



CASCOPHEN® ADHESIVE SYSTEM G-1260

For Bonding of White Oak for Ship and Boat Use Reference: *MIL-A-22397 Specification Adhesives*

Description

CASCOPHEN® Adhesive System G-1260 is a resorcinol-phenol formaldehyde adhesive capable of providing strong, durable, waterproof bonds for marine service use. Cascophen Adhesive System G-1260 comes in two parts, a liquid resin G-1260-A and a powdered setting agent, G-1260-B.

Cascophen Adhesive G-1260-A is an alcohol-water solution of a partially condensed resorcinol-phenol formaldehyde resin. CASCOSSET® Hardener G-1260-B is a tan powder comprising paraformaldehyde and walnut shell flour.

As required by the Toxic Substance Control Act (TSCA) Cascophen Adhesive System G-1260 is listed in the Chemical Substance Inventory. The CAS registry numbers for G-1260-A (resorcinol-phenol-formaldehyde polymer) and G-1260-B (paraformaldehyde) are (25986-71-4) and (30525-89-4).

Storage Conditions

Cascophen G-1260-A should be stored preferably at 40°F to 70°F. Frozen resin should be allowed to thaw in a warm room at approximately 70°F and stirred well before using. Containers should be kept tightly closed to prevent evaporation of the solvent.

Cascoset G-1260-B should be stored at 40°F to 70°F and kept dry. Storage at elevated temperatures will decrease the reactivity. Until mixed for use, both components have a shelf life of one year, if stored as suggested above.

Mixing Instructions

Component	Quantity(parts by weight ¹)
G-1260-A (liquid resin)	100
G-1260-B (powdered hardener)	20

¹ Volumetric measures *must not be used*.

It is essential for all mixing and spreading equipment to be free from any traces of acids, alkalies or glue residue.

Component "A" is charged to the mixer; component "B" is added slowly and mixing is continued for 5 to 15 minutes thereafter, until a uniform dispersion is obtained. Carefully scrape down the mixer walls and bottom several times during the dispersion to accomplish a uniform mix. When resin "A" and hardener "B" components are mixed the mixture becomes warm due to an exothermic reaction; therefore, it is suggested that batches of adhesive no greater than 10-25 pounds be mixed at one time, unless the temperature throughout the mix can be held below 70°F. Mixes should be so timed that there is no delay in assembly and yet no chance of mix being used before it is completely dispersed.

Additional extenders or fillers should not be used.

Spills should be cleaned up immediately. Hardener dust and vapors from mixed adhesive must be controlled to meet local, state and federal requirements regarding formaldehyde and nuisance particulates. Exhaust ventilation may be required.

Working Life

The rate at which the mixed adhesive reacts is dependent upon temperature; the higher the temperature, the faster the rate of reaction and, therefore, the shorter the usable life of the adhesive mix. It is advisable to *keep the mixture cool (50-70°F.) during mixing and until used.* Quantities sufficient for only 2-2 1/2 hours use should be mixed at one time.

The mixed adhesive should be stirred frequently during use in order to prevent excessive temperature rise. Table I indicates the relationship between usable working life and temperature of the mixed adhesive.

Table I

Adhesive Temperature	Useful Working Life (Hours)
60°F	10
75°F	3
90°F	1½

The advantage of cooling the mix is apparent from this table.

The working life of the adhesive is extremely sensitive to traces of acids or alkalis, so all mixing and spreading equipment should be kept clean.

Roll life is usually less than pot life, since the milling and excessive aeration causes thickening by solvent loss. It is recommended that the rolls be stopped when not in use and started again 1/2 minute before spreading. When rolls are standing idle for an appreciable period, they should be occasionally turned over to prevent skinning.

Spreading

Cascophen® Adhesive System G-1260 may be applied by a resilient rubber-roll mechanical resin-glue spreader, or hand spread with a stiff-bristled brush or paint roller.

The joints must be double spread with not less than 30 pounds adhesive/1,000 sq. ft. of surface on each face of each lamination. In double spreading, the glue is applied to both surfaces of the joint, the total amount of adhesive used being evenly divided between the two surfaces. Double spreading is recommended for oak and where the time required for assembly approaches the maximum permissible time.



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Assembly Time

Assembly time is the time elapsing between spreading a joint and applying pressure to the assembly. "Open assembly" is the time between spreading and assembling the spread surfaces, while "closed assembly" is the time the spread surfaces are in intimate contact before pressure is applied.

The assembly periods given in Table II are recommended for freshly mixed adhesive batches. If several different mixes are employed in the laying-up of one assembly, the permissible assembly time should be based on the first adhesive mix used.

The age of the adhesive mix will have a shortening effect on the permissible assembly time. In any case, the assembly time should not be longer than two-thirds of the remaining pot life (considering the adhesive mix temperature history).

Table II

Assembly Temp. ¹ (°F)	Closed Assembly Time ² (minutes)		Open Assembly Time (Minutes) ³
	Minumum	Maximum	
60	10	300	0
	0	200	15
	0	0	30
75	10	120	0
	0	60	15
	0	0	20
90 ⁴	10	60	0
	0	30	10
	0	0	20

¹ Ambient assembly temperature; air, lumber and adhesive mix (5-15 mix age)

² Permissible closed assembly time range

³ Use these Open Assembly times in conjunction with permissible closed time ranges.

⁴ Adhesive mix 75°F

Curing Conditions

In general, sufficient pressure to reduce the glueline to a thickness of 0.002-0.007" is required; thicker gluelines will result in an inferior bond. Pressures of 150-200 psi are generally used. In thick assemblies, slight excess pressure is desirable to compensate for shrinkage.



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Clamps that are adequate to distribute the pressure uniformly should be used. The close spacing of the clamps is of utmost importance and the use of cauls to distribute pressure is highly recommended. Clamps should be frequently inspected before use to eliminate those which have become warped or thread burred. After clamping has been completed, there should be an inspection to observe if there is any appreciable deflection in the flat surfaces that make contact with the glued assemblies.

The Bureau of Ships requires a pressure period of six (6) hours at a sustained glueline temperature of 150°F when Cascophen® Adhesive System G-1260 is used for this type of laminating.

Curing consists of three phases of heat with controlled humidity:

- (a) the elapsed time required to raise the innermost glueline of the clamped assembly from the ambient assembly temperature to the specified cure temperature;
- (b) the actual time elapsed of sustained temperature specified for cure;
- (c) the elapsed time required to cool the bonded assembly to room temperature. The actual time the glueline (by thermo-couple measurement) is at or above the specified temperature constitutes the curing period.

Table III

Glueline Temp., (°F)	Curing Period, (hours)
150	6
170	4
190	3

Cleaning

When the adhesive mix becomes too thick to spread, containers should be emptied and cleaned. Brushes, spreaders, or other equipment used for the application of Cascophen® Adhesive System G-1260 should be cleaned immediately after use. Do not use plain water for cleaning, since resin will settle-out and gum-up equipment. Dilute aqueous solutions of caustic soda (1/2%), or sodium carbonate, may be used. Caustic soda solutions are corrosive to the skin and must be handled carefully with proper safety equipment including goggles, rubber gloves and rubber aprons.



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Precautions

The proper use of Cascophen Adhesive System G-1260-A should not create hazardous worker exposures, however, each use location will require specific hazard potential analysis – see Material Data Sheets describing the individual components of this adhesive system. In every case, high standards of cleanliness should be maintained to minimize the possibility of dermatitis. The use of proper protective clothing and frequent washing is recommended.

Use of safety equipment such as glasses, goggles, face shield, long sleeved shirts, aprons, coveralls, etc. may be advised. Please refer to MSDS for this product.

Until fully cured, the adhesive mix will have the hazardous properties of the individual components.

Cascophen Adhesive G-1260-A contains Phenol, Resorcinol, Ethanol and Ethylene Glycol.

DANGER! Causes severe eye irritation. Causes skin irritation. Harmful if absorbed through the skin. Harmful if swallowed. Combustible liquid and vapor.

Avoid prolonged or repeated breathing of vapors, mists or fumes. Avoid prolonged or repeated contact with skin or eyes. Do not take internally. Wash exposed areas promptly and thoroughly after skin contact and before eating, drinking, using tobacco products or rest rooms. Provide sufficient general/local exhaust ventilation in pattern/volume to control inhalation exposures below current exposure limits and areas below flammable vapor concentrations. Follow NIOSH Pub. 80-106 "Working in a Confined Space." Keep away from sparks and open flame. Keep closures tight and upright to prevent leakage. Keep container closed when not in use.

KEEP OUT OF REACH OF CHILDREN.

USE WITH ADEQUATE VENTILATION.

Cascoset® Hardener G-1260-B contains formaldehyde (paraformaldehyde).

DANGER! Causes severe eye irritation. Harmful to upper respiratory tract if inhaled. Harmful if swallowed. May cause allergic skin reaction. Combustible solid and vapor.

Avoid prolonged or repeated inhalation of dust/vapor and contact with skin and eyes. Do not take internally.

Wash exposed areas promptly and thoroughly after skin contact and before eating, drinking, using tobacco products or rest rooms. Provide sufficient general/local exhaust ventilation in pattern/volume to control inhalation exposures below current exposure limits and areas below flammable vapor/explosive dust concentrations. Local exhaust is



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necessary for use in enclosed or confined spaces. Follow NIOSH Pub. 80-106 "Working in a Confined Space." Keep away from sparks and open flame.

Manufactured and labeled for Industrial use only.

For first aid, spill, fire and disposal procedures, refer to product container label and/or MSDS.

Hexion Specialty Chemicals, Inc. will not be responsible for unsatisfactory gluing outcomes that are the result of using Cascophen® and/or Cascoset® in ways which fall outside the recommendations of this product bulletin.

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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