Era Polymers Pty. Ltd.
25-27 Green Street, Banksmeadow
Sydney, NSW 2019
AUSTRALIA
www.erapol.com.au

Ecofoam XPF25-3011 G4

RIGID POLYURETHANE SPRAY FOAM

TECHNICAL DATASHEET

Ecofoam XPF25-3011 G4 is a two-component, rigid polyurethane spray foam with a nominal sprayed density of 36-44 kg/m^3. It was developed for use as a spray foam for the production of trench breakers.

Component Properties

	Polyol	Isocyanate
Appearance	Amber coloured liquid	Brown liquid
Brookfield Viscosity (cps) @ 25°C	800	250
Specific Gravity @ 25°C	1.12	1.23

Reaction Profile

Laboratory results based on hand-mix @ 20°C

Mix ratio by volume (Polyol:Iso) **100 : 100**
Mix ratio by weight (Polyol:Iso) **100 : 110**

Mix Time (seconds)	3
Cream Time (seconds)	4-5
Gel Time (seconds)	10-12
Tack Free Time (seconds)	12-13
Free Rise Density (kg/m^3) - Core	32-35

Typical Processing Parameters

Suggested Gun – Gama Master III *
Suggested Mix Chamber – AR 2929 equivalent * (dependent on machine output)
Hose Temperature 40-50°C
Preheater Temperature 30-50°C
Spray Pressure, psi
Dynamic, A/B 1400-1600

*NOTE: Discuss machine parameters with Era Polymers Technical Department.

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Typical Physical Properties

Properties presented below are to be used as a guide and not intended for specification purposes.

Property	Value	Test Method
Foamed Density	43.5 kg/m³	AS2498
Compressive Strength (@10%) -Parallel to the rise	211 kPa	AS 2498.3
Compressive Strength (@10%) -Perpendicular to rise	110 kPa	AS 2498.3

Trench Breaker Foam Application Procedure Guidelines

Production of trench breakers using polyurethane foam involves the building of a foam wall around pipelines to eliminate erosion of back filled soil by subsurface water flow, particularly where gradients exceed specified angles – generally greater than 10 degrees. Polyurethane foam trench breakers are economical and have the advantage of fast application relative to conventional methods which require cartage of many tonnes of fill for sand bags and/or cement resulting in much slower installation and high labour costs.

Polyurethane foam chemicals react together and produce an exothermic (heat generating) reaction which is part of what causes the foam to expand and cure. Under abnormal processing conditions this exothermic reaction can produce excessively high temperatures within the core of the foam and in the extreme cause ignition within the core of the foam. Specific Era Polymers Ecofoam Sprayfoam Systems have been developed based on proprietary low exothermic (heat) formulations for the production of trench breakers and when processed using the following procedures will result in effective production of pipeline trench breakers.

Component Temperatures: Ecofoam Polyol and Isocyanate components can be processed (mixed) at the gun between 30-50°C. The higher the temperature the faster the foam reaction, conversely the lower the temperature the slower the reaction will be.

Component Pressures: Minimum processing (mixing) pressure is 1200psi and can be up to 2500PSI depending on spray machine and gun configurations. Both components are to be maintained within 200psi of each other – wider variation of pressures will generally indicate a problem / blockage at the gun or possibly a component pump failure.

Mix Ratio: The mix ratio must be maintained within a tolerance of +/-2%.

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Substrate Temperatures: Substrate temperatures are generally not critical in respect to trench breaker production. However, the colder the substrate the slower the first foam lay down will be and the density of the resultant foam will be higher – in affect there may be a decrease in foam yield for the first layer applied, subsequent layers will not be affected. Adhesion (particularly to smooth surfaces) may also be reduced when applied to cold substrates. Cold substrate can be classed as less than 18°C.

Substrate Moisture: Polyurethane foam should not be applied to damp surfaces as water will cause some breakdown of the foam structure upon contact. Foam should not be applied during or immediately after rain.

Foam Layer Application: For standard sprayfoams it is recommended the foam be applied at no more than 300mm in height at any one time to ensure excess heat is not produced within the foam core. A minimum 20 minute break between subsequent layers will ensure excessive heat build-up does not occur.

Overspray: Like all sprayed products small particles will be airborne upon spray application of trench breakers, these particles are minute foam particles that will adhere to most surfaces they come in contact with. They are extremely difficult to remove or clean and therefore consideration must be given to the vicinity of surrounding buildings, vehicles, etc.
As a guide it is not recommended to spray foam without appropriate screening if winds are 10knots or more when the application is in the vicinity of buildings or vehicles.

Backfilling / Covering Trench Breakers: Although the foam is 95% cured within the first hour of application the final 5% takes place within 12-24 hours, it also retains heat in the core of the foam due to the foam's excellent insulation properties. To ensure the foam is completely cured and had a chance to cool it is recommended the trench breakers are not backfilled until 24hours after installation. *Note: If a trench breaker or part thereof is to be removed or dismantled in any way then it must be left for a minimum of 24 hours after installation.

Storage Conditions and Handling

The components are sensitive to humidity and should at all times be stored in sealed drums. The recommended storage temperatures are 18-25^{o}C, which will give a normal shelf life of 3 months in the original unopened drums. At elevated temperatures problems may arise with pressure build-up within the drums. When opening these drums extreme care must be exercised in releasing the internal pressure. **It is recommended that the drum contents should be mixed well before use.**

Health and Personal Protection

Before handling these chemicals, please consult the Material Safety Data Sheets for the two components. The polyol component contains tertiary amines. Contact with the skin or eyes must be avoided. Safety goggles and protective gloves should be worn whenever handling both of the chemicals. Splashes that come into contact with the skin must be wiped off immediately and the contaminated area washed with soap and water. Splashes in the eye must be flushed immediately with plenty of clean running water. If irritation occurs thereafter contact an eye specialist.

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