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Product Name :

Plastic Bending Of Beams

Product Code :

SLE/EG/10



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Description :

Plastic Bending Of Beams (Product Code: SLE/EG/10) is an experiment in which a specimen beam is loaded at mid-span until it yields and forms plastic hinges, under three different end conditions: simply supported, fixed, or propped cantilever. A load cell assembly both applies and measures the force, a precision indicator tracks deformation, and one support runs on roller bearings to allow horizontal movement. It helps students see how a structural element can yield yet keep carrying load. The apparatus is made by **Jain Scientific Equipments Pvt Ltd (ScienceLab)**, Ambala, as lab equipment for college and university structures courses.

Key Details

Parameter	Detail
Type	Plastic bending and hinge formation experiment for beams
Support conditions	Simply supported, fixed or propped cantilever
Supports	Two; one includes roller bearings to allow horizontaltranslation
Loading	Load cell assembly applies and measures force at mid-span
Deformation measurement	Precision indicator
Concepts covered	Hinge position, failure load, yield moment, fully plasticmoment and form (shape) factor
Prediction methods	Textbook beam equations and bending moment diagrams

Typical Use

For each end condition, students first sketch the elastic bending moment diagram, work out the load at first yield, and predict where plastic hinges will form and what load will cause collapse. They then fit a specimen, apply load at mid-span with the load cell assembly and record force against deformation. A simply supported beam fails once a single hinge forms under the load; a propped cantilever or a fixed beam needs further hinges before it becomes a mechanism, so it carries noticeably more load beyond first yield.

Comparing the load at first yield with the collapse load leads to the ratio between yield moment and fully plastic moment, the form or shape factor, and shows how it gives an extra margin of safety. Students leave with a clear, physical sense of why ductile structures give warning before failure, which is central to modern design codes. It is well matched to departments investing in engineering educational equipment for advanced strength of materials.

Manufacturer

This apparatus is manufactured in Ambala, Haryana by **Jain Scientific Equipments Private Limited**, operating under the brand ScienceLab. Visit the company profile to learn about our range and approach.

Related Laboratory Equipment

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