Conversion of Moisture Content Units in Concrete

Several methods are available to determine whether the moisture content in concrete is at an acceptable level for the application of finishes. The most widely used methods result in three different units:

Calcium carbide method		= %CM
Darr method	= moisture content by mass / weight	= %M
Hygrometer test	= relative humidity	= %RH

Without going into details about strengths, weakness, sources of errors of each of these methods, instruments on the market usually indicate the measuring results in one of these units. On the other hand, the flooring industry has established guidance values for their different products referring to these methods. These guidance values are defined by the manufacturer and usually specified in the datasheet of each product, e.g.:

BASF
The Chemical Company

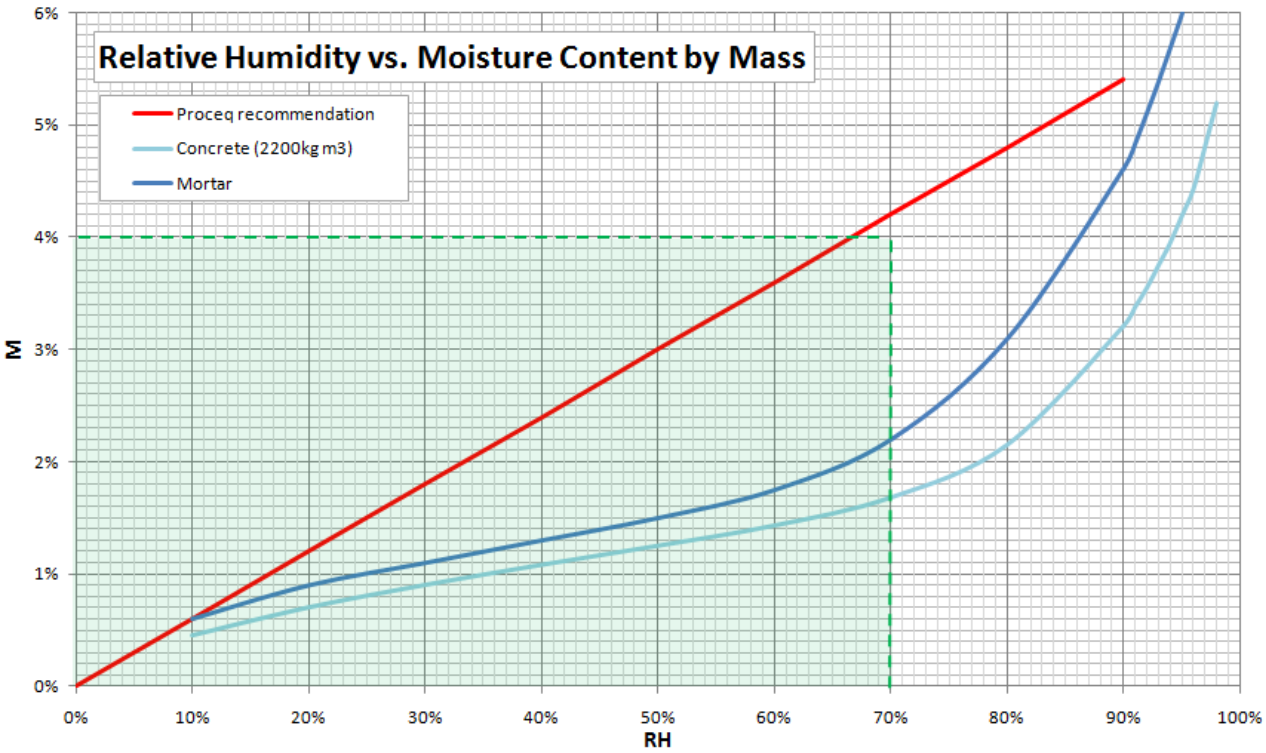
Preparation
Substrates to be coated have to be firm, dry, load bearing and free of loose and brittle particles and substances which impair adhesion such as oil, grease, rubber skid marks, paint or other contaminants. The moisture level must not exceed 4 % (check with CM equipment), which corresponds to maximum 75 % relative humidity according to ASTM F 2170. If using the calcium chloride test, the maximum allowable vapour emissions is 4.0 lbs. as per ASTM F 1869. The temperature of the substrate must be at least 3 °C above the current dew point temperature.

Sika®

Application	Moisture level requirements using Tramex method (%)	Moisture level requirements using CM method (%)
3/4" solid or engineered over concrete	4%	2.5%
3/4" solid or engineered over concrete with Primer MB layer	6%	4.0%
3/4" solid or engineered over in-floor heating over concrete	3%	1.8%

*Tramex method = moisture content by mass

The Hygropin is a highly accurate hygrometer, measuring relative humidity and temperature quick and precisely. We advise our customers to follow the ASTM-F2170 procedure and refer whenever possible to the RH levels recommended by the flooring product manufacturers. In cases where the RH levels are not available or %M or %CM values are required, you can either use the following charts or use the implemented conversion function in the Hygropin (Firmware 2.0b).



*Sorption isotherms for concrete and mortar (Straube, ACI Committee Report 302.2R)