

The logo for DIN (German Institute for Standardization) is displayed within a dark blue rectangular graphic on the left side of the slide. The logo itself consists of the letters 'DIN' in a white, sans-serif font, centered within a white square.

DIN German Institute for Standardization | Group Research and Transfer

Standardization

CO₂-WIN Connect: Achievements and next steps

Final conference of the BMBF funding measure CO₂-WIN



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Federal Ministry
of Education
and Research

Berlin, 28th September 2023



Supporting with Standardization

Framework Program Research for Sustainable Development (FONA):

- **Standards** are an **important instrument** for **economic success**.
- They **contribute** to a **faster dissemination** of **innovative** and **sustainable technologies**.
- The **transfer of research results into standardization supports legislation** in terms of being **based on the latest scientific findings**. Through its **role model qualities** this type of legislation may **become adapted internationally**.



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More information
on FONA

Familiarization with status quo

Initialization Phase

Scope:

- Introduce project partners of the CO₂-WIN funding measure to **basic principles of standardization**.
- **Familiarize** with the **funding measure's projects** and **consortium partners' expectations**.

Method:

- **Conduct multiple exchanges** with project partners in varying constellations.

Results:

- **Leveled expectations** and **knowledge basis** of project partners.



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Analysis of initial situation and identification of gaps



Scope:

- Analyze standardization landscape and identify standardization potentials.

Method:

- **Research** based on **keywords** provided by consortium partners as well as **activities** by relevant DIN standards committees.
- **Multiple exchanges** with relevant **DIN standards committees** to identify and single out **standardization potentials**.

Results:

- Identified **two standardization potentials: Photocatalysis of CO₂ and Terminology regarding utilization of CO₂**.
- Created an **exchange basis** with **relevant DIN standards committees**.
- Published a **report** on **“Standards in the field of CO₂ utilization”**.

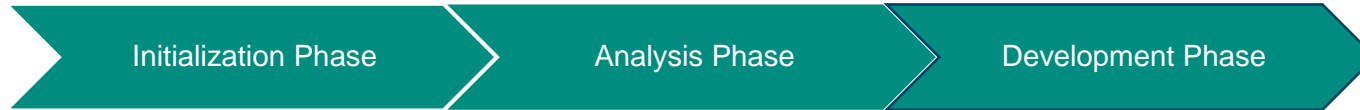


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Report
(German only)

Setting up standardization activities



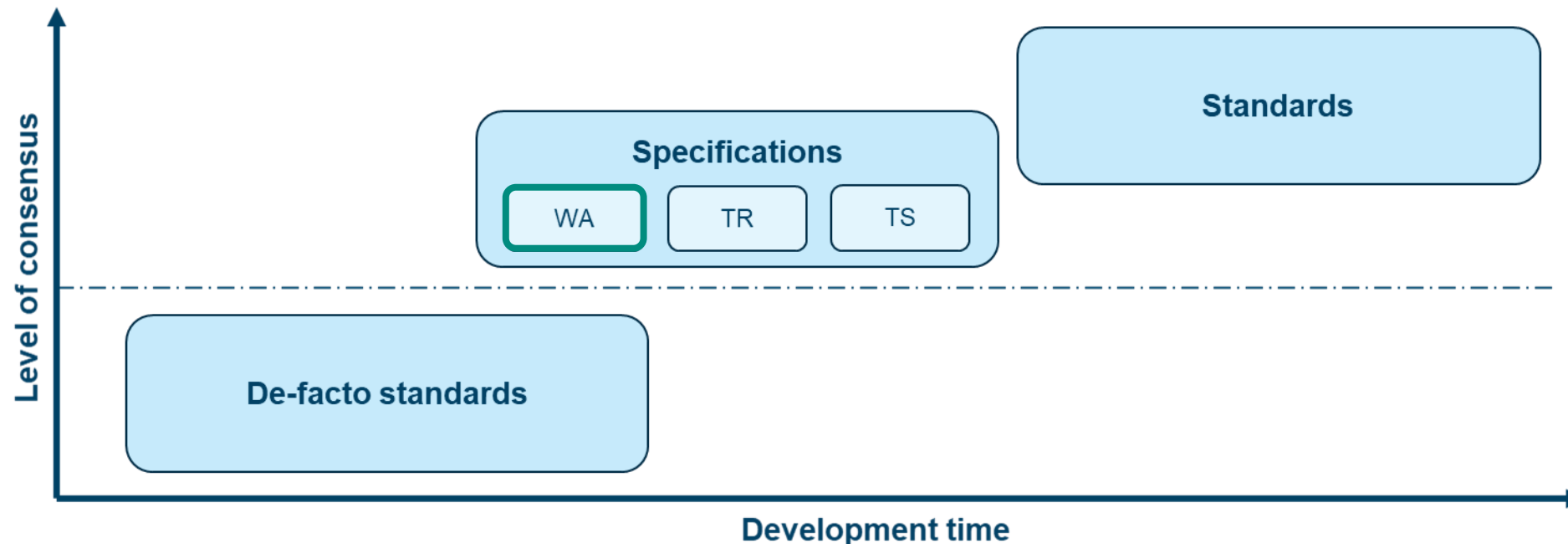
Information on Workshop Agreement (WA) concept:

- Agreed upon by participants of temporary workshop.
- Designed to meet immediate need and form basis of future standard.
- Open to direct participation of interested parties and rapid development.

Ideal tool for dissemination of research projects' results.



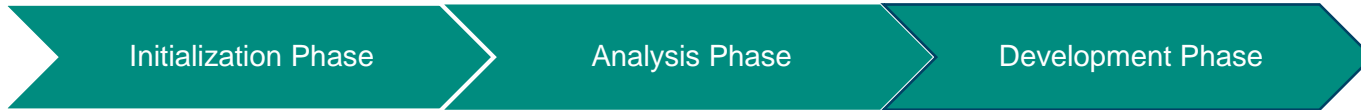
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Introduction to standardization (free download)

DIN SPEC 91457

Photocatalysis - Determination of product formation in CO₂ reduction



Underlying Problems:

- Through **photocatalytic cleavage or reduction**, products like **fuels or basic chemicals** can be **produced from CO₂**.
- Need to **create comparability** of the **measurements** of the **various catalysts** with regard to their **performance**.

Development:

- **Initiation** by **Prof. Dr. Jennifer Strunk**. **Bilingual development** to maximize impact.
- **Exchange** with **DIN standards committee NA 062-02-93 AA "Photo catalysis"** before, during and after development.
- **Publication** was planned to occur **in parallel with** the publication of a **paper** by Prof. Dr. Strunk in Hardware X to link and thus **maximize** the individual **networking and dissemination potential** of both documents.

Impact:

- **DIN SPEC 91457** is first specification in photocatalysis to **compare results across different laboratories**.
- Provides a leveled playing field and allows **comparing different research groups** and **projects**.



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DIN SPEC 91457
(free download)

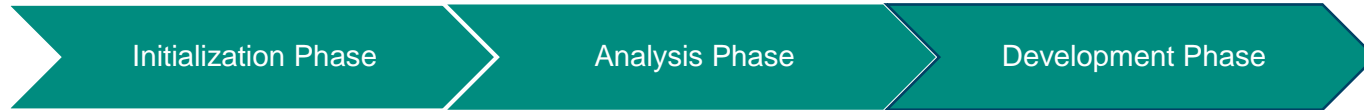


Paper
(free download)



DIN SPEC 91458

Utilization of carbon dioxide - Terms



Underlying Problems:

- **Multitude** of new terms, designations and acronyms surrounding CO₂ usage.
- **Use of terminology** still varies from country to country and company to company. **Terms** are used synonymously despite having different meanings.

Development:

- **Initiation** by Dipl.-Ing. Dennis Krämer. **Bilingual development** to maximize impact.
- **Exchange** with DIN standards committees NAW and NAGUS before, during and after development.
- Due to the **large number of terms (ultimately 118 terms)** and the **consortium partners' high level of interest**, many **iterations** took place.
- Many **specialized objectors refined the document** throughout the commenting phase.

Impact:

- **DIN SPEC 91458** will help to **facilitate cross-national and cross-disciplinary communication** between **research institutes, companies, and users**, as well as in **political and public discourse**.



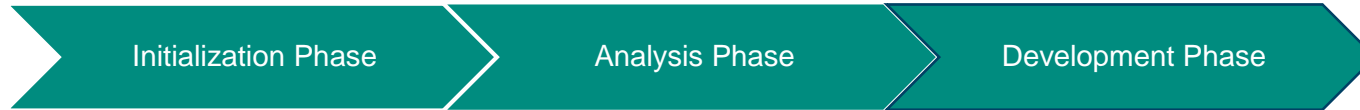
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DIN SPEC 91458
(free download)

DIN SPEC 91508 (Activities still in planing)

Requirements for the Life Cycle Assessment of CCU- and CCS-Technologies



Underlying Problems:

- **ISO 14000 series** sets out **requirements for environmental management systems** with **little flexibility for different use cases**. However, it is **not feasible to develop separate LCA standards** for every technology.

Proposed solution:

- DIN SPEC as a **template for adaptation of LCA criteria for different technologies**.
- **Initiation by Prof. Dr. Volker Sick**, University of Michigan. **Bilingual development to maximize impact**.
- **Exchange** with DIN standards committees NAGUS, NAGas and NAW before development.
- **Similar guideline has already been developed**. **Suitable content** will be **incorporated** into DIN SPEC.

Impact:

- DIN SPEC 91508 may **serve as template for transnational standardization** activities by a **future CEN/TC** that is currently being established. Hence, the **goal** is to **harmonize our activities** with the **scope of the future CEN/TC to maximize future dissemination**.
- The document will promote the **establishment of CCU and CCS technologies** by **promoting their compatibility with LCA recommendations**.



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Techno-Economic Assessment & Life Cycle Assessment Guidelines for CO₂ Utilization (free download)

Dissemination activities by DIN

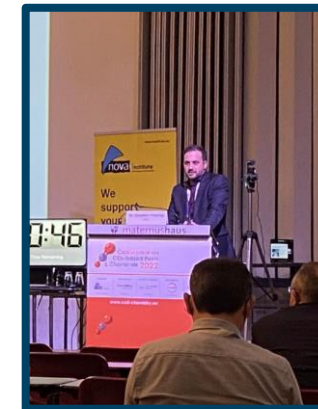


Inward dissemination activities:

- **Regular exchange with DIN standardization committees to align activities with planned / ongoing activities to increase possibility of transferring our results and to avoid “double standardization”.**
- **Participation in multiple workshops.**

Outward dissemination activities:

- **Promotion of own activities at various stakeholder events:**
 - Nova Conference (2022)
 - ACHEMA Conference (2022)
 - FONA Conference (2023)
 - ICCDU Conference (2023)
- **Dissemination by involved partners and via social media.**



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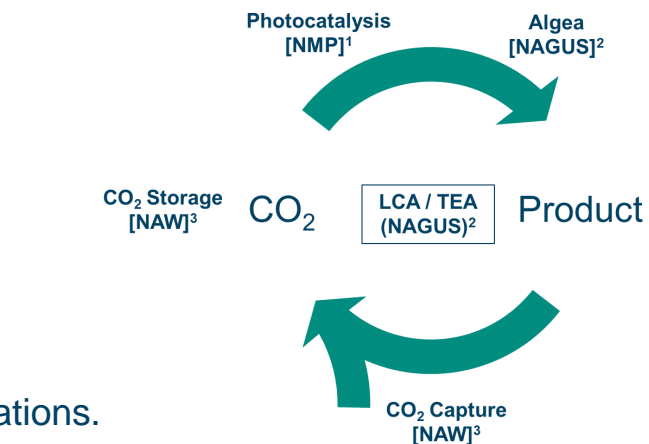


Dissemination activities by DIN



Planned dissemination activities:

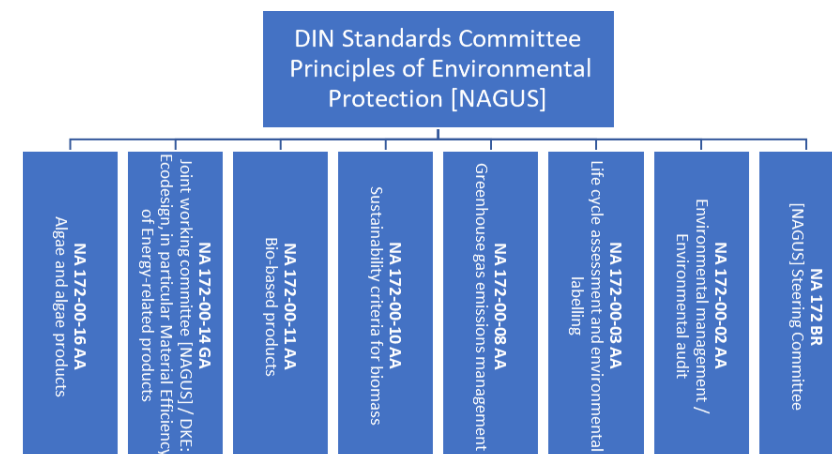
- **Necessity of close exchange within DIN**, as topic has **horizontal character**.
- Possibility of **connecting to** and **triggering of subsequent in-house activities**.
- **Disseminating** the results in **DIN standards committees**.
- **Promoting the development of standards** on the basis of the developed specifications.
- **Further use** developed **network** and **win more experts for standardization**.



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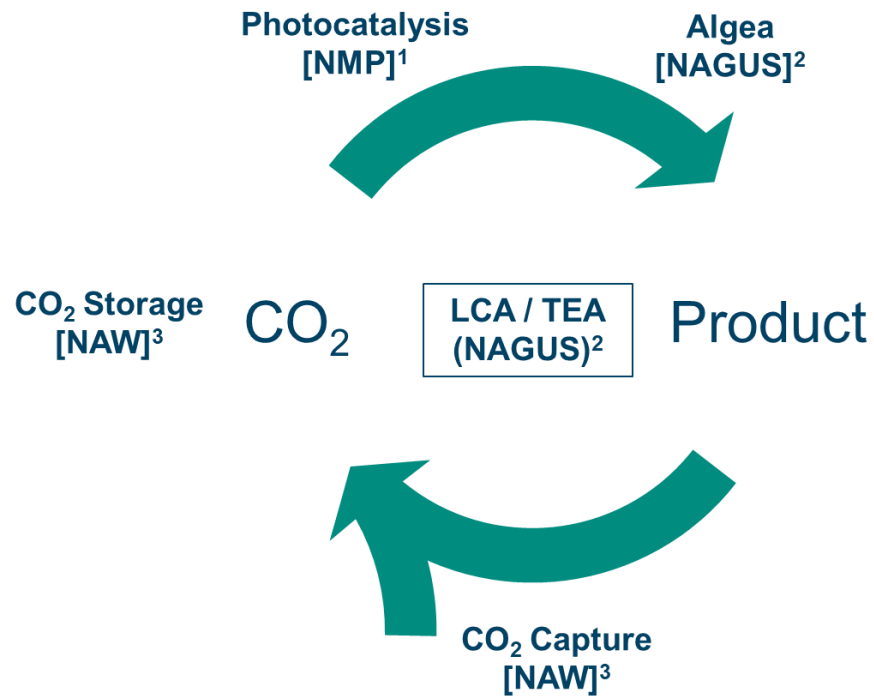
10787 Berlin

www.din.de



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Backup: Exchanges with responsible DIN Standards Committees



Requirements Definition by following DIN Standards Committees

- Materials Testing [[NMP](#)]
- Building and Civil Engineering [[NABau](#)]
- Gas Technology [[NAGas](#)]
- Nonferrous Metals [[FNNE](#)]
- Elastomer Technology [[NET](#)]
- Iron and Steel [[FES](#)]
- Petroleum and Natural Gas Industries [[NÖG](#)]
- Tank Installations [[NATank](#)]
- Plastics [[FNK](#)]
- Packaging [[NAVp](#)]
- Textiles and Textile Machinery [[Textilnorm](#)]
- DKE - VDE Association for Electrical, Electronic & Information Technologies [[DKE](#)]

Abbreviated DIN Standards Committees:

¹ Materials Testing [[NMP](#)]

² Principles of Environmental Protection [[NAGUS](#)]

³ Water Practice [[NAW](#)]



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