

# Envirolac and R1374

## Sub-Zero Cold Check Testing

**Author:** Chris Boyer

**Title:** Development Chemist

**Date:** September 29, 2014

**Customer reference:** Northern Coating Supply

**Product code reference:** IX-7812XX, IX-284125 (IX-2850XX), R137415000, IX-782720

**Project reference:** P-144

**Lab book reference:** CB-13332

### Conclusions:

1. Envirolac, Envirolac D, Envirolac HS and R1374 did not exhibit checking, cracking or delamination when used as a sealer and topcoat on oak cabinet doors at a total dry film thickness of 1.6 – 1.9 mils and exposed to two hot/cold cycles from 120°F to -40°F.

**Background:** Envirolac precat lacquer and R1374 Water-Based Self Sealer are occasionally coated onto wood articles that are installed in buildings that are left unconditioned in the winter and summer months. These types of coatings are not generally tested at the low temperatures that are present at the northern latitudes during the winter months. As a result, the coatings are occasionally not sufficiently robust to withstand these very low temperatures.

**Objective:** Complete two hot/cold cycles and observe the condition of the Envirolac precat lacquer and R1374 Water-Based Self-Sealer.

**Experimental approach:**

- Spray apply coatings to wood.
  - Onto an oak cabinet door apply two coats (seal + topcoat) of Envirolac.
    - 1.6 – 1.9 mils total dry film thickness
    - Envirolac; IX-781210
    - Envirolac D; IX-284125 (AKA IX-2850XX) catalyzed
    - Envirolac HS; IX-782720
    - R1374, R137415000 (sprayed onto maple)
  - Allow doors to cure at ambient laboratory conditions for 7 days.
- Conduct hot/cold cycle test
  - Place doors in oven at 120°F and 50% relative humidity for 1 hour.
  - Remove doors and let them equilibrate under ambient conditions for 30 minutes.
  - Place dry ice into a cooler and place the cooler into a freezer (ambient temperature was -40°F). Place doors into the freezer for 1 hour.
  - Remove doors and let them equilibrate under ambient conditions for 30 minutes.

**Results:** Pieces of wood coated with Envirolac and R1374 were exposed to two cycles of hot/cold testing with the temperature of the cold cycle at -40°F. Twenty-four hours after the second cycle was completed there was no checking, cracking or delamination of the coating observed on the door samples.

**Conclusions:** Envirolac, Envirolac D, Envirolac HS and R1374 did not exhibit checking, cracking or delamination when used as a sealer and topcoat on oak cabinet doors at a total dry film thickness of 1.6 – 1.9 mils and exposed to two hot/cold cycles from 120°F to -40°F.

**IX-284125**  
**Post exposure**



**IX-781210**  
**Post exposure**



