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Impact Penetration Tester Type PEP

Use

The Impact Penetration Tester type PEP serves to determine the necessary curing time for safe stripping of moulds and cores made from cold, self-hardening sand mixtures and measure the subsurface strength of CO_2-silicate moulds and cores. A graduated probe is driven into the mould or core by a series of blows of equal impact. The number of blows required to cause a given penetration of the probe can be related to the subsurface strength of the material being tested, stronger materials requiring more impacts to cause an equivalent depth of penetration. The instrument consists of a hardened steel probe, graduated in one centimetre divisions attached to a hand operated, spring loaded mechanism which subjects the probe to a series of equally strong blows.

Test procedure

Before screwing the probe into the mechanism, actuate it a few times to ensure freedom of movement. Turn the knurled knob counter-clockwise to the outmost position and press the Impact Penetration Tester against a wooden surface until the blow is released.

The test is carried out as follows:

1. Screw one of the two probes firmly into the instrument.
2. If the mould or core to be tested is expected to be very hard, turn the knurled knob clockwise as far as it will go to give maximum spring pressure on the hammer.
3. Should the mould or core be relatively soft, the knurled knob has to be turned anticlockwise to give the minimum spring pressure on the hammer.
4. Place the point of the probe on the mould surface. Hold the instrument at right angles to the surface and press the instrument firmly inward until a definite impact is felt. It is important that the spring loaded hammer should be responsible for forcing the probe into the surface and hence only sufficient pressure should be applied by the operator to release the hammer mechanism.
5. Repeat this operation without withdrawing the probe and record the number of impacts necessary to penetrate the mould surface up to the first centimetre mark.
6. Continue impacting the probe into the mould, maintaining it at right angles to the surface, and record the number of impacts necessary for each centimetre of the probe to penetrate the mould.

For the determination of the safe curing time for moulds and cores made of coldhardening sand mixtures.

Diameter	approx. 22 mm
Length	approx. 142 mm
Length with probe	approx. 230 mm

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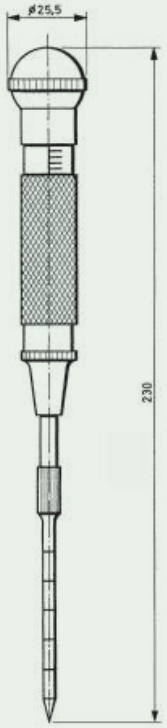
Interpretation of results
It is known that uniform hardening is not normally achieved from the surface to the interior of a mould or core during the hardening process. It is generally desirable to strip a mould from its box as soon as sufficient hardening has developed to avoid distortion or breakage, this time as a rule being much earlier than that of full uniform hardness development.

By plotting the number of impacts per centimetre of probe penetration against the depth of penetration it is possible to assess the hardness or internal strength at varying distances from the mould surface. Routine acceptance tests on cold self-hardening sand mixtures can be carried out with this instrument by assessing the number of impacts required to penetrate the probe a given distance into the mould surface as soon as the required subsurface strength for stripping has been achieved.

Note
To avoid damage to the probe care should be taken to keep the body of the instrument vertical line with the probe during penetration.



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