

Natural Cork® Homogeneous and Cork Colors™ installed over radiant systems:

People are rediscovering the extreme comfort and energy efficiency of this type of heat. Since the interest rekindled in the late seventies and early eighties, a new industry has grown up around radiant floor heating. The 21st century has once again catapulted radiant heat flooring into use addressing alternative and efficient consumption of fossil fuels and energy. The cost effectiveness of new technologies and construction techniques has made the comfort of radiant heating affordable and adaptable to almost any situation.

For centuries, the utilization of radiant floor heating took place, for instance; the Romans channeled hot air under the floors of their villas, the Koreans channeled hot flue gases under their floors before venting them up the chimney and in the 1930s, architect Frank Lloyd Wright piped hot water through the floors of many of his buildings. To some, the greatest advantage of radiant floor heating is aesthetic. The system is "invisible." There are no heat registers or radiators to obstruct furniture arrangements and interior design plans. Radiant floor systems also eliminate the fan noise of forced hot air systems.

If you look at the floor covering R-Values listed by the Radiant Panel Association, you can see that the 1/8" cork is a little less than for 3/8" engineered wood.*Any resistance you put over the radiant heat will reduce system efficiency, driving more heat down into the slab and less into the interior space. Floor covering suits when achieving acoustics and comfort in a space. That said the values of USF Contract Natural Cork® tiles agreeably become acceptable over radiant heat flooring in the industry. The reality is not the floor covering but rather the slab encasing the heating system. The heat loss to the slab is going to be huge, regardless of what you use for a floor covering. If possible, it is better to find some way to insulate UNDER your heating tubes.

Here are some numbers* (R-value):

1/8" cork tile = 0.28

for comparison...

linoleum or rubber tile = 0.05

carpet w/ foam rubber pad = 1.23

3/4" hardwood flooring = 0.68

*from the Sequoia Press Pocket Reference, 3rd edition

Radiant Heat source is directly beneath the flooring covering which may gain moisture or dry out faster than in a home with conventional heating system. Installation of USF Contract Natural Cork® tiles is acceptable as long as the end user understands that joints between parquet tiles could become more visible during heating season.

Technical Requirements:

- ◆ The subfloor temperature should never be below 65 °F (18 °C).
- ◆ Prior to installation, once the slab has cured, turn heat on regardless of season; keep this temperature for at least 5-6 days. Maximum surface temperature should never be more than 85°F. The temperature of the room must remain at the room temperature of 70°F (21 °C) to 72 °F (22 °C) regardless of season.
- ◆ USF Contract will not warrant gluing directly on low-density concrete slab less than 3,000 psi.
- ◆ R.H. should be in the range of 35% to 65%; indoor climate can have adverse effects on the flooring itself and its processing.
 - Low temperatures lead to a considerable increase in the setting time and reaction time of adhesives and leveling compounds.
 - The drying time for primers and leveling compounds and the airing time for adhesives will likewise increase in high humidity.
 - The corresponding details of times given by the manufacturers of adhesives standardize at a temperature of 68 °F (20 °C) and 50 % R.H. as a rule. This is why floor temperature and humidity measurements are helpful.
- ◆ Conduct calcium chloride moisture tests to ensure that moisture emission levels are less than 3 lbs/1000ft²/24 hours (USA and Canada).
- ◆ The moisture content of concrete subfloors should be as indicated below: -when using a CM moisture-gas pressure gauge measuring instrument
 - USF Contract cork tile installations over concrete require sealing (insulation) against rising dampness if

there is no cellar underneath (basement). Water-repellent concrete, crawl spaces or similar areas are not sufficient to prevent the migration of damp into the subfloor.

- Alkali testing - pH: In addition to moisture testing, you may also test the concrete for alkalinity. It is quite possible during curing especially on newly poured slabs, alkali salts have carried to the surface by moisture. These alkali salt deposits will adversely affect the adhesive bond. The flooring contractor can test for alkalinity of the concrete with a special pH testing paper. If you have a pH Reading of 10 or higher, you must neutralize the alkalinity before beginning the installation.
 - Screeds with underfloor heating: when installing USF Contract tiles in a heated subfloor installation, the surface temperature of the subfloor must not exceed 82°F (28°C).
 - Depending on the system involved, this kind of screed is 2 to 3 inches (45 - 65 mm) thick.
 - Testing the moisture of the subfloor using the CM meter (moisture-gas pressure gauge) is always possible if the installer of the screed marked the measuring points. This is the only way to avoid damaging of the heating pipes while taking test samples from the screed. If there are no marks, the flooring contractor must register a complaint to the general contractor.
 - The temperature of the screed must remain constant for 3 days after the floor covering installation. The temperature of the subfloor should not exceed 82°F (28° C) over the lifetime of the installation.
 - Follow the instructions supplied by the subfloor heating system manufacturer/contractor or contact your supplier for more detailed information.
- ◆ The flooring must not close expansion joints in the building. If the flooring is adhered across expansion joints in the building, it may tear, for it cannot “work” with the movements of the building. Expansion joints for the building are common, in large areas. Expansion joints, which do not run through the whole of the building (e.g. construction joints in the screed), but are designed merely to absorb tension during setting, are not what is meant here. The flooring contractor will, however, be well advised to consult with the customer concerning the connection to expansion joints.

Good measure understanding:

- ◆ Fading: cork contains organic pigments. Just like other wood products, cork will yellow and fade when directly exposed to sunlight.
 - Where possible, use drapes or other systems to protect your floor from excessive light.
- ◆ Joints: Cork floor systems expand and contract in response to fluctuations in temperature and humidity.
 - By controlling the environment, maintaining an adequate temperature and R.H., you will minimize the visible effects of the normal contraction and expansion of your floor. In very dry climates, the use of a humidifier might be necessary.
- ◆ Protection: You may protect your cork floor by taking the following precautions:
 - To help eliminate fine particles of dirt/grit that act like sandpaper and will scratch any floor, vacuum or sweep as needed.
 - Immediately wipe up spills.
 - Use walk-off mats at entrance doors and in front of wet areas.
 - Avoid rubber backed or other non-ventilated mats or rugs.
 - Weight distribution is a key factor in preventing indentation. Dents will recover in time as long as the cellular structure of the cork has not been broken.
 - Install proper protectors under “feet” of furniture. Furniture will require different types of protectors in order to achieve maximum weight distribution.
 - Resilient pads such as those made of felt, flexible rubber, and saucer-shaped plastic glides will work for most furniture.
 - Caster wheeled chairs should have wide casters.
 - Use of protective mats under office chairs is a good measure of abrasive protection.
 - Never use tape or other adhesive products on this surface.

Good measure maintenance:

- ◆ Sweep or vacuum the floor frequently in order to avoid build up of abrasive particles.
- ◆ Clean the floor using recommended USF Contract floor cleaner.
 - Oversaturation or excessive moisture will harm the flooring!
- ◆ Periodic application of a USF Contract Natural Cork® recommended polish in accordance with the directions printed on the manufacturer's label insures the best performance and appearance.
- ◆ The longevity of the finish is relative to traffic intensity and quality of floor care.
 - When showing signs of wear, the floor will require a screening and recoat with Natural Cork C-800 Cork Lacquer or other USF Contract recommended finishes.
- ◆ Most cork decorative patterns are made of thin veneer laminated to a cork base. Failure to maintain the finish could result in irreparable damage

Your floor is a long-term investment. Buying quality flooring and employing proper maintenance are paramount in achieving intended performance and lasting beauty.

Comparative R-Values of Flooring and Subfloors

Material	Typical R-Value	R-Value Per Inch	Typical Thickness
Brick	3.38	2.25	1.50
Prime Urethane	2.15	4.30	0.50
Bonded Urethane	2.10	4.20	0.50
Carpet	2.10	2.80	0.75
Wool Carpet	2.10	4.20	0.50
Hair Jute	1.94	3.88	0.50
Carpet	1.75	2.80	0.63
Wool Carpet	1.58	4.20	0.38
Prime Urethane	1.40	4.30	0.33
Carpet	1.40	2.80	0.50
Bonded Urethane	1.35	4.20	0.33
Hair Jute	1.25	3.88	0.33
Carpet Pad/Waffle Rubber 25lb	1.24	2.48	0.50
Cork/MDF/Laminate	1.18	2.35	0.50
Cork	1.13	3.00	0.38
Recycled Rubber Flooring	1.10	2.20	0.50
OSB	1.05	1.40	0.75
Carpet	1.05	2.80	0.38
Pine	0.98	1.30	0.75
Fir	0.90	1.20	0.75
Plywood	0.83	1.10	0.75
Softwood	0.83	1.10	0.75
*Natural Cork® Clic Planks	0.80		0.50
Engineered Wood	0.75	1.00	0.75
Ash	0.75	1.00	0.75
Maple	0.75	1.00	0.75
Engineered Bamboo	0.72	0.96	0.75
Carpet	0.70	2.80	0.25
*Natural Cork® Parquet	0.67		0.25
Carpet Pad/Slab Rubber 33lb	0.64	1.28	0.50
Oak	0.64	0.85	0.75
Engineered Wood	0.63	1.00	0.63
Carpet Pad/Waffle Rubber 25lb	0.62	2.48	0.25
MDF/Plastic Laminate	0.50	1.00	0.50
Carpet Pad/Slab Rubber 33lb	0.48	1.28	0.38
Linoleum	0.40	1.60	0.25
Marble	0.40	0.80	0.50
Engineered Wood	0.38	1.00	0.38
Carpet Pad/Slab Rubber 33lb	0.32	1.28	0.25
Laminate Floor Pad	0.30	1.92	0.16
Dense Rubber Flooring	0.25	1.30	0.33
Ceramic Tile	0.25	1.00	0.25
Engineered Wood	0.25	1.00	0.25
Sheet Vinyl	0.20	1.60	0.13
Vinyl Composition Tile (VCT)	0.20	1.60	0.13
Linoleum	0.20	1.60	0.13
Engineered Wood Flooring Pad	0.20	1.60	0.13

*Inserted Data by Natural Cork®
 ©2003 Delta-Therm Corporation
 398 W. Liberty Street · PO Box 345
 Wauconda, Illinois 60084 · USA