TOPIC
Site-specific correction factor

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Dustlight mobile app & web app

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YOUR OWN CORRECTION FACTOR FROM A GRAVIMETRIC REFERENCE

How to match Dustlight readings to the dust at your workplace in a few steps — using the laboratory result you already commission.

What Dustlight measures — and what it cannot see

Dustlight measures the respirable fraction of airborne dust optically, in real time, on the person. An optical instrument sees particles rather than mass or composition, so its response depends on the density, refractive index, shape and size distribution of the dust. Every Dustlight is factory-calibrated against a standard reference dust, and its material presets cover typical workplace aerosols. Your dust, however, is a mixture that exists only at your site.

RESPIRABLE FRACTION · ISO 7708

The particles that penetrate to the unciliated, deep airways of the lung. ISO 7708:1995 defines it as a sampling-efficiency curve over the whole particle size range — a health-related convention, not a single PM cut-off such as PM4 or PM2.5. Dustlight evaluates the respirable fraction to this convention, and a gravimetric cyclone sampler collects the same fraction — which is what makes the two methods comparable. Compare like with like: respirable against respirable, never against inhalable or total dust.

Why a correction factor

Gravimetric sampling — a filter weighed in an accredited laboratory — remains the reference method for compliance. It yields one number for one shift, weeks later. Dustlight shows the pattern during the shift, but its absolute level may differ from the laboratory result for your dust mix. Occupational-hygiene guidance ranks a side-by-side gravimetric comparison as the most rigorous way to correct a direct-reading instrument.

A correction factor closes that gap: the ratio of what your laboratory reported to what Dustlight measured over the same period in the same place.

Correction factor = Gravimetric respirable dust result ÷ Dustlight respirable dust average (same period, same position)

LABORATORY RESULT		DUSTLIGHT AVERAGE		CORRECTION FACTOR
1.10 mg/m³	÷	1.00 mg/m³	=	1.1

Sample long enough for the filter to carry a mass your laboratory can weigh with confidence — a reference near the limit of quantification carries more uncertainty than the factor you derive from it.

Once applied, every reading — live value, STEL, TWA, charts and reports — is scaled to your reference: a raw 1.00 mg/m³ is shown as 1.10 mg/m³. Warnings then fire when your dust reaches the limit value.

With a material analysis, one step further. If the laboratory also determined the share of the assessed component — say 30 % crystalline silica — you enter that share too. Dustlight then warns on that component against its limit value, instead of checking total dust against a limit that applies to one constituent.

Component concentration = Dustlight reading × correction factor × material share (from the laboratory report)

DUSTLIGHT RAW		FACTOR		SILICA SHARE		SILICA
1.00 mg/m³	×	1.1	×	30 %	=	0.33 mg/m³

From now on, Dustlight outputs only this value: **0.33 mg/m³ crystalline silica** — on the device screen, in the app and in all data and reports. The raw reading is no longer shown, and warnings compare this value against the silica limit value.

Our recommendation for a robust factor

2 FILTERS **1–2** DUSTLIGHTS

Two gravimetric samples, at least one Dustlight — preferably two

Two gravimetric samplers side by side. Dust clouds are not homogeneous, and single filter results can deviate considerably from one another. Two filters show how reliable your reference is; use their mean.

One Dustlight completes the flow; a second one verifies it. Two devices worn next to each other should read consistently — if they do, the reference position was representative.

Same breathing zone, same period. Wear the Dustlight and the cyclone inlet close together on the collar; record start and end times exactly.

Device settings: Eco Mode, measurement interval 1 second. This gives more than 13 hours of battery life. Start with a fully charged Dustlight; for a stationary set-up consider mains power. The Dustlight must be on, at the 1-second interval, for the entire time the gravimetric sampler runs.

Representative conditions. Sample during typical work, long enough for the laboratory to weigh a meaningful mass — ask your lab for its minimum.

Upload before you calculate. Dustlight stores data on the device; sync after the shift so the app can find your reference period.

What this is — and what it is not

Dustlight does not replace gravimetric sampling as the reference method for compliance. It complements it: once the factor is set, fewer repeat reference measurements are needed, and the real-time pattern shows where and when exposure happens.

A factor is valid only for the dust it was derived from — this process, this material, this work area. Other areas or processes need their own factors.

Re-derive it whenever the material changes or an essential part of the workflow or surroundings changes — new raw material, new extraction, a relocated process.

Factors can be shared across your organisation, so every site assesses against the same reference. Document the factor and its basis in your monitoring reports.