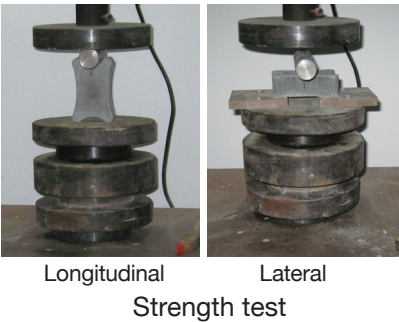


Strength performance

The breaking strength of i-CON Spacer, both compressive and bending, is equivalent to that of ordinary mortar spacers. Embedding the IC tag does not affect the strength of the spacer.

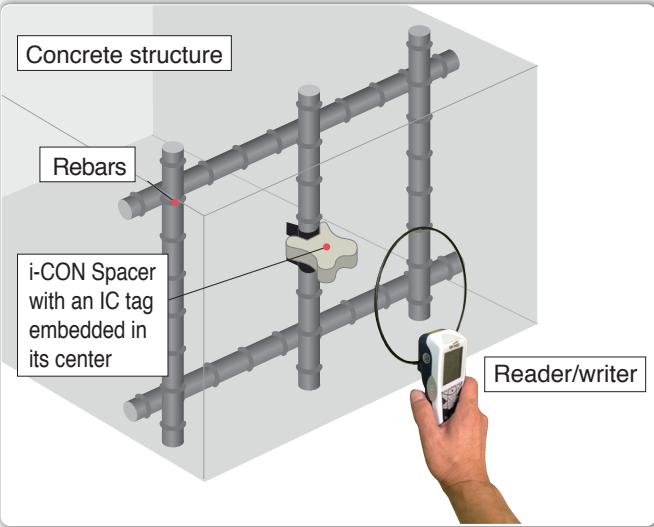


	Spacer in market	i-CON Spacer
Longitudinal breaking load (n=3, average)	10.2kN	10.9kN
Lateral breaking load (n=2, average) Span = 40 mm	2.2kN	2.1kN

Results of i-CON Spacer strength test

Installation and measurement methods

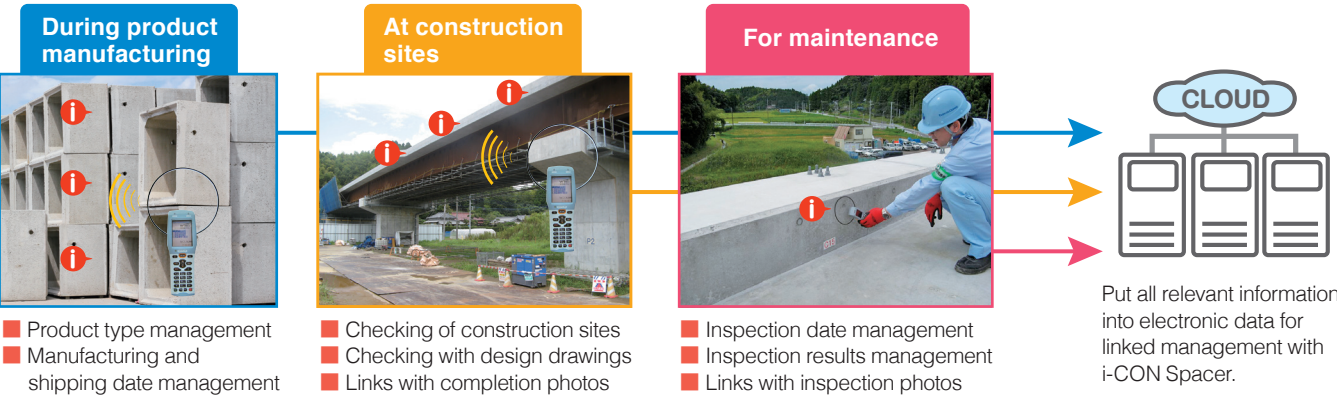
i-CON Spacer has directional communication characteristics and requires special care during installation. The spacer should be positioned so that the embedded IC tag is parallel to the concrete surface. Do not place the spacer within 15 cm of the placing surface of concrete. Wireless communication with external devices may fail when i-CON Spacer is fixed at an angle of 30 degrees or greater. The reader/writer antenna should be held within 30 mm of the concrete surface during reading or writing.



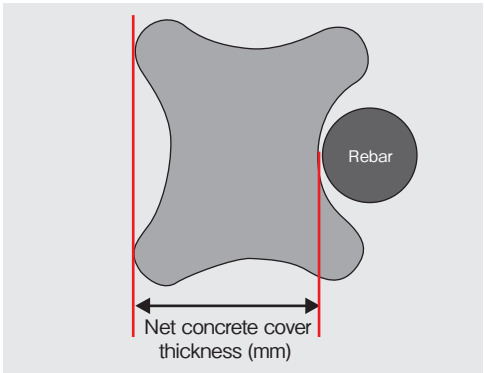
Measurement using the reader/writer

How to use i-CON Spacer

i-CON Spacer can store a variety of information, and the information about manufacturing, inspection, shipping, acceptance and construction of concrete products can be connected to each actual structure. Its application ranges from product management at a factory and checking of product information at a construction site to maintenance activities after construction. These enable labor saving, error prevention and efficient product management at various operations.



Product specifications



i-CON Spacer

- Available in 14 sizes to fit various concrete cover thicknesses (30-140 mm).
- One mounting jig (included) fits 12 different rebar diameters.
- The jig is designed not to interfere with the net concrete cover.

Concrete cover thicknesses	30、35、40、45、50、60、70、80、90、100、110、120、130、140 mm
Compatible rebar diameters	10、13、16、19、22、25、29、32、35、38、41、51 mm
Compressive strength	70 MPa or above
Product dimensions	Dimensions depend on the concrete cover thickness. Example: external size 45(H)*50(W)*25(D) mm for 35 mm

Product appearance



IC tag

	HF band	UHF band
RFID frequency band	13.56 MHz	920 MHz
Size	dai.16 x 3t mm	13 x 8 x 3 mm
Applicable standards	ISO15693	EPC Class 1 Gen 2
Waterproof standards	IP68	IP68



Reader/writer for the dedicated application (HF band)

RFID frequency band	13.56 MHz
Category by the Japanese Radio Act	Inductive reading and writing radio communication equipment
External size	171 (H) x 58 (W) x 45 (D) mm Grip: 45 (W) x 29 (D) mm
Weight	225g
Power	Lithium-ion secondary battery

NOTE: For a UHF band reader/writer let us know your specific needs, and we will select and offer the most suitable model.



<https://www.taiheiyo-cement.co.jp/rd/rfid/>

WiMO is a registered trademark of Taiheiyo Cement Corporation in Japan.

Precautions

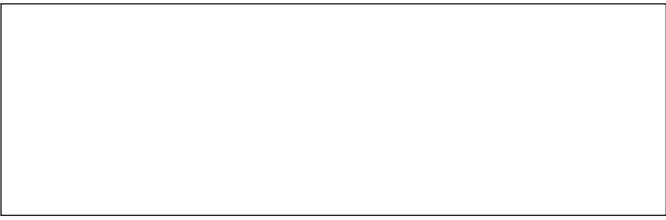
- Taiheiyo Cement Corporation assumes no responsibility whatsoever for any secondary damage resulting from the use of this product.
- Do not allow any person other than the manufacturer's repair technicians to disassemble, repair or alter this product.
- Do not drop or subject this product to strong impact or vibration.
- This product is a consumable. Its durability performance is tested, but no guarantee is provided after the delivery.
- The communicable range of i-CON Spacer and the reader/writer antenna can vary depending on the rebar arrangement, materials, water content of concrete or local conditions.

Precautions about the reader/writer

- Be sure to observe the following instructions for use :
- Do not disassemble or alter this product. Such actions are prohibited by law.
 - Do not remove the label of Technical Regulations Conformity Certification.
 - When the reader/writer is not used for an extended period of time, remove the battery or disconnect the power cord.

Manufactured and distributed by :

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Product specifications are subject to change without notice.
202007

IoT solutions for concrete structures



i-CON Spacer



Easy way to install IC tags inside the concrete


Site-by-site management using unique IDs

Applicable to inspection, traceability and many other systems

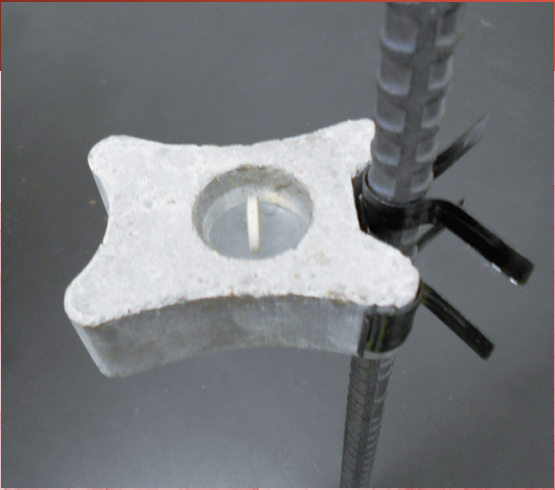


What is i-CON Spacer ?

i-CON Spacer is a mortar spacer with a built-in IC tag. By utilizing the IC tags with IC memory and unique IDs, i-CON Spacer enables management of information required for maintenance activities and management of structures. Furthermore, IoT (Internet of Things) on structures can be established by linking i-CON Spacer to external systems or various forms of management information.



Making structural diagnosis easier and more handy.
WiMO is the technology for evaluating the structural integrity developed under the concept that anyone can easily perform non-destructive quantitative testing.



Overview



i-CON Spacer contains an IC tag but can be used in a similar manner to ordinary mortar spacers in reinforced concrete. Fix it to a rebar using the included jig, and you can use it to ensure a required thickness of concrete cover.

i-CON Spacer with IC memory and unique ID has a wide range of applications. We can offer the best solutions that fit your specific needs, including individual customization and proposals of utilization systems. (Customization may require additional cost.)

Management of concrete information

- Concrete name
- Mix proportion and shipping information
- Design strength, date of placement
- Quality information (slump values, etc.)
- Types of reinforcing and other steels

Link with drawings

- IDs assigned to individual area sites
- Construction and maintenance management linked with drawing data
- Position information management on large structures

Link with various external systems

- ID and memory data exportable to CSV format
- Easy to link inspection and construction information to map or forms management software

Basic specifications

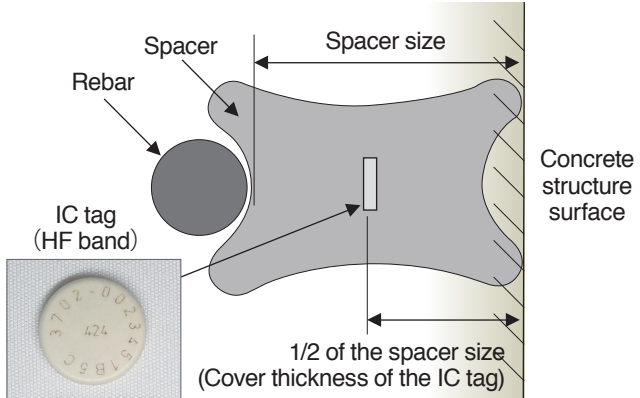
Specifications of the embedded IC tag

We offer two types of IC tags: HF band and UHF band. You can select either type, according to your usage or peripheral equipment. The highly waterproof and heat resistant tag withstands steam or autoclave curing with no problem.

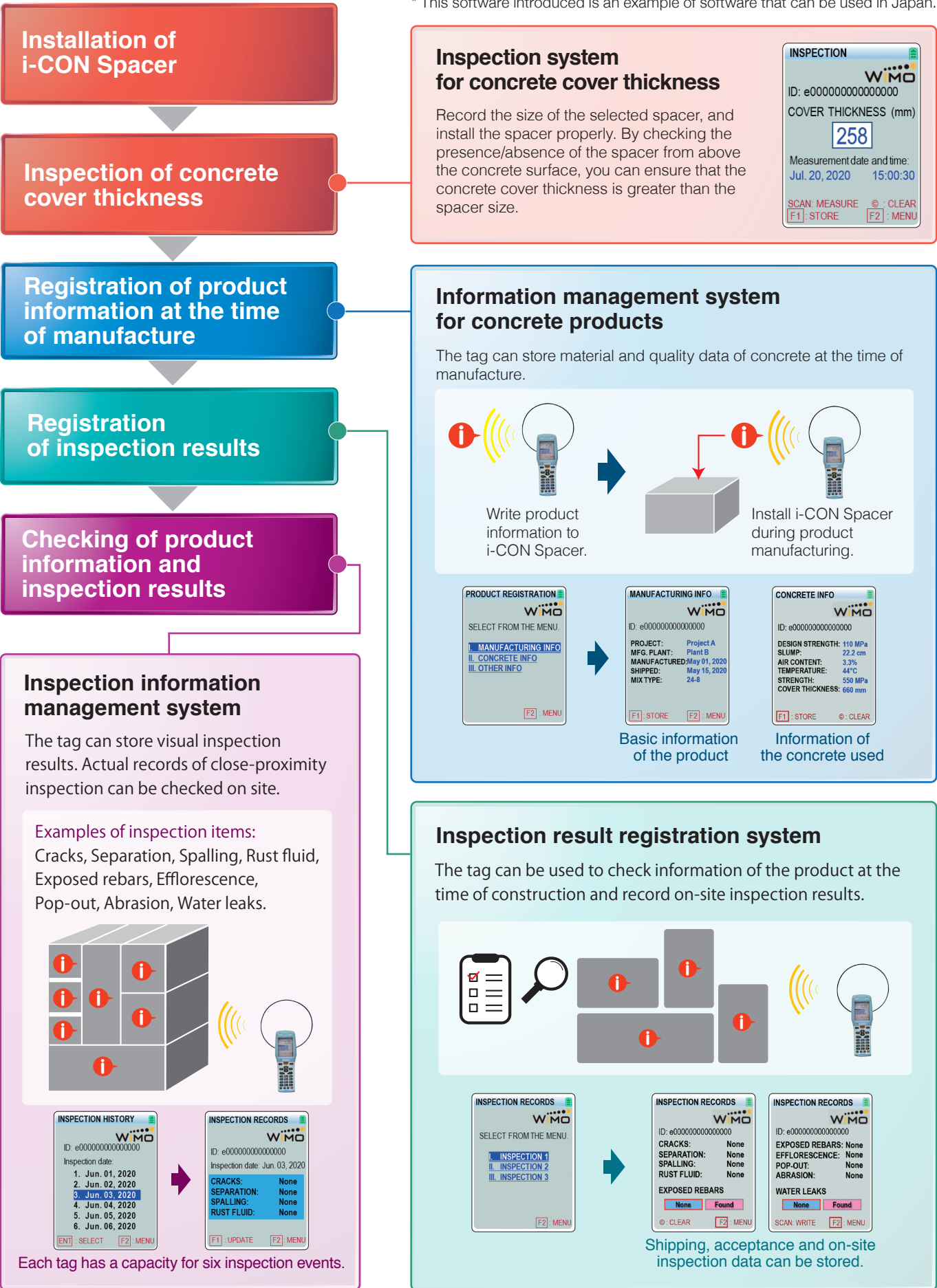
	HF band	UHF band
Frequency band	13.56MHz	920MHz
Applicable standards	ISO15693	EPC Class1 Gen2
Memory capacity	110byte	64byte
Operating temperatures	-25~85°C	-20~85°C

Built-in position of the IC tag

The IC tag is built in the center of the mortar spacer.



Making inspection and information management more simple and easier with i-CON Spacer



* This software introduced is an example of software that can be used in Japan.

A variety of applications

i-CON Spacer is a simple way to provide concrete structures with the features of IC tags (e.g. individual identification, information recording). There can be various applications using the IC tag features, such as:

- Concrete cover thickness quick check system
- Visual inspection information management system
- Concrete product manufacturing information management system
- Concrete product construction information management system

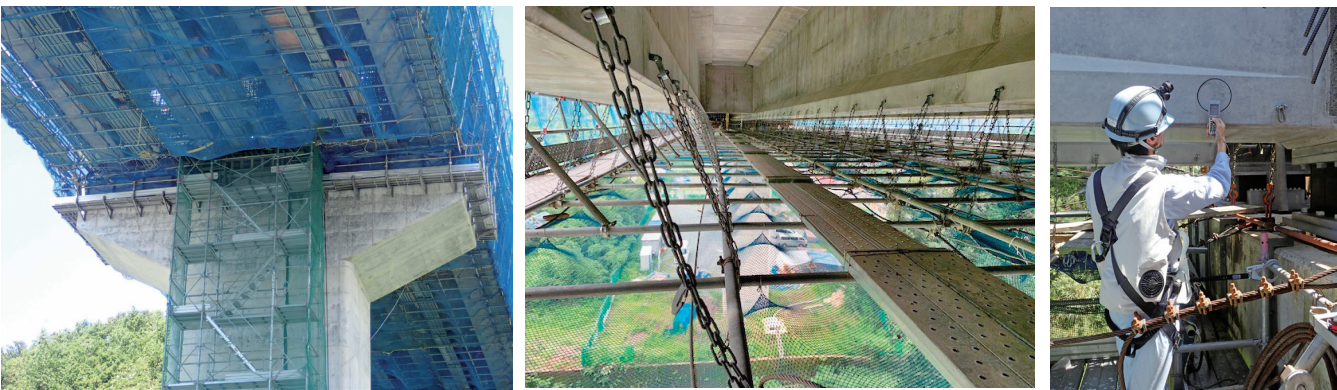
Examples of construction

Application to a building



- Concrete cover thickness quick check system
- Measurement and checking after form removal, and recording of the measurement results

Application to civil structures



Used in the underside of floor slab and the parapet wheel guards.



- Concrete product manufacturing information management
- Visual inspection information management