



## CASCOPHEN® LT-75C With CASCOSSET® FM-282C

### ROOM-TEMPERATURE SETTING, PHENOL-RESORCINOL ADHESIVE

#### Description

CASCOPHEN® LT-75C is a liquid, phenol-resorcinol timber laminating resin. The setting of this material is obtained through reaction with a definite proportion of a dry powdered hardener; CASCOSSET® FM-282C.

Tests in Hexion Specialty Chemicals' laboratories indicate that representative lots of this adhesive will meet Canadian Standards Association 0112.7-M1977 Type I specifications. This adhesive mix is recommended for laminating softwoods for wet-use or dry-use exposure. Recent information has shown that gluing of high density softwoods may give low strength values where hard summer wood constitutes the surface area to be glued. We suggest that this material be tested for gluability prior to assembly. Adequate information is not presently available to recommend its general use with chemically treated lumber or hardwoods, but it is suitable for post treatment with preservatives. The choice of the proper adhesive system for a particular operation can be decided by discussion with a Hexion Specialty Chemicals Sales Representative.

#### Storage Life

CASCOPHEN LT-75C will remain in usable condition for at least nine months at 21°C. CASCOSSET FM-282C should be stored under dry conditions, and has a usable life of over nine months from time of manufacture. Since aging causes slow changes in both materials, rotate stock so that old inventory is used first.

#### Mixing Proportions:

Product	Parts(by weight)
Cascophen LT-75C	100
Cascoset FM-282C	15-17

The hardener is added to the resin and stirred until thoroughly dispersed, normally about 5 minutes. The lower hardener level can be used if a slightly thinner viscosity is desired.

#### Usable Life of Mixed Glue

Temperature	16°C	21°C	27°C
Hours	4½	2½	1

#### Precautions of Mixing

Because of the heat that is released by chemical reaction between the liquid adhesive and the hardener, the liquid resin should be cooled to about 10°C, or below, before mixing; otherwise, glue mixes must be made at relatively short intervals. Precautions for using the mixed glue are based upon being able to clean the equipment and maintain adequate assembly properties since glue that is close to setting can cause difficulty in both clean-up and reduced assembly.

1. With cooled glue, if the anticipated spreading period is not likely to exceed about 2 hours, little difficulty is likely to be experienced in clean-up or from overage glue.
2. For a longer run, the glue in the system should not rise to more than about 27°C. This adhesive temperature is dependent upon the initial resin temperature, the average age of the glue being applied, plus plant conditions.
3. Glue handling equipment will have to be cleaned during extended break periods.

## Spreading

A spread of 293 to 490 g/m<sup>2</sup> (60 to 100 lbs. Of mixed glue per 1,000 sq.ft.) of glue line is recommended. The heavier spreads are required for longer assembly times and higher lumber temperatures.

CASCOPHEN® LT-75C is dispersible with water and can be readily washed from mixing and spreading equipment. If the same equipment must be used for mixing or spreading protein glues, extremely thorough cleaning is required.

## Total Assembly Time

Total assembly is the time interval from spreading first surface to application of full pressure and is the sum of open and closed assembly time periods.

Open Assembly Time: Open assembly is the period between spreading the laminars and placing them in contact with each other. During this period, the spread members are exposed to air and subject to evaporation. This causes dry-out, which is related to air temperature, circulation, and relative humidity. Because of the importance of dry-out caused by open time, and its dependence upon many factors, total assembly cannot be measured precisely. However, the open assembly time should not exceed 20% of the total assembly time.

Closed Assembly Time: Closed assembly is the period between close contact of the laminars and development of full pressure when surfaces are protected from open evaporation.



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## Maximum Assembly Period (in minutes)

Spread - grams of glue per square metre of glue line.  
(lbs. of glue per 1,000 sq.ft. of glue line.)

Ambient Air Temp. (°C)	Spread Weight					
	293g (60#) Min.	342g (70#) Min.	391g (80#) Min.	440g (90#) Min.	488g (100#) Min.	538g (110#) Min.
7-12	120	130	130	130	130	130
13-15	105	115	120	125	130	130
16-17	90	100	110	120	130	130
18-19	75	85	95	105	115	120
20-23	60	70	80	90	100	110
24-26	40	50	60	70	80	90
27-30	20	30	40	50	60	70

The above chart is based on an average lumber moisture of 9-16% and relative humidity above 50%.

For average lumber moisture content below 9% increase spread by 50g (10 lbs.). For relative humidity below 50%, increase spread by 10%.

## Use of Assembly Table

With glue spread of 440 g/m<sup>2</sup> lumber temperature of 16-17°C, a total assembly of 120 minutes is the maximum and 24 minutes, or 20%, of this could be open. If the open time exceeds this maximum percentage of open time, the total time shall be reduced by two minutes of each minute of this excess. In the example above, if the open time were 40 minutes, then total time would be reduced to 88 minutes: 120-2 (40-24) = 88.

The most important general rule is that the entire assembly should be brought under full pressure before the first spread glue films become dry to the touch. Under proper conditions, there is a slight squeeze-out of glue along the entire edge of all the joints.

## Pressure

For most conditions, recommended pressure is 690 – 1,034 kPa (100 to 150 psi).



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## Clamp Time and Temperature

Inner Glue Line Temp.	Minimum Clamp Time
21-24°C	9 hours
27-30°C	4 hours
32-35°C	1½ hours

It is recommended that the clamp periods be increased by 50% for curved members.

The above pressure period will develop substantial wood failure upon shearing adjacent laminates, so generally beams can be unclamped in this time period. With highly curved beams, where spring-back may be pronounced, more clamp time is necessary. Protect a fresh glue line against extreme thermal and physical shock.

## Use Of This Bulletin

Information in this bulletin is based on laboratory and plant experience in gluing untreated Douglas fir. Further information may be obtained from the Hexion Specialty Chemicals Material Safety Data Sheet for CASCOPHEN® LT-75C / CASCOSSET® FM-282C.

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**Before using any Hexion Specialty Chemicals, Inc. product, please be sure to read the Material Safety Data Sheet which was included with the shipment.**

**For more information contact your local Hexion Sales Representative or Customer Service Center (800) 441-9637.**



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