



**Polyvine Limited
Technical Information**

**Polyvine Extraphen/Polyproof
Woodworking Adhesive System**

POLYVINE EXTRAPHEN/POLYPROOF RESIN is a phenol resorcinol phenol formaldehyde resin 2-pack adhesive used with EXTRAPHEN/POLYPROOF HARDENER. This system is widely used for timber laminating, door, window and panel making, and general joinery when a high degree of durability is required.

It has particularly good waterproofing characteristics and satisfies the requirements of BS EN 301, Adhesive Type 1 and BS 1203 WBP. It is also capable of bonding components to achieve Class 0 fire resistance. It may be used in conventional hot and cold presses and in the general gluing processes, normally encountered in the woodworking industry.

Properties

Resin

Appearance	Thin reddish brown liquid
Solids contents (3 h @ 120°C)	56%
Viscosity @ 25°C	3.5P
Specific Gravity @ 25°C	1.12
pH	8.5
Diluent for washing	Water
Storage life @ 20°C	1 year

Hardener

Appearance	Beige powder
Storage life @ 20°C	1 year

To ensure consistent quality, the product is manufactured to within a strict product specification. However, it is also important for the user to make regular quality checks. Should any changes be made to the materials to be bonded, the equipment or the process, particular care should be taken to check the bond quality. Whilst offering technical help and advice, Polyvine cannot accept responsibility for actions beyond our control.

Health and Safety

Please read the relevant material safety data sheet carefully.

Hardeners

Resorcinol phenol formaldehyde resins are cured by the addition of a hardener. Extraphen/Polyproof resin is a fairly low viscosity resin and is easily mixed with powder hardener.

Mixing instructions

Resin 5 parts by weight
Hardener 1 part by weight

Carefully mix the powder hardener into the liquid resin until evenly dispersed. Observe the handling procedure described in the Material Safety Data Sheet. Because powders are of varying density, and difficult to measure consistently by volume, it is strongly recommended that all hardener ratios are measured by weight. Mixing may be done by hand for small batches or by mechanical mixer. In both cases, it is advisable to allow the mixture to stand to allow entrapped air to escape; bubbles or foam in a glue line can cause a weak bond.

Pot Life

As soon as the hardener is mixed with the resin, they start to react. The time elapsing after which the mixture is too cured to be useable is the "pot life". This is affected by the mix temperature (see Table 1).

Table 1: Pot Life

	POT LIFE IN HOURS (Except where marked in minutes)				
TEMPERATURE	16°C	18°C	20°C	25°C	30°C
POT LIFE	6.5	5	3	1.5	50m

Spreader Life

If the mixture is applied by mechanical spreader, the "life" in the spreader is normally some half to two thirds shorter than the static pot life, due to frictional heat and evaporation of water from the adhesive.

Bonding Conditions

For consistent high quality of wood based materials, the following should always be observed.

SUBSTRATES	Ensure that the surfaces to be bonded are clean and free of dust. Very oily timber should be wiped with a cloth soaked in detergent Or, if necessary, a degreasing solvent (read the safety instructions carefully).
MOISTURE CONTENT	Ideally the moisture content of the substrates should be 6-16% with a 3% difference between the two surfaces to be bonded, otherwise stresses are built into the joint which may result in wood or joint failure or excessive cracking of the veneer.
APPLICATION	The adhesive mix can be applied by brush, roller, hand applicator or mechanical rollers at a spread rate of 150-500 gsm, depending on the nature of the surface. Mechanical spreaders are more capable of achieving the lower end of this range.
TEMPERATURE	Extraphen/Polyproof has been found to bond some timbers satisfactorily at temperatures as low as 10°C (50°F) and, in this respect, is superior to other Resorcinol Resins of this type. High moisture content will make the performance and strength inferior at low temperatures. Below 10°C the reaction virtually stops for all practical purposes and although the resin may slowly dry out, no proper bond is formed.
ASSEMBLY TIMES	The open assembly time is the maximum length of time after the adhesive mixture is applied to the timber surface, before it is too cured to form a bond. The closed assembly time is the maximum time after applying the Adhesive mixture to the timber and closing the joint before pressure must be applied to form a good bond. (See Table 2)

PRESSURE

A pressure of 3.5 - 4.5 kgf/cm² is required in the glue line.

PRESSURE CALCULATION

The pressure gauge on the press indicates the pressure on the pistons or rams. The pressure exerted on the panels can be determined as follows:

$$\frac{\text{Gauge reading (kgf/cm}^2\text{)} \times \text{Total area of press ram(s) (cm}^2\text{)}}{\text{Area of panel(s) (cm}^2\text{)}} = \text{Pressure applied to panel (kgf/cm}^2\text{)}$$

The gauge reading required to provide the recommended pressure can be calculated as follows:

$$\frac{\text{Pressure required on panel(s) (kgf/cm}^2\text{)} \times \text{Area of panel(s) (cm}^2\text{)}}{\text{Total area of press ram(s) (cm}^2\text{)}} = \text{Gauge reading (kgf/cm}^2\text{)}$$

PRESSING TIMES

The pressing time is that required to provide a joint of sufficient strength for it to retain its integrity in subsequent operations and conditions. Clearly this will be quite different for a curved "glulam" construction, compared to thin veneer bonded on particleboard, with regards to the stress in the joint. Other factors will include the temperature of the glue line, the moisture content of the timber, the thickness of the glue and the age of the mixture. The following table (Table 2) gives a guide based on laminating 0.6mm veneer to particleboard, where the heat is transferred from the press to the glue line fairly rapidly. Heat transfer through thicker substrates will vary considerably. For timber, a very rough guide is 1 minute per 5mm, but other materials may take considerably longer. This should be tested with temperature strips in a dry construction.

Table 2: Assembly and Pressing Times

TEMPERATURE(°C) (Glue, wood & shop)	10	15	20	25	30	40	50	60	70	80
OPEN ASSEMBLY PERIOD (minutes)	35	25	15	10	5	-	-	-	-	-
CLOSED ASSEMBLY PERIOD (minutes)	120	60	45	20	10					
PRESSING TIME {hours(h) or (m)}	36h	16 h	5 h	2.5h	1h	30m	20m	15m	10m	5m

Storage

Extraphen/Polyproof is supplied in 670g packs, resin & hardener. IN all cases, it is important to store the resin at 15-20°C. At lower temperatures, the resin becomes thicker and difficult to apply to surfaces, as well as being much slower setting. At higher temperatures, the resin is thinner and prolonged storage at higher temperatures will significantly shorten the shelf life. It is important to use the resin in strict order, according to age.

The above figures are typical of this product and should not be taken as an agreed specification.

This information is based on the present state of our knowledge and experience and does not imply any acceptance of liability for loss, damage or consequential loss arising directly or indirectly from the use of the information or the use of the Company's products described herein. No warranty is given or implied that use of the information or any such product does not infringe the propriety rights of any third party. Prospective users shall be solely responsible for any use made of the products and/or information and should therefore satisfy themselves by appropriate trials that the product to be used is suitable for the intended use and that such use will not infringe any proprietary rights of any third party.

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SAFETY DATA SHEET

EXTRAPHEN RESIN/POLYPROOF RESIN

Issued: 19/10/2006 Revision No: 1

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product name EXTRAPHEN RESIN/POLYPROOF RESIN)

Company name

Polyvine Ltd Severn Distribution Park Burma Road Sharpness Berkeley GL13 9UQ Telephone 0870 787 3710
Fax 0870 787 3709

2. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous ingredients:

PHENOL 1-10%

EINECS: 203-632-7 CAS: 108-95-2

[T] R23/24/25; [C] R34; [Xn] R48/20/21/22; [Xn] R68

• ETHANOL 10-30%

EINECS: 200-578-6 CAS: 64-17-5

[F] R11

• METHANOL <1%

EINECS: 200-659-6 CAS: 67-56-1

[F] R11; [T] R23/24/25; [T] R39/23/24/25

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3. HAZARDS IDENTIFICATION

Main hazards: Flammable. Harmful in contact with skin and if swallowed. Causes burns. Possible risk of irreversible effects.

Other hazards: Flammable. Harmful by inhalation. Harmful in contact with skin. Harmful if swallowed. Possible risk of irreversible effects.

4. FIRST AID MEASURES (SYMPTOMS)

Skin contact: Blistering may occur. Progressive ulceration will occur if treatment is not immediate.

Eye contact: Corneal burns may occur. May cause permanent damage.

Ingestion: Corrosive burns may appear around the lips. Blood may be vomited. There may be bleeding from the mouth or nose.

Inhalation: There may be shortness of breath with a burning sensation in the throat. Exposure may cause coughing or wheezing.

4. FIRST AID MEASURES (ACTION)

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Drench the affected skin with running water for 10 minutes or longer if substance is still on skin. Transfer to hospital if there are burns or symptoms of poisoning.

Eye contact: Bathe the eye with running water for 15 minutes. Transfer to hospital for specialist examination.

Ingestion: Wash out mouth with water. Do not induce vomiting. Give 1 cup of water to drink every 10 minutes. If unconscious, check for breathing and apply artificial respiration if necessary. If unconscious and breathing is OK, place in the recovery position. Transfer to hospital as soon as possible.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. If unconscious and breathing is OK, place in the recovery position. If conscious, ensure the casualty sits or lies down. If breathing becomes bubbly, have the casualty sit and provide oxygen if available. Transfer to hospital as soon as possible.

5. FIRE-FIGHTING MEASURES

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

Exposure hazards: Corrosive. In combustion emits toxic fumes.

Protection of fire fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Notify the police and fire brigade immediately. If outside keep bystanders upwind and away from

danger point. Mark out the contaminated area with signs and prevent access to unauthorised personnel. Do not attempt to take action without suitable protective clothing - see section 8 of SDS. Turn leaking containers leak-side up to prevent the escape of liquid.

Environmental precautions: Do not discharge into drains or rivers. Contain the spillage using bunding.

Clean-up procedures: Clean up should be dealt with only by qualified personnel familiar with the specific substance. Absorb into dry earth or sand. Transfer to a closable, labeled salvage container for disposal by an appropriate method.

7. HANDLING AND STORAGE

Handling requirements: Avoid direct contact with the substance. Ensure there is sufficient ventilation of the area. Do not handle in a confined space. Avoid the formation or spread of mists in the air. Eliminate all sources of ignition.

Storage conditions: Store in cool, well-ventilated area. Keep container tightly closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Hazardous ingredients: PHENOL

WEL (8 hr exposure limit): 2 ppm

• ETHANOL

WEL (8 hr exposure limit): 1920 mg/m³

• METHANOL

WEL (8 hr exposure limit): 266 mg/m³ WEL (15 min exposure limit): 333 mg/m³

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency.

Hand protection: Impermeable gloves.

Eye protection: Tightly fitting safety goggles. Ensure eye bath is to hand.

Skin protection: Impermeable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

State: Liquid

Colour: Red-brown

Odour: Characteristic odour

Oxidising: Non-oxidising (by EC criteria)

Solubility in water: Highly soluble

Viscosity: Non-viscous

Viscosity value: 3.5p

Boiling point/range°C: 78

Flash point°C: 43

Relative density: 1.12

pH: 8.5

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.

Conditions to avoid: Heat. Sources of ignition.

Materials to avoid: Strong oxidising agents. Strong acids.

Haz. decomp. products: In combustion emits toxic fumes.

11. TOXICOLOGICAL INFORMATION

Hazardous ingredients: PHENOL

ORL MUS LD50 270 mg/kg

ORL RAT LD50 317 mg/kg

SCU RAT LD50 460 mg/kg

• ETHANOL

IVN RAT LD50 1440 mg/kg

ORL MUS LD50 3450 mg/kg

ORL RAT LD50 7060 mg/kg

• METHANOL

IVN RAT LD50 2131 mg/kg

ORL MUS LD50 7300 mg/kg

ORL RAT LD50 5628 mg/kg

Routes of exposure: Refer to section 4 of SDS for routes of exposure and corresponding symptoms.

12. ECOLOGICAL INFORMATION

Mobility: Readily absorbed into soil.

Persistence and degradability: Not tested but the product is expected to have the following property Not biodegradable.

Bioaccumulative potential: No data available.

Other adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

14. TRANSPORT INFORMATION ADR / RID

ADR / RID

UN no: 1866 **ADR Class:** 3

Packing group: III **Classification code:** F1

Shipping name: RESIN SOLUTION (PHENOL/RESORCINOL RESIN)

Labeling: 3 **Hazard ID no:** 30

IMDG / IMO

UN no: 1866 **Class:** 3

Packing group: III **EmS:** F-E,S-E*

Marine pollutant: . **Labeling:** 3

IATA / ICAO

UN no: 1866 **Class:** 3

Packing group: III **Packing instructions:** 309(P&CA); 310(CAO)

Labeling: 3

15. REGULATORY INFORMATION

Hazard symbols: Corrosive.

Risk phrases: R10: Flammable.

R21/22: Harmful in contact with skin and if swallowed.

R34: Causes burns.

R68: Possible risk of irreversible effects.

Safety phrases: S1/2: Keep locked up and out of the reach of children.

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37/39: Wear suitable protective clothing, gloves and eye / face protection.

S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Note: The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

15. REGULATORY INFORMATION

Hazard symbols: No significant hazard. **Note:** The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions, which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

Risk phrases used in s.2: R23/24/25: Toxic by inhalation, in contact with skin and if swallowed.

R34: Causes burns.

R48/20/21/22: Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

R68: Possible risk of irreversible effects.

R11: Highly flammable.

R39/23/24/25: Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

Legal disclaimer: The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

SAFETY DATA SHEET

EXTRAPHEN HARDENER/POLYPROOF HARDENER

Issued: 19/10/2006 Revision No: 1

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Product name:

EXTRAPHEN HARDENER/POLYPROOFHARDENER

Company name

Polyvine Ltd Severn Distribution Park Burma Road Sharpness Berkeley GL13 9UQ Telephone 0870 787 3710

Fax 0870 787 3709

2. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous ingredients: *PARAFORMALDEHYDE POWDER BLEND >90%

[F] R11; [Xi] R36/37/38; [Xn] R40; [Sens.] R43

3. HAZARDS IDENTIFICATION

Main hazards: Highly flammable. Irritating to eyes, respiratory system and skin. Limited evidence of a carcinogenic effect. May cause sensitisation by skin contact.

4. FIRST AID MEASURES (SYMPTOMS)

Skin contact: There may be irritation and redness at the site of contact.

Eye contact: There may be irritation and redness. The eyes may water profusely.

Ingestion: There may be soreness and redness of the mouth and throat.

Inhalation: There may be irritation of the throat with a feeling of tightness in the chest. Exposure may cause coughing or wheezing.

4. FIRST AID MEASURES (ACTION)

Skin contact: Remove all contaminated clothes and footwear immediately unless stuck to skin. Wash immediately with plenty of soap and water.

Eye contact: Bathe the eye with running water for 15 minutes. Consult a doctor.

Ingestion: Wash out mouth with water. Consult a doctor.

Inhalation: Remove casualty from exposure ensuring one's own safety whilst doing so. Consult a doctor.

5. FIRE-FIGHTING MEASURES

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.

Exposure hazards: In combustion emits toxic fumes.

Protection of fire fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: HIGHLY FLAMMABLE SOLID. Eliminate all sources of ignition Refer to section 8 of SDS for personal protection details. If outside do not approach from downwind. If outside keep bystanders upwind and away from danger point. Mark out the contaminated area with signs and prevent access to unauthorised personnel.

Environmental precautions: Do not discharge into drains or rivers. Contain the spillage using bunding.

Clean-up procedures: Absorb into dry earth or sand. Transfer to a closable, labeled salvage container for disposal by an appropriate method.

7. HANDLING AND STORAGE

Handling requirements: Avoid direct contact with the substance. Ensure there is sufficient ventilation of the area. Do not handle in a confined space. Avoid the formation or spread of mists in the air.

Storage conditions: Store in cool, well-ventilated area. Keep container tightly closed.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures: Ensure there is sufficient ventilation of the area.

Respiratory protection: Self-contained breathing apparatus must be available in case of emergency.

Hand protection: Protective gloves.

Eye protection: Safety glasses. Ensure eye bath is to hand.

Skin protection: Protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

State: Powder

Colour: Off-white

Odour: Formaldehyde

Oxidising: Non-oxidising (by EC criteria)

Solubility in water: Slightly soluble

Flash point°C: 70

Autoflammability°C: >410

Vapour pressure: 1.45 mm Hg @ 25C

Relative density: 0.51

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions.

Conditions to avoid: Heat. Sources of ignition.

Materials to avoid: Strong oxidising agents. Strong acids.

Haz. decomp. products: In combustion emits toxic fumes.

11. TOXICOLOGICAL INFORMATION

Chronic toxicity: May cause sensitisation by skin contact.

Routes of exposure: Refer to section 4 of SDS for routes of exposure and corresponding symptoms.

12. ECOLOGICAL INFORMATION

Mobility: Partially soluble

Persistence and degradability: No data available.

Bioaccumulative potential: No data available.

Other adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Disposal operations: Disposal should be in accordance with local, state or national legislation. This material and/or its container must be disposed of as hazardous waste. In UK, surplus product should be declared a 'Special Waste'.

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

14. TRANSPORT INFORMATION ADR / RID

ADR / RID

UN no: 2213 **ADR Class:** 4.1

Packing group: III **Classification code:** F1

Shipping name: PARAFORMALDEHYDE MIXTURE

Labeling: 4.1 **Hazard ID no:** 40

IMDG / IMO

UN no: 2213 **Class:** 4.1

Packing group: III **EmS:** F-A,S-G

Marine pollutant: NO **Labeling:** 4.1

IATA / ICAO

UN no: 2213 **Class:** 4.1

Packing group: III **Packing instructions:** 419(P&CA); 420(CAO)

Labeling: 4.1

15. REGULATORY INFORMATION

Hazard symbols: Highly flammable.
Harmful.

Risk phrases: R11: Highly flammable.

R36/37/38: Irritating to eyes, respiratory system and skin.

R40: Limited evidence of a carcinogenic effect.

R43: May cause sensitisation by skin contact.

Safety phrases: S2: Keep out of the reach of children.

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S7/9: Keep container tightly closed and in a well-ventilated place.

S36/37: Wear suitable protective clothing and gloves.

S46: If swallowed, seek medical advice immediately and show this container or label.

S60: This material and its container must be disposed of as hazardous waste.

Note: The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

Risk phrases used in s.2: R11: Highly flammable.

R36/37/38: Irritating to eyes, respiratory system and skin.

R40: Limited evidence of a carcinogenic effect.

R43: May cause sensitisation by skin contact.

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