

PROFESSIONAL PROTECTION FOR HARDWOOD FLOORS™

# POLYBALLS



Polyballs are beads of paint or finish which protrude from cracks in floors when the moisture content (MC) of the wood rises, causing the cracks to close up. Paint polyballs are a bad problem, as they can be smeared over the rest of the floor, possibly requiring screening or even recoating. Polyballs typically occur in the spring on jobs that were completed the previous winter. Let's analyze why:

- Wood furnished from the north in winter is typically supplied at a low moisture content. It is milled at around 6% MC and stored at about the same.
- During the winter, even in the south, humidities are at the lowest. Couple this with possible heating at the facility and the moisture content can be even lower.
- If the floor is laid and finished at this low moisture content, there will be considerable expansion in the spring during higher humidities. This can cause great compression of any paint or finish in the cracks of the floor.
- Paint and finish which accumulate in the cracks of the floor, are denied the oxygen required for curing and could be soft [semisolid] when the spring expansion occurs.
- Facility owners and operators may be resistant to maintaining proper temperature and humidities in their facilities due to the high cost of air conditioning. Therefore, we must estimate the worst case temperature and humidity as an acclimation condition. On the other hand, floors laid in spring and summer will acclimate to a higher, more representative MC, thereby lessening the problem.

## WOOD MOISTURE CONTENT FOR TEMPERATURE AND HUMIDITIES [%]

		Relative Humidity [%]																	
		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95
Temperature (F)	40°	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3
	50°	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3
	60°	2.5	3.6	4.6	5.4	6.2	7.0	7.8	8.6	9.4	10.2	11.1	12.1	13.3	14.6	16.2	18.2	20.7	24.1
	70°	2.5	3.5	4.5	5.4	6.2	6.9	7.7	8.5	9.2	10.1	11.0	12.0	13.1	14.4	16.0	17.9	20.5	23.9
	80°	2.4	3.5	4.4	5.3	6.1	6.8	7.6	8.3	9.1	9.9	10.8	11.7	12.9	14.2	15.7	17.7	20.2	23.6
	90°	2.3	3.4	4.3	5.1	5.9	6.7	7.4	8.1	8.9	9.7	10.5	11.5	12.6	13.9	15.4	17.3	19.8	23.3

## HOW DO WE AVOID SITUATIONS WHICH RESULT IN POLYBALLS?

First, we must establish or estimate the highest moisture content [MC] of the year for the floor to be installed. Use the chart on the front side from the NWFA [Water and Wood] Handbook to estimate the normal MC of the wood, based on temperature and relative humidity [RH]. Consider an example of predominant winter conditions of 50°F and 25% RH. This is when the floor is to be laid and finished. For this same facility we can project a spring or summer condition of 70°F and 75% RH. Refer to the chart and you will see a moisture content change from 5.5% to 14.4% or a change of 8.9%! This translates into a dimensional change of 0.70" across ten 21/4" boards [8.9 x 10 x 2.25" x .00353]. [Change in MC x # of boards x board width x expansion factor for maple]. Of course, this dimension increase is not possible and is translated into extreme pressure between boards. This is the pressure that causes polyballs. If this floor had been laid and finished at a moisture content closer to the worst case of 14.4, there would have been little expansion and no polyballs.

To ensure polyballs do not ever happen we hope you will pay close attention to this winter moisture content problem of both the subfloor and the flooring. When moisture content is low it must be raised through the use of humidifiers or other means. To check moisture content without a moisture meter, or if you question the meter reading, assemble ten boards and measure the overall width. These boards were milled at 6%. For every 1% of moisture content over that at which it was milled, these ten boards will grow in width about 1/8". Use this guide to establish proper moisture content. If there are open cracks in the floor, assume a low moisture content. Increase the moisture content before applying the finish.

As an additional measure to prevent polyballs, we recommend that multiple layers of paint NOT be used. There is a new masking system which allows the use of only one layer of paint, even on logos.

As an example; if you were going to letter a school name on a border, using this new system, you would paint the letters first. Then a computer generated mask is placed over the letters and the border is painted. This actually leaves a small amount of wood showing around the perimeter and the inside of the letters, which looks more professional.

Finally, to eliminate polyballs we recommend adding POLOPLAZ Super Dry catalyst to your paint in the winter. This will harden the paint, even in the cracks and reduce or totally eliminate the problem.

When polyballs do crop up, get to them QUICKLY. Oftentimes these balls can be wiped up with mineral spirits if they are still wet. If they have become hard, a straight edge or a drywall knife can be used to break them off. Train your local maintenance personnel how to deal with them and the problem will not be severe.

Everyone's warranty should require that the facility owner maintain the proper temperature and humidity conditions in any facility with a wood floor. Explanation of the consequences of not doing so [i.e. polyballs, cupping, etc.] should be clearly explained.

This will at the least give you a point of negotiation when dealing with the problem. Together let's eliminate these polyballs!