

# Chapter 3

## Site conditions and moisture testing

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### 3.1 Job site conditions

- Before job testing, the building envelope must be sealed and weather tight (walls, roofing, windows, doorways etc.).
- The installation of floor covering must not begin until work of all other trades has been completed.
- It is strongly recommended to use a permanent, operational HVAC system. If temporary systems are employed, they must ensure consistent control of both temperature and humidity. Altro specifically advises against using propane heaters, as they release moisture into the air, which can affect the adhesive, be absorbed by the substrate, and create condensation or a dew point issues. A minimum temperature of 68°F (20°C) must be maintained for at least 72 hours before, during, and there after.
- The installation area and Altro materials must be maintained and installed at a minimum of 68°F (20°C) and a maximum of 85°F (29°C) Slab temperature should be between 65°F (18°C) and 80°F (27°C). Altro Ollero must be maintained and installed between temperatures of 57°F(14°C) and 72°F (23°C). Relative humidity level extremes should also be avoided.
- All materials and subfloors must be fully acclimated to installation temperature.
- The areas of installation must be adequately lighted to allow for proper inspection of the flooring and subfloor. This is especially critical when flash coving.
- Area of installation must not be within 10°F (5°C) of dew point. Please reference the enclosed dew point chart. Low relative humidity (dry air) must exist and be maintained during the application of adhesive. Installations must not take place when the substrate of the area of installation is within 10°F (5°C) of dew point.
- Perform and document moisture tests of the subfloor to ensure it is sufficiently dry and within moisture limitations of the adhesive and flooring.
- Prior to starting the installation please advise the general contractor and/or end user about the subfloor moisture requirements, all applicable job site, and site storage requirements that will be needed at time of installation.
- Remember if you cover a subfloor, underlayment or other surface with floor covering, you have, in essence, approved it.
- Check the adhesive data sheets for information on when traffic, loads, and maintenance can begin on the finished flooring

#### Dew points and humidity

Dew point is the temperature at which the humidity in the air begins to condense in and on a surface. Floor coverings and adhesives should not be installed any time the air temperature or concrete surface temperature is within five degrees of dew point. See the chart below for a breakdown of dew points in different conditions.

#### Dew point temperature in Fahrenheit

	Relative humidity									
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Air temp (F)	Dew point (concrete surface temperature)									
40	5	8	14	18	24	28	31	34	37	40
45	5	9	16	23	28	32	36	39	42	45
50	6	13	21	27	33	36	40	44	47	50
55	8	16	25	31	36	41	45	49	52	55
60	9	20	29	35	41	46	50	54	57	60
65	10	24	33	40	46	51	55	58	62	65
70	13	28	37	45	50	55	60	64	67	70
75	17	31	42	49	55	60	64	68	72	75
80	20	35	46	53	60	65	69	73	77	80
85	24	40	50	58	64	69	74	78	82	85
90	27	43	54	62	69	74	79	83	87	90
95	30	48	59	67	73	79	84	88	92	95
100	34	52	62	71	78	83	88	93	97	100

### Procedure to determining a dew point

- Test and read the air temperature in the room.
- Test and read the relative humidity in the room.
- Test and read the concrete surface temperature.
- Find the air temperature on the accompanying dew point chart. (Left hand side, up and down the chart.)
- Find the relative humidity on the dew point chart. (Top of chart, across.)
- Intersect the air temperature (sideways movement) with the relative humidity (downward movement) on the dew point chart.
- Obtain the figure at this intersection.
- Compare this figure with the concrete surface temperature.
- If these figures are within five degrees of each other, floor covering should not be installed.

## 3.2 Moisture testing

Moisture testing is crucial to assess whether a concrete slab is suitable for receiving a resilient floor covering. It should be conducted on all concrete slabs, regardless of age or grade level, including areas where flooring has already been installed. Testing must be done under service conditions (fully enclosed building, HVAC running). The tests measure current moisture levels and do not predict future conditions. Be sure to document and time stamp all testing results for later reference, with photos and required documents by testing parties.

### Testing for moisture in accordance with:

**ASTM F2659** Preliminary Evaluation of Comparative Moisture Condition of Concrete, Gypsum Cement and Other Floor Slabs and Screeds Using a Non-destructive Electronic Moisture Meter, such as the Tramex X5 or similar. Electrical Impedance Testing is recommended as an effective method for determining the ideal start time for the more complex ASTM 1869 and/or ASTM F2170 moisture testing procedures.

**ASTM F2170** Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

**ASTM F1869** Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride. This test may be used with in floor heating systems and where damage caused by drilling holes into the concrete slab is not conducive without X-Ray equipment.

### Additional tests

**ASTM D4263** Standard Practice for Indicating Moisture in Concrete by the Plastic Sheet Method can be utilized to verify whether capillary moisture is present and can show that MVER is present, and warrant follow up testing as listed above.

**ASTM F3191** Standard Practice for Field Determination of Substrate Water Absorption (Porosity) for Substrates to Receive Resilient Flooring can be utilized to obtain a qualitative assessment of substrate porosity and whether the substrate should be regarded as porous or nonporous before applying any water-based adhesives.

### At the time of installation:

Testing the substrate with a electrical impedence meter (EIM) such as a Tramex (refer to ASTM F2659) is recommended due to possible issues related to topical moisture from dew point conditions. Refer to the instructions of the EIM used for it pass / fail thresholds. If results are above acceptable levels, contact Altro Technical Services prior to beginning installation. If these conditions are not properly addressed, the open and working times, bond strength, and setting of the adhesive may be affected.

Acceptable moisture and pH limitations for each Altro adhesive can be found on the data sheets.

### pH testing

**ASTM F3441** Standard Guide for Measurement of pH Below Resilient Flooring. Acceptable pH limits can be found on the adhesive data sheets. Test results must not exceed the limits of the adhesive; if they do, the installation must not proceed until the problem has been corrected.

### Moisture mitigation

If test results show that the moisture levels exceed the acceptable limits for the adhesive the floor, installation should not proceed until the issue is resolved. Altro does not guarantee any specific product or method for addressing high moisture content. Several manufacturers offer products designed for moisture remediation. We recommend consulting the ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring and ASTM F3010 Standard Practice for Two-Component Resin-Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings for guidance. The primary objective is to ensure that the concrete slab has reached sufficient dryness to allow for floor installation, thereby preventing potential long-term moisture-related problems. It is important to note that test results reflect the current conditions, and these tests cannot reliably predict future moisture intrusion.