

# IMPEL<sup>®</sup>

## RODS

## Log And Timber Structures

### Use And Applications Guide

*IMPEL<sup>®</sup> Rods offer a unique and effective preservative system for the prevention and control of internal decay in log and timber structures. They are a EPA approved, low-cost, environmentally responsible alternative to potentially hazardous brush or spray-on preservatives. IMPEL Rods can easily be applied at the time of log production, building construction or in existing log structures.*

IMPEL Rods are manufactured as a highly concentrated, solid form, water-diffusible borate rod. Their placement into the very heart of wood offers superior protection over brush-on or spray type wood preservative treatments. Where paints or water repellents prevent the penetration of subsequent liquid preservatives, IMPEL Rods offer the only effective decay control system that protects logs internally. They depend upon moisture to be activated and diffuse very slowly to provide a controlled and long-lasting release of borate preservative in strategic areas.

IMPEL Rods are ideal for both preventive treatments of high risk areas and remedial treatments in areas with existing decay. Because IMPEL Rods stop decay when properly used, there's no need to replace decay damaged, yet structurally sound, logs. On average, this can cost more than \$150 a lineal foot. That's why IMPEL Rods are the most cost-effective measure that can be taken to protect log homes against decay.

Decay prone and rot hot spot areas at greatest risk include: base logs, corner construction, exposed rafters or overhangs, and below windows, doors or dormers. Diagram 1 highlights those areas in a typical log home that are at highest risk for decay and most appropriate for treatment with IMPEL Rods.

### Installation Details

There are three easy steps in installing IMPEL Rods: (1) drill appropriate sized holes to accommodate the rods; (2) insert IMPEL Rods into the holes; and (3) plug

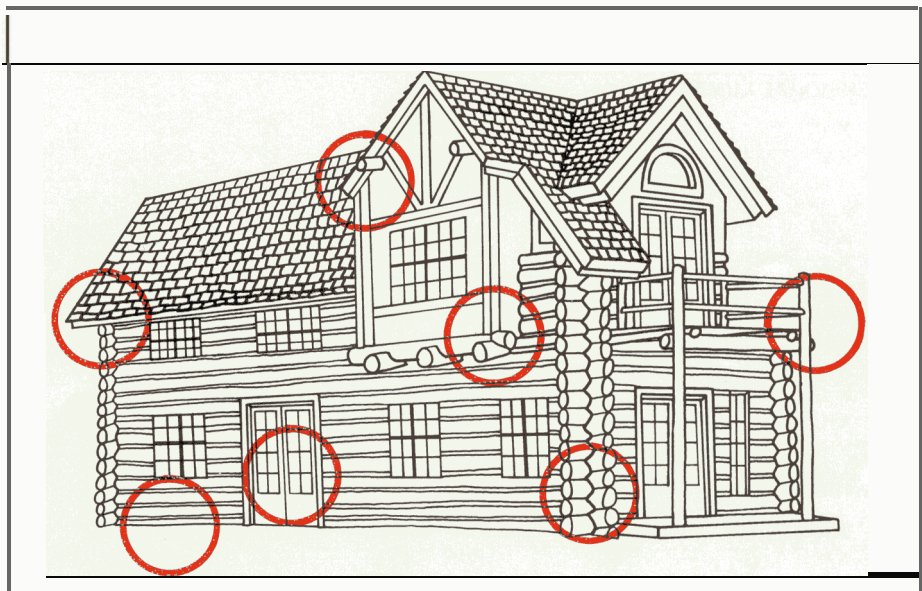


Diagram 1 Typical Log Home Rot "Hot Spot" Areas

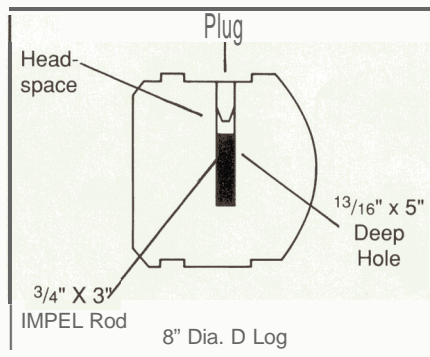
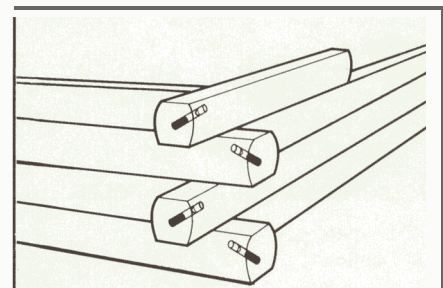


Diagram 2 Typical Installation Detail

the holes with wooden dowels or caulk. Drill holes should be about  $1/16$ " greater in diameter than the rods for a snug fit. This ensures diffusion in all directions. Also, a minimum of  $1/8$ " head space should be left between IMPEL Rods and the hole plug to allow for rod expansion. See Diagram 2 for an illustration of these details. The recommended application rates for various sizes of logs and timbers are found in Table 1.

IMPEL Rods may be positioned in a variety of ways depending on access and



IMPEL Rods positioned into holes drilled 6" from log end, 45° angle to top of logs.

Diagram 3 Typical Butt and Pass Corner

owner preference. A drilling pattern that is least conspicuous may be selected for aesthetics. Diagram 3 shows how IMPEL Rods may be positioned in a typical butt and pass corner section. Although corner construction details vary widely, IMPEL Rods should be placed about 6 inches from the end of each log and perpendicular to the wood grain, as shown.

In base logs, install IMPEL Rods 6 inches from each end and at the recommended spacings along the log. In

rafters and overhangs, install IMPEL Rods 6 inches from each exposed end and at the recommended spacings.

## Preservative Diffusion: How It Works

IMPEL Rods depend on moisture to work. When moisture contents reach levels suitable for decay attack (i.e., around 25 percent), IMPEL Rods slowly dissolve and begin to diffuse throughout the wood.

The rate and extent of diffusion is

mainly dependent upon the wood moisture content. The preservative will migrate into the areas of highest moisture, which are also the areas at highest risk from fungal decay. Generally, higher moisture contents result in more rapid diffusion. Diffusion is also more rapid along the wood grain and in wood where decay is present than across the grain. Remedial treatments can effectively stop decay up to 12" from the site of application in relatively short periods of time. At moisture contents of 60 percent, borate preservative can migrate 10 inches in

only 8 weeks. At 30 percent, this distance may take 4-6 months. Nonetheless, preservative diffusion from IMPEL Rods will adequately control fungal decay, which attacks wood at a much slower rate.

When moisture levels drop below about 25 percent, the preservative becomes dormant and provides a reserve ready to reactivate should decay-conducive conditions reoccur. See Diagram 4 for an illustration of this diffusion process over time.

Table 1

RECOMMENDED APPLICATION RATES				
Nominal Dimension	Rod Size (Dia. x Length)	Hole Size (Dia x Depth)	Linear Space Between holes	No. of Rods Per Hole
<b>DIMENSIONAL LUMBER</b>				
1" x 1"	1/4" X 1/2"	5/16" x 3/4"	12"	1
1" x 2"	1/4" X 1/2"	5/16" x 1"	12"	1
1" X 4"	1/4" X 1/2"	5/16" x 2 1/4"	6"	2
1" X 6"	1/4" X 1/2"	5/16" x 3 1/4"	4"	2
2" x 2"	1/4" X 1/2"	5/16" x 1 1/2"	7"	2
2" x 2"	1/3" X 1"	3/8" x 1 1/2"	12"	1
2" x 4"	1/3" X 1"	3/8" X 2 3/4"	8"	1
2" X 6"	1/3" X 1"	3/8" x 3 3/4"	10"	2
2" X 8"	1/3" X 1"	3/8" x 4 1/2"	7"	2
2" X 10"	1/3" X 1"	3/8" X 6"	8"	2
2" x 10"	1/2" X 2"	9/16" x 5 1/2"	12"	1
2" x 12"	1/3" X 1"	3/8" X 7"	7"	3
2" x 12"	1/2" X 2"	9/16" X 6 1/2"	10"	1
<b>SAWN TIMBERS</b>				
4" x 4"	1/2" X 2"	9/16" X 2 3/4"	14"	1
4" X 6"	1/2" X 2"	9/16" x 3 3/4"	9"	1
4" X 8"	1/2" X 2"	9/16" x 4 3/4"	6"	1
6" X 6"	1/2" X 2"	9/16" x 4 3/4"	11"	2
6" X 6"	3/4" X 3"	9/16" x 4 3/4"	15"	1
6" X 8"	1/2" X 2"	9/16" x 5 3/4"	8"	2
6" X 8"	3/4" X 3"	13/16" x 5 1/4"	14"	1
6" X 12"	3/4" X 3"	13/16" x 7 1/4"	9"	1
8" X 8"	3/4" X 3"	13/16" x 5 1/4"	10"	1
10" x 10"	3/4" X 3"	13/16" X 6 1/4"	13"	2
12" x 12"	3/4" X 3"	13/16" x 7 1/4"	9"	2
<b>ROUND LOGS, POSTS AND POLES</b>				
4" Diameter	1/2" x 2"	9/16" x 2 3/4	14"	1
6" Diameter	1/2" x 2"	9/16" x 4"	12"	2
6" Diameter	3/4" x 3"	13/16" x 4 1/2"	15"	1
8" Diameter	3/4" x 3"	13/16" x 5"	12"	1
10" Diameter	3/4" x 3"	13/16" X 6"	7"	1
12" Diameter	3/4" x 3"	13/16" x 9"	10"	2
14" Diameter	3/4" x 3"	13/16" x 10"	7"	2
16" Diameter	3/4" x 3"	13/16" x 12"	9"	3

Diagram 4

