



1/24 REINFORCING BARS
for professional education,
business activities,hobbies,etc.

These are reinforcing bars, which are used as innerstructural material of reinforced concrete, precisely scaled down for the first time in the world in terms of material, shape, hardness, tensile strength, etc.

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Produced by : Mr. Toshio Suzuki, President of Kingo Seisakusho, Co., Ltd.
Scale : Corresponding to 1/12 - 1/24 scale
Material : Soft Steel
Vickers Hardness : about (HRC) 250

Surface treatment is scaled down version of actual reinforcing bars.

Specifications : Equivalent to SD295 ~ SD345
Length of the products (bars) : about 20cm (exception : 0.5mm thick bar : about 15cm)

Thickness of the products (bars) :
(Thick) about 1.4 mm Equivalent to D32
(Medium) about 1.0 mm Equivalent to D22
(Thin) about 0.7 mm Equivalent to D16
(Very Thin) about 0.5 mm Equivalent to D13

Use:

- 1) As test material for making scaled-down models of RC (=reinforced concrete) structures both for universities and general industries
- 2) As modeling material for construction companies and housing developers.
- 3) As a tool for explaining building construction to clients
- 4) For general model fans who make dioramas of reinforced concrete buildings.

1.4mm enlarged photo

By the way, the pitch of the surface texture of other thickness bars (1.0mm, 0.7mm & 0.5mm) is reproduced, with slight deformations. Close-up photos of each thickness

Example of construction:

Made of mini KEN and concrete sold on the market. Instant cement is used for connecting reinforcing bars.

Regarding the product:

- 1) It is essential to correctly understand the strength that a construction experiment can bear, and a reinforcing bar's inherent adhesiveness and joining characteristics with concrete. We have also consulted professors with expertise in other fields in our quest to create the most accurate "scaled-down reinforced concrete" (for example, to recreate 20mm diameter gravel, a size of about 1mm is needed).
- 2) We believe "mini KEN" can be a great tool for recreating the internal structure of a construction model and allow students to experience it in 3D. Furthermore, it can be used to recreate the internal structure of pillars, the structure of floors for areas like garages, etc. to obtain approval prior to actual construction.
- 3) Drawings are often too difficult to interpret and judge for most people, and conversely, they may feel that a large number of reinforcing bars will provide a sense of safety. In this sense, "mini KEN" is an effective

sales tool. It can be used to convince the client and let them easily judge for themselves that their once-in-a-lifetime purchase is of the highest structural safety standard. Once the contract is concluded, it can also be used as a commemorative item.

Background and purpose of this project

In the present information-intensive society, books of construction design are digitized using CAD, etc. Also in universities, lectures are available with CAD, and students are trained to cope with this trend after they go out into the world. However, in the reality, many of the students cannot visualize the drawings three-dimensionally, even after they go out into the world. Particularly they are in a situation that they cannot understand the effects of the arrangement of reinforcing bars and interference of spacers inside concrete construction, relationship between inner construction (like plumbing) and reinforcing bars. Furthermore, as it will be difficult to conduct large-scale construction experiments in future, so experiments with a precisely scaled-down small model, with comparable characteristics, will be necessary and essential in order to conduct them in a limited spaces.

So, it will be of great value to let students have actual experience by arrangement of reinforcing bars, inner construction, etc. with their own hands, based on the drawings of the actual construction which they drew by CAD, etc. Furthermore, construction experiments can be easily done, using a small scaled-down model, at the lectures. However, scaled-down educational construction materials, especially reinforcing bars which have precisely scaled down, strength characteristics, are not yet on the market. So, it is necessary to develop them. This project, with the above-mentioned background, aims to develop such scaled-down reinforcing bars, as a tool to teach students the ability of having three-dimensional and see-through images of the floor plan. Also, by letting students place reinforcing bars, their above-mentioned skill can be developed and they will understand why the bars are necessary at each structural location. Furthermore, they will understand the meaning of structural design, by conducting construction experiments, using their own hand-made small models. For that, it is necessary to develop materials not only scaled-down but also of the same characteristics.

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"Mini KEN" is a "Reinforcing Bar that was scaled to 1/24 scale".

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