

FROSIO exam-day sheet

The rules and numbers for this exam, on one page you can print.

Film thickness and paint consumption

Dry from wet	$DFT = WFT \times VS \div 100$
Wet from dry	$WFT = DFT \times 100 \div VS$
Wet from dry, with thinner	$WFT = DFT \times (100 + \text{thinner } \%) \div VS$
Theoretical spreading rate	$m^2/L = 10 \times VS \% \div DFT \mu m$
Loss factor	$(100 - \text{loss } \%) \div 100$
Practical spreading rate	theoretical rate $\times$ loss factor
Paint needed	litres = area $\div$ practical rate; packs = litres $\div$ pack size, rounded up
Dead volume paint (primer only)	$L = \text{area} \times DV (L/m^2) \times 100 \div (VS \% \times \text{loss factor})$
Consumption factor	$1 \div \text{loss factor}$

Conditions

- Steel at least **3 °C above the dew point** during blasting, application and early cure; relative humidity often capped at 85 %.
- Dew point from air temperature and humidity (ISO 8502-4); steel temperature with a contact thermometer.
- NORSOK M-501: no final blast cleaning or coating above 85 % RH or with the steel less than 3 °C above the dew point; dust rating 2 or better (ISO 8502-3); salts at most 20 mg/m² NaCl (ISO 8502-6 and -9).

Surface preparation (ISO 8501)

- Part 1: rust grades A to D; blast cleaning Sa 1, Sa 2, Sa 2½, Sa 3; hand and power tool St 2, St 3.
- Part 2: P Sa, P St, P Ma for previously coated steel. Part 3: P1 to P3 for welds and edges. Part 4: waterjetting, with flash rust graded L, M or H.

Profile and cleanliness

- Profile (ISO 8503): G (grit) and S (shot) comparators, graded fine, medium or coarse. Replica tape (Part 5): subtract the 2 mil (50.8 µm) film.
- Dust (ISO 8502-3): tape, rated for quantity 1 to 5 and size class 0 to 5. Salts: Bresle patch (ISO 8502-6), then the conductivity of the water (ISO 8502-9).

Dry film thickness (ISO 19840)

- mean $\geq$ nominal; every reading $\geq$ 80 % of nominal; fewer than 20 % of readings between 80 % and 100 %; none above the maximum. Subtract 10, 25 or 40 µm for a fine, medium or coarse profile (25 µm if unknown).
- Readings per inspection area: 5 up to 1 m², 10 up to 3 m², 15 up to 10 m², 20 up to 30 m², 30 up to 100 m², then 10 more for each further 100 m².

Adhesion and degradation

- Pull-off (ISO 4624): report the stress and the failure mode: adhesive, cohesive or glue. A glue failure means the coating is at least as strong as the reading.
- Cross-cut (ISO 2409): 0 (nothing detached) to 5, for films up to about 250 µm; thicker films by X-cut or pull-off (ISO 16276).
- ISO 4628: blistering as density 0–5 with size S1–S5, for example 2(S3); rusting Ri 0 to Ri 5; cracking and flaking by density, size and depth; chalking by tape.

Corrosivity and durability (ISO 12944)

C1 to C5 and CX in the atmosphere; Im1 to Im4 in water and soil. Durability to first major maintenance: L up to 7 years, M 7 to 15, H 15 to 25, VH more than 25. A planning figure, not a guarantee.

Practical exam

Four hours at instrument stations, 48 points, 32 to pass. Start at the first free station. Verify the instrument, record each reading and judge it against the stated values.

Stop and ask

- Steel less than 3 °C above the dew point, or humidity above the specification's limit.
- Salts, dust or oil above the limits: soluble salts (ISO 8502-6 and -9), dust (ISO 8502-3), compressed air (blotter test, ASTM D4285).
- Mixed paint past its pot life, or a recoat window passed without the preparation the data sheet asks for.
- A hold point not yet released: stop until it is released. Work past an unreleased hold point, or work that does not meet the specification: record a nonconformance.