



THE DATA TELL YOU EVERYTHING ABOUT THE BEHAVIOUR OF CONCRETE!

Céline Rousselot, Project Manager for Research Data Management - Scientific Directorate, Department for the promotion and sharing of scientific and technical knowledge

In 2018, France reaffirmed its commitment to the opening up of research data by implementing a national plan for open science. As an institution, IFSTTAR supports its researchers' sharing of the data generated during research by helping them to adhere to good practices. In this connection, the researchers and partners involved in the CEOS.fr national project are publishing open datasets on cracking in special reinforced concrete structures.

Unique data in the field of special structures

The national CEOS.fr and MEFISTO projects have provided an opportunity to study the behaviour, durability and cracking of the concretes used in the construction of special structures. These structures are referred to as special either because of their exceptional dimensions or because they must meet certain service or protection requirements (service life, air- or water-tightness, industrial or environmental risks, etc.). Examples include nuclear installations, dams and bridges, but some structures that are open to the public, such as railway stations, can also be subject to such requirements.

Monitoring cracking, particularly at early age, is of major importance as it is crucial to the durability of the structure. In order to observe the development of cracks, experiments are carried out on different types of concrete. To this end, a large number of sensors are deployed to measure the temperature and displacements of the materials. This makes it possible to establish the strain at any point in the structure. The data generated then facilitates in-depth analysis of the concrete's behaviour.

Data that are eagerly awaited by the scientific community

As a supplement to the scientific articles that describe the research that has been done, the sharing of data allows other researchers to validate the results obtained or to reuse them for future research. The publication of these data has therefore created considerable anticipation in the scientific community.

For the CEOS.fr, project team, opening up these data is a means of adding value to and capitalising on research while inviting contributions from other members of the scientific community in order to advance knowledge. This initiative also aims to preserve these data, which, in the case of large test specimens, are unique in terms of their quantity and diversity.

Data published in accordance with good openness practices

In order to make the data identifiable and easy to find, accessible, interoperable and reusable, the data had to be prepared before it was published.

- > To ensure access to the data, files in a proprietary format (Excel) were converted to an **open-access format** (CSV) while ensuring that no data were lost.
- > To make sure they could be reused, the raw data were cleansed and corrected and work was carried out **to document** the data and the experimental method.
- > Independently of this documentation, and to facilitate interoperability, the data were accompanied by a **set of metadata with a structure that complies with an international standard**.

Once they have been prepared for openness, the data are placed in the IFSTTAR repository in which they are given a permanent identifier so they are easy to find and cite. Finally, a **re-use license** tells those using the data about the conditions of re-use.

Things to find out about:

- > IFSTTAR's institutional data repository: <https://research-data.ifsttar.fr/>
- > IFSTTAR's research data: <https://www.ifsttar.fr/ressources-en-ligne/nos-politiques-de-diffusion-de-connaissances/donnees-de-la-recherche/>

Find out more

Project website CEOS.FR, IREX

Rospars, Claude; Rivillon, Philippe; Bisch, Philippe; Lançon, Hervé, 2018, «Experimental data for large reinforced concrete shear wall», [doi:10.25578/7ACMLG](https://doi.org/10.25578/7ACMLG), Ifsttar Dataverse

Rospars, Claude; Lançon, Hervé; GINGER CEBTP, 2018, «Experimental data for reinforced concrete beam (RL scale 1/3)», [doi:10.25578/6RZ7BR](https://doi.org/10.25578/6RZ7BR), Ifsttar Dataverse

Rospars, Claude; Lançon, Hervé; Buffo-Laccarrière, Laurie; Kolani, Batian; Dubois, Jean-Philippe; Bourbon, Xavier, 2018, «Experimental data for large reinforced concrete beam (RG)», [doi:10.25578/DOQZPL](https://doi.org/10.25578/DOQZPL), Ifsttar Dataverse

Rospars, Claude; Lançon, Hervé; Dubois, Jean-Philippe; Bourbon, Xavier, 2018, «Experimental data for large reinforced concrete beam (RL)», [doi:10.25578/ONC91X](https://doi.org/10.25578/ONC91X), Ifsttar Dataverse



Science and Society

<http://www.ifsttar.fr/ressources-en-ligne/espace-science-et-societe/>
Contact : openexperience@ifsttar.fr



Reusable articles
contents

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What these words mean...

Interoperability:

The ability of different computer systems to dialogue with each other, exchange data, communicate unambiguously and thus interpret information correctly.

Metadata:

A structured dataset that describes, explains, and locates a data resource in order to facilitate its search, use, and management ¹.

Open data :

Data that an organization makes available to all in the form of digital files for reuse.

¹ <https://www.niso.org/publications/understanding-metadata>

Projet contact:
Claude Rospars