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PURL GP-90

PRODUCT DESCRIPTION

PURL GP-90 is a fully formulated polyol blend designed to react with **Purl Part A** to make a general purpose rigid polyurethane foam**.**
The product has several uses i.e.
Discontinuous slabstock
Continuous slabstock
Flooring for portable buildings/housing
Expanding foam for pole setting

PURL GP-90 is formulated with water as the blowing agent so has 0 ODP and 0 GWP.

TYPICAL LABORATORY REACTION & PROPERTIES DATA

Mixing ratio :

PURL GP-90 :	100 pbw
Isocyanate :	120 pbw

Laboratory reaction profile at 21^{o}C :

Cream Time (sec) :	68
Gel Time (sec) :	260
Rise Time (sec) :	510
Free Rise Core Density (kg/m^3) :	90

Typical liquid properties at 21^{o}C :

Appearance :	Honey coloured liquid
Viscosity (Brookfield) :	630 mPa s
Specific Gravity :	1.14

Typical properties as seen in laboratory samples:

Test	Result	Method
10% Compressive strength – parallel (90kg/m3)	800-1000 kPa	AS2498.3
10% Compressive strength – perpendicular (90kg/m3)	800-1000 kPa	AS2498.3
Dimensional stability 14 days @ -30^{o}C 14 days @ 70^{o}C with 100% humidity 14 days @ 100^{o}C	% change <1% <1% <1%	D2126-66
Thermal conductivity (k-factor) @22.5^{o}C	0.030 W/mK	EKO machine
Closed cell content	>95%	Pycnometer

STORAGE AND HANDLING PRECAUTIONS

When opening a container, care must be taken to release any internal pressure slowly.

To prevent ingress of moisture, drums must be kept tightly sealed when not in use.

Storage Stability
Recommended storage temp: 20-30°C

Under these conditions this product has a storage stability of at least 12 months.

PACKAGING

Nett 1050 kg per IBC.
Nett 210 kg per drum.

HEALTH AND SAFETY ADVICE

Refer to Liquimix Safety Data Sheets for individual products. Also refer to Technical Information PU193-1E *"MDI-Based Compositions : Hazards and Safe Handling Procedures"*.

PROPERTIES AND SUSTAINABILITY OF POLYURETHANE FOAM

Polyurethane rigid foams have a closed cell structure and high cross-linking density give them the characteristics of good heat stability, high compressive strength and excellent insulation properties. PU insulation has a very low thermal conductivity, starting from as low as 0.017 W/m.K, making it one of the most effective insulants available today for a wide range of applications. All types of insulation can also play a role in improving the energy efficiency of buildings and reducing CO_2 emissions.

The environmental impact Polyurethane offers is as follows;

- Excellent thermal efficiency – leading to optimum energy savings and reduced CO_2 emissions
- Relatively low environmental impact at the building level – the product saves more than 100 times the energy than is used in its manufacture.
- Durability – leading to long term performance and reducing the need for replacement, therefore saving energy.

The economic impact from polyurethane is;

- Increased energy efficiency – leading to immediate savings for the end user.

Ref: PU Europe Sustainability and polyurethane insulation.

λ INFORMATION ON THERMAL CONDUCTIVITY (K-FACTOR OR Λ) TESTING

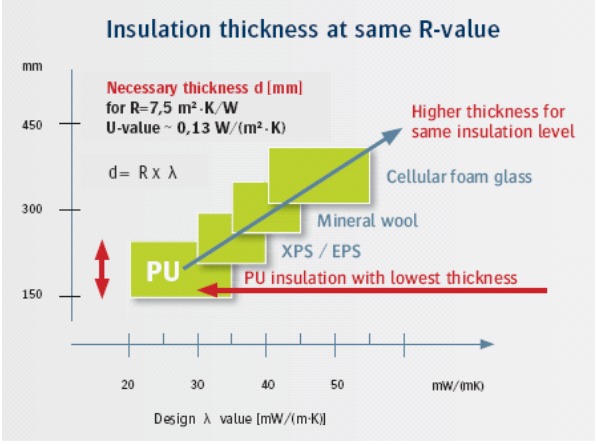
To test the insulation properties of foam we test the thermal conductivity or k-factor, which is a measure of a materials ability to transfer heat through conduction and therefore is the principle property of an insulation material.

Typical values of insulating materials are;

Material	**Density (kg/m3)**	**k-factor (W/mK)**
Polyurethane foam	32	0.017
Polystyrene foam	16	0.035
Rockwool	100	0.037
Glasswool	65-160	0.041
Timber – white pine	350-500	0.112

Insulation materials are then normally reported in terms of there R-value, which is a measure of the thermal resistance.

The following graph shows the thickness of insulation materials needed to get an R-value of 7.5 m^2K/W with standard PU foam. As seen PU offers the best insulation at lowest thickness.



Reference: Insulation for sustainability: A guide, XCO2 Conisbee 2002