

TOPIC

Site-specific correction factor

APPLIES TO

Dustlight mobile app & web app

PLANS

Business, Corporate

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/m ³	÷ 1.00 mg/m ³	= 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/m ³	× 1.1	× 30 %	= 0.33 mg/m ³

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.

STEP BY STEP IN THE APP

1 Run the reference measurement

Set the Dustlight to Eco Mode, measurement interval 1 second (over 13 h of battery life), fully charged; for a stationary set-up consider mains power. Place cyclone samplers and Dustlight side by side in the breathing zone, start all together and record start and end exactly. The Dustlight must run for the entire sampling period. Recommended: two samplers, one or two Dustlights. After the shift, connect each Dustlight and sync.

YOU NEED

1. A laboratory result for respirable dust with exact start and end time — optionally with a material analysis.
2. A Dustlight in Eco Mode at a 1-second interval that measured next to the sampler for the entire period, data uploaded.
3. A Business or Corporate plan (mobile app or web app).

2 Open the configurations

Device → Material Configuration → tab Correction Factor Configurations → Add Correction Factor Configuration. Factors your organisation already uses are listed here.

3 Start the calculation

The dialogue summarises what you need. Tap Calculate Factor. If you already know a factor and material share, use Enter factor and material percentage manually.

4 Enter the reference period

Enter the exact start and end date and time of the gravimetric sampling, then Find Dustlight Data.

5 Select the Dustlight

Dustlights that recorded during the period are listed with their average. Pick the one that ran next to the sampler and check Covers the full period. If nothing is found: connect the device and upload, or enter the average manually.

6 Enter the laboratory result

Type the reported respirable dust concentration (mean of your two filters). If the lab analysed the material, switch on Material Analysis, name the substance and enter its result in $\mu\text{g}/\text{m}^3$ or as % of respirable dust.

7 Review and name the factor

The app shows Dustlight average, lab result and the resulting factor. If the factor looks implausible, the app warns you — check period, position and units. Name the configuration after the place or process, e.g. Bagging Area, and switch on Share with entire organisation.

8 Check the exposure limits

The limits shown are the regulatory defaults for the selected base material in your country. Adjust them only if you know the rules for your specific material. Tap Create.

9 Apply

Apply the configuration to the connected Dustlight now, or later from the device's material settings. It can be assigned to any Dustlight in your organisation; device and app label readings with its name.

Verify with your second Dustlight

If you wore a second Dustlight, compare its average for the same period with the first — step 5 lists both. Consistent readings confirm the position was representative and the factor is sound. If they differ noticeably, find the cause — covered inlet, different position, incomplete period — before rolling out. Keep the factor unchanged and documented while in use; re-derive it when the material or an essential part of the workflow or surroundings changes.

Good to know

- Setting a material share too low understates exposure. If you do not know the share, leave the material analysis off.
- Two routes, not one: the Crystalline Silica slider sets a known share on the standard material; a custom configuration needs a gravimetric reference.
- Wearer, safety officer and report recipient should all know that a value refers to the corrected configuration.

Please note: Dustlight measures respirable dust optically and cannot identify the composition of individual particles. It is intended for orienting, real-time exposure assessment and does not replace gravimetric sampling as the legally recognised reference method.

References: ISO 7708:1995, Air quality — Particle size fraction definitions for health-related sampling · Australian Institute of Occupational Hygienists (2026), Technical Paper: Minimising Uncertainties When Using Direct Reading Dust Monitoring Instruments, sections 6.2–6.6 and 8.2.