1. PRODUCT DESCRIPTION

EKOPRODUR S0331FL is a two-component system for the production of closed-cell, self-extinguishing, rigid polyurethane foam. Excellent insulating properties of the foam were obtained thanks to the use of HFO - a fourth generation foaming agent from the group of hydrofluoroolefins with a low global warming potential GWP[1] = 1 and a zero ozone depletion potential indicator ODP[2] = 0.

COMPONENT POLY (polyol mixture)	EKOPRODUR S0331FL POLY
COMPONENT ISO (isocyanate)	ISO COMPONENT B 2

2. APPLICATION

EKOPRODUR S0331FL is designed to perform thermal insulation by spraying: floors, foundations, walls and ceilings.

3. COMPONENTS CHARACTERISTIC

COMPONENT POLY – polyol blend formulation in the form of oily liquid without suspension, from light red to dark brown.
COMPONENT ISO – mixture of aromatic polyisocyanates, especially diphenylmethane diisocyanate. Brown liquid without suspension.

Parameter	POLY	ISO	Unit
Density at 20°C	1,17 ± 0,02	1,22 ± 0,02	g/cm³
Viscosity at 20°C	400 ± 100	350 ± 100	mPa·s

4. FOAMING CHARACTERISTIC IN LEBORATORY CONDITIONS

Reaction times and the apparent density of the core were measured in laboratory conditions (at 20°C) with manual foaming in a laboratory vessel - stirrer about 7000 rpm.

Parameter	Value	Unit
The volumetric ratio of components POLY:ISO	**100 : 100**	
Cream time	3 ± 1	s
Gel time	10 ± 3	s
Tack free time	13 ± 4	s
Apparent core density	40 ± 2	kg/m³

5. RECOMMENDED PROCESSING CONDITIONS

EKOPRODUR S0331FL is a system designed for spraying, and should be processed using specialized foaming units equipped with a spray head. Recommendations are based on experience in applying the foam using Graco Reactor H-XP3 machine and PROBLER P2 ELITE spray gun (01 mixing chamber).

The volumetric ratio of components POLY:ISO	**100 : 100**	
Recommended machine settings		
Parameter	**Parameter**	**Parameter**
Heating temperature POLY and ISO	35 – 45	°C
Heating the hoses	35 – 45	°C
Component's pressure	70-100 (1015-1450)	Bar (psi)
Component's temperature in drums	15 – 30	°C
Optimal processing conditions		
Ambient temperature	15 – 35	°C
Recommended surface temperature	15 – 50	°C
Relative ambient humidity	< 70	%
Humidity of porous base	< 15	%
Humidity of non-porous base	0	%

Insulated surfaces should be prepared in advance. They must not contain dust, water, oil, loose fragments and other substances that may reduce the adhesion of the foam.
Before spraying, carefully protect the surfaces of adjacent objects such as windows, doors, floors, furniture, etc., to avoid accidental soiling during spraying – keep in mind that the sprayed foam has very good adhesion and may be difficult to remove later from undesirable places.
Pressure settings for the POLY component and the ISO component should be the same.
In order to obtain the best insulation parameters, at least two uniform layers of foam should be sprayed so that the total thickness is greater than 30 mm. Between spraying successive layers of insulation, wait until the foam stabilizes (layer temperature below 30°C). All layers of insulation should be done in one day.
IMPORTANT: Do not exceed the recommended layer thickness - the maximum thickness of each insulation layer is 35 mm.
After application the EKOPRODUR S0331FL system, it is recommended to ventilate the room until the odor disappears. If the ventilation is not adequate, forced air movement should be ensured using dedicated devices. If the foam is exposed to direct UV radiation (e.g., sunlight), it should be protected.
Before starting work with the EKOPRODUR S0331FL system, read the Safety Data Sheets of both components.

[1] GWP, Global Warming Potential – potential of creating greenhouse effect - indicator used to quantify the impact of a substance on the greenhouse effect.
[2] ODP, Ozone Depletion Potential – potential of depleting ozone layer – indicator used to quantify the impact of substance on the ozone layer.

6. PROPERTIES OF SPRAYED FOAM

The measurements were carried out on foam cut from samples made using a special spraying machine.

Parameter	Value	Unit	Standard
Apparent core density	≥ 38	kg/m³	PN-EN 1602
Flammability class	Class E	-	PN-EN 13501-1
Short-term water absorption by partial immersion, W_P	0,10	kg/m²	PN-EN ISO 29767
Thermal conductivity $\lambda_{mean, i}$	0,020	W/(m·K)	PN-EN 12667
Thermal conductivity, $\lambda_{90, 90}$	0,021	W/(m·K)	PN-EN 12667
Aging value, λ_D for the thickness:			PN-EN 12667 + NB-CPR/SG19-17/167r2
d_N < 80mm	0,026	W/(m·K)	
80 mm ≤ d_N < 120 mm	0,025	W/(m·K)	
d_N ≥ 120 mm	0,024	W/(m·K)	
Compressive stress at 10% relative deformation, σ_{10}	≥ 250	kPa	PN-EN 826
Deformation under compressive load (1st stage 40kPa/48h RT, 2nd stage 40kPa/168h 70°C)	<5	%	PN-EN 1605
Resistance coefficient of water vapour diffusion, μ	≥ 60	-	PN-EN 12086
Dimensional stability at defined temperature: 70°C, 90% rH, after 48 h	DS(70,90)3	-	PN-EN 1604
Dimensional stability: -20°C, after 48 h	DS(-20,-)3	-	PN-EN 1604
Adhesion of the foam perpendicularly to the surface	≥ 100	kPa	PN-EN 1607
Closed-cell content	≥ 90	%	PN-EN ISO 4590
Emission of volatile organic compounds - French Regulation VOC	Class A+	-	PN-EN 16516

Full mechanical properties of the foam obtained after 48 hours of seasoning.

7. PACKAGING

Metal drums with a capacity of 216 dm³, IBC with a capacity of 1000 dm³.

8. RECOMMENDED STORAGE CONDITIONS

Both components should be stored in tightly closed containers in dry place at a temperature of 10 - 25°C. Protect against moisture and direct sunlight. Shelf life of EKOPRODUR S0331FL system stored in original sealed manufacturer's packaging, under recommended conditions, is **3 MONTHS**.

9. REGULATORY AFFAIRS AND CERTIFICATES

- EKOPRODUR S0331FL does not contain any foaming agents that deplete the ozone layer. This is in accordance with the provisions of the European Union (EU) Regulation on Ozone Depleting Substances (ODS Regulation) - No. 1005/2009 dated September, 16th 2009
- Polyurethane system EKOPRODUR S0331FL has been introduced to the market in accordance with the EU Regulation No. 305/2011, together with an assessment of the performance made in accordance with the European harmonized standard EN 14315-1:2013
- This product has CE marking and Declaration of Performance No. 26DOP-2022-EN
- Product approved by the Polish National Institute of Health
- ADR/RID, IMDG, ICAO/IATA transport regulations do not apply to the transport of this product.

10. ADDITIONAL INFORMATION

Please refer to the data contained in the Safety Data Sheet of both system components.
Data included in this technical information are based on the results of our laboratory tests and practical experience as well. This data does not guarantee the properties of the final product. The results obtained may differ from those listed above especially when the use of the product is under the conditions other than originally intended. Hence, we recommend testing performance of the product for specific application at own degree. Foam application and conditions of use are beyond manufacturer control and contractor is responsible for correct selection. Guidelines for use are included in technical Information sheets (TDS) and safety date sheets (SDS). Failing to meet the recommended conditions can have negative impact on the foam application process and its parameters.

IMPORTANT: We are happy to provide technical and substantive assistance in implementing and applying polyurethane system EKOPRODUR S0331FL. At the same time when it is necessary and possible, we help in adjusting relevant parameters. In all matters related to the purchase and usage of polyurethane system EKOPRODUR S0331FL we encourage you to use a direct contact to our technical and commercial representative or by writing to prodex@pcc.eu.