

## Profile Grinder

### Purpose

The **Profile Grinder** is used to obtain concrete powder by precision grinding at small depth increments for accurate determination of the chloride ion profile for the following applications:

- Following ponding of specimens in the laboratory, e.g., according to NT BUILD 443 or ASTM C1556, or
- On-site on structures that have been subjected to chloride ion ingress.

From the chloride ion content profile, the chloride ion diffusion coefficient can be estimated in accordance with ASTM C1556 and used for service life calculations.

### Principle

A grinding bit, 18 mm in diameter, grinds the concrete to a fine powder at selected, exact depth increments, selected between 0.5 mm to 2.0 mm. The bit is attached to a grinding machine that is held against the surface by a grinding plate. The grinding takes place by working the bit over the surface in three rotations. The grinding area is 73 mm in diameter and the maximum depth is 40 mm. The powder produced at each depth increment is collected with a battery-operated vacuum cleaner (Dust Buster) containing a re-usable filter. On a vertical face, the powder is collected in a plastic bag attached to the grinding plate. For every depth increment of 0.5 mm, approximately 5 grams of powder is obtained for analysis. It takes 4 to 6 minutes to obtain each sample and about 5 minutes to determine the chloride content using the **RCT** (see page 112).

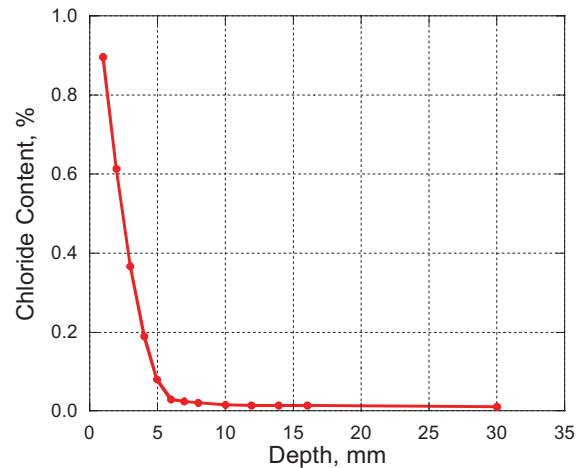
### Depth Accuracy

The depth increments are accurate to within  $\pm 2\%$

### Testing Examples



*Profile grinding of specimen subjected to 35 days of ponding in the laboratory. Chloride content of each sample is determined using the **RCT** (page 112)*

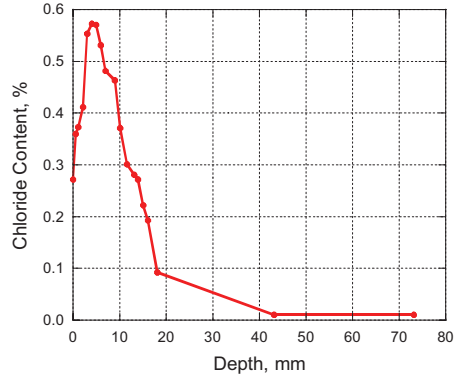


*Chloride profile of a specific concrete. A chloride coefficient of  $29 \text{ mm}^2/\text{y}$  is determined using Fick's second law of diffusion in accordance with NT BUILD 443 or ASTM C1556.*

# GI *Profile Grinder*



The **Profile Grinder** is ready for grinding on a 1-year old wall. The powder obtained for each depth increment is collected in a separate plastic bag. Chloride content at each depth is determined on-site using the **RCT**.



Chloride content profile for the 1-year old wall. The chloride diffusion coefficient was calculated to be  $75 \text{ mm}^2/\text{y}$ . It is estimated that another 5 years will elapse before initiation of corrosion of the reinforcement with a cover of 50 mm.

## The **Profile Grinder** Kit and Ordering Numbers



Item	Order #
Grinder unit consisting of variable-speed grinding machine, grinder housing, handle cover with flange and counter nut, two handles, and high performance grinding diamond bit	PF-1101
Grinding plate with green felt, attachments for plastic bag and top plastic cover	PF-1102
Grinding bench plate with screws and nuts	PF-1103
Attachment ring and two bolts	PF-1104
Allen key, 4 mm	CC-25
Two adjustable fastening pliers	C-102-3
Set of anchoring tools	CC-30
Two seating rubber rings	PF-1105
Plastic bags, 50 pcs	PF-1106
Brush	PF-1107
Measuring tape	RCT-1028
14 and 17 mm wrenches	C-155/151
Sponge	PF-1108
Dust mask	PF-1109
Silicone oil bottle	L-24
Spare green felt	PF-1111
Manual	PF-1112
Portable vacuum cleaner	PF-1200

### Complete **Profile Grinder** Kit PF-1100



**Portable vacuum cleaner with reusable filter PF-1200**

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