

# The Truth About Interactive Whiteboard Operating Specifications

Interpreting temperature and relative humidity

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SMART Technologies Inc.

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# Introduction

When it comes to evaluating operating specifications for interactive whiteboards,<sup>1</sup> it is important to understand what the numbers mean and to be wary of claims about the ability of different boards to withstand extreme temperature and humidity conditions. The specifications used to prove or disprove such claims may be cited out of context, and they may be irrelevant given the other technology products that connect to your interactive whiteboard. It is best to consider operating specifications for interactive whiteboards in the context of the whole technology package that you are assembling.

## Understanding Operating Specifications

All technology manufacturers recommend certain temperature ranges and humidity levels for the safe operation of their product. These are typically set by a series of formal or standard tests. Product specifications often list this information under a heading such as *Environment*. Here, for example, are the operating specifications for a SMART Board™ 680 interactive whiteboard:

<b>Storage</b>	–40°F to 120°F (–40°C to 49°C) with up to 95% humidity noncondensing
<b>Operating</b>	41°F to 95°F (5°C to 35°C) with up to 80% humidity noncondensing

### Temperature ranges

The temperature ranges are straightforward. Within these, the manufacturer typically ensures a product will work. If it does not, the manufacturer will often repair the defect or replace the interactive whiteboard within a specified period.

### Relative humidity

Generally speaking, *humidity* refers to the amount of water

vapor in the air relative to the amount of water vapor the air can potentially hold. But these amounts vary, depending on temperature: warm air can hold more water vapor than cold air. The term relative humidity is used to describe this phenomenon and is expressed as a percentage.

In operating specifications, relative humidity is often said to be noncondensing when the manufacturer has performed a standard environmental test confirming the point at which water vapor condenses to a liquid form and coats electronics, rendering them inoperable or unsafe.

At SMART, for instance, all SMART Board interactive whiteboards undergo standard environmental tests, including temperature and humidity.

## Considering the Whole Package

Interactive whiteboards do not function in isolation. They are part of a system that usually includes at least a computer and projector. You should review the operating specifications of each of these products in order to assess the optimum environment for an interactive whiteboard.

For instance, a safe room (or ambient) temperature range for most computers is 60–75°F (16–24°C),<sup>2</sup> which is far more restrictive than the typical specifications for interactive whiteboards. As well, many of the most commonly available projectors will not tolerate operating temperatures lower than 41°F (5°C) or more than 80% humidity noncondensing.

Hardware	Temperature	Relative humidity noncondensing
Interactive whiteboard	41–95°F (5–35°C)	Max 80%
Computer	60–75°F (16–24°C)	Max 80% <sup>3</sup>
Projector	41–95°F (5–35°C)	Max 80% <sup>4</sup>

<sup>1</sup> This white paper discusses only front-projection interactive whiteboards. SMART offers a variety of rear-projection interactive whiteboards. For more information, visit [www.smarttech.com](http://www.smarttech.com).

<sup>2</sup> [http://searchdatacenter.techtarget.com/sDefinition/0,290660,sid80\\_gci1062312,00.html](http://searchdatacenter.techtarget.com/sDefinition/0,290660,sid80_gci1062312,00.html), August 29, 2006

<sup>3</sup> <http://pcsupport.stritch.edu/cobhelp/laptop.php>, September 1, 2006

<sup>4</sup> Temperature and humidity specifications based on survey of 15 projectors on brand name manufacturers' websites, September 1, 2006

In effect, operating specifications for other products in your technology package may make the extreme ends of interactive whiteboard operating specifications irrelevant.

The British Educational Communications and Technology Agency (BECTA) recommends the following ideal operating conditions for information and communication technology (ICT) systems: 64–75°F (18–24°C) with humidity between 40% and 60%. This range also happens to best suit the relative comfort of the people using ICT.<sup>5</sup>

## A Complete Picture

When evaluating interactive whiteboards, you will undoubtedly compare operating specifications for all brands under consideration. While this step is important, it is also essential to consider specifications for the computer, projector or other products that will form part of your technology package. There is no point in making a buying decision based on an interactive whiteboard's ability to withstand temperature and humidity extremes if the computer or projector connected to the board have more restrictive specifications.

SMART has been manufacturing interactive whiteboards since 1991 – longer than any other interactive whiteboard manufacturer in the world. It has installed more interactive whiteboards in more countries than all other manufacturers combined. Part of that success comes from having a strong team of research scientists and engineers who, in the design of our technology products, conduct all the standard environmental tests and pay attention to the other products that have to work with them.

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<sup>5</sup> [www.becta.org](http://www.becta.org)