p>Consideration of Grid losses</p> <p>If there are large distances between the generation of electrical energy and the production site for hydrogen, the grid losses should also be taken into account in the balancing, depending on the distance and the voltage level. This should be done depending on the voltage level and distance.</p>	--	O	--
6.3.8	<p>Storage</p> <p>In the event that electrical energy is used to store hydrogen, hydrogen derivatives or industrial gases, the criteria from Chapters 6.3.1 - 6.3.2 must be applied for each requirement.</p>	X	X	X
6.3.9	<p>Transport</p> <p>If electrical energy is used to transport hydrogen, hydrogen derivatives or industrial gases, the criteria from Chapters 6.3.1 - 6.3.2 must be applied for each requirement.</p> <p>Note: A transport of products in a pipeline can be evaluated like a storage. Direction of flow of the pipeline and temporal correlation of storage shall not be considered.</p>	X	X	X
6.3.10	<p>Monitoring of TÜV NORD standard and DA I</p> <p>Monitoring requirements and other standard requirements can be found in the TÜV NORD standard A75-S026-1, norms, etc., among others. See chap. 6.1.12</p>	X	X	X

6.4. Requirements for the use of the starting materials used and other criteria

Table 7: Requirements for the use of the starting materials deployed

No.	Description	category of the label		
		A	B	C
6.4.1	<p>Sustainable use of raw materials</p> <p>The sustainable use of raw materials is becoming increasingly important. The amount of water, for example, is very small in some nations that generate a lot of electrical energy from photovoltaic systems. In order to ensure the sustainable use of water, a balance of the amounts of water used for each production site based on the amount of hydrogen generated must be developed. The reported amounts of water are to be verified with the balance for the amounts of hydrogen produced (6.1.9). Based on the determined water quantities, the customer must prove that the required water quantities are sourced in a sustainable manner. In particular, it must be checked that the amount of water used has no negative impact on the environment and the surrounding communities.</p> <p>The requirements for balancing of chap. 6.1.7 and 6.1.9. shall be used in a similar way for other raw materials that are used for the production of hydrogen derivatives or industrial gases .</p> <p>For the electrical energy used, the requirements from Chap. 6.3. apply</p> <p>The conversion can take place, for example, as follows:</p> <p>1) If an environmental risk assessment is carried out according to Directive 2011/92/EU, which includes an assessment of the effects on water according to Directive 2000/60/EC, no additional assessment of the effects on water is required, provided that the risks identified have been remedied.</p> <p>2) On the basis of an analysis by interested parties (eg NGO), goals must be defined in the context of the above requirement, which prevent the extraction of raw materials from having a negative impact on the environment and people. Measures must be defined for this. The measures are monitored together with Chapter 6.1.8. It is not possible to reduce the monitoring. Note: Goals must be SMART.</p>	X	O	O
6.4.2	<p>Holistic use of generated gases and waste heat</p> <p>The production of hydrogen generates large amounts of oxygen and waste heat. The oxygen generated can be further processed in the industry. The waste heat can be used to heat buildings, for example. Therefore, the customer should provide evidence of the further use of oxygen and waste heat.</p> <p>If applicable, evidence should also be provided in a similar way for other raw materials that are required for the production of hydrogen derivatives or industrial gases.</p>	O	O	--

6.4.3	OHS Depending on the area of application, the company should have implemented an occupational health and safety management system or present a valid certificate, e.g. according to ISO 45001.	O	O	O
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7. CERTIFICATION PROCESS

The certification body carries out the certification and monitoring according to the regulations set by TÜV NORD CERT GmbH. The certification body undertakes to treat all information about the client's company made available as confidential and to evaluate it only for the agreed purposes. Documents that have been made available will not be passed on to third parties.

The certification procedure is described in A75-S041-VA-001. The project process is described in A75-S041-VA-002. The procedure and the course of the project must be taken into account for a positive assessment and consequently an issue of the TÜV NORD-H₂-label.

Further details can be found in the service description A75-S041-MU-002.