

PLIXXOPOL® RI 4696W005

PLIXXOPOL® RI 4696W005 is a polyol formulation which is reacted with various PLIXXONAT® types by the RIM method to produce mouldings in the 500 to 700 kg/m³ range. The addition of suitable flame retardants yields the mould-foamed reaction products BAYDUR® 66FR and BAYDUR® 66FR-1. The ready-to-use polyol formulation contains neither fillers nor CFCs.

Introduction & Application

Typical Characteristics

Polyol component PLIXXOPOL® RI 4696W005:

Appearance	at 25°C	yellowish liquid	
Density	at 20°C	approx.	1.03 g/cm ³
Viscosity	at 25°C	approx.	1450 mPa*s
OH-number		approx.	515 mg KOH/g

Isocyanate component PLIXXONAT® N111:

Appearance	at 25°C	brown liquid	
Density	at 20°C	approx.	1.21 g/cm ³
Viscosity	at 25°C	approx.	140 mPa*s
NCO-content		approx.	29 %

Isocyanate component PLIXXONAT® N126:

Appearance	at 25°C	brown liquid	
Density	at 20°C	approx.	1.21 g/cm ³
Viscosity	at 25°C	approx.	170 mPa*s
NCO-content		approx.	29 %

These values provide general information and are not part of the product specification.

General Processing Instructions

PLIXXOPOL® RI 4696W005 must be thoroughly homogenized prior to processing. The ingress of moisture must be avoided.

Processing formulation for BAYDUR® 60:

PLIXXOPOL® RI 4696W005	100 parts by weight
PLIXXONAT® N126	140 parts by weight
or	
PLIXXONAT® N111	140 parts by weight

PLIXXOPOL® RI 4696W005

Processing formulation for BAYDUR® 66FR (NC):

PLIXXOPOL® RI 4696W005	100 parts by weight
Exolit AP 422 ²⁾ (Clariant AG)	15 parts by weight
or	
FR CROS 484 ²⁾ (Budenheim)	15 parts by weight
PLIXXONAT® N126	140 parts by weight

Processing formulation for BAYDUR® 66FR (BK):

PLIXXOPOL® RI 4696W005	100 parts by weight
Exolit AP 422 ²⁾ (Clariant AG)	15 parts by weight
or	
FR CROS 484 ²⁾ (Budenheim)	15 parts by weight
Black Repitan/IN 99430 (REPI S.p.A)	5 parts by weight
or	
Isopur-Schwarzpaste DN (ISL Chemie)	5-8 parts by weight
PLIXXONAT® N126	140 parts by weight

Processing formulation for BAYDUR® 66FR-1 (NC):

PLIXXOPOL® RI 4696W005	100 parts by weight
Exolit AP 422 ²⁾ (Clariant AG)	15 parts by weight
or	
FR CROS 484 ²⁾ (Budenheim)	15 parts by weight
PLIXXONAT® N111	140 parts by weight

Processing formulation for BAYDUR® 66FR-1 (BK):

PLIXXOPOL® RI 4696W005	100 parts by weight
Exolit AP 422 ²⁾ (Clariant AG)	15 parts by weight
or	
FR CROS 484 ²⁾ (Budenheim)	15 parts by weight
Black Repitan/IN 99430 (REPI S.p.A)	5 parts by weight
or	
Isopur-Schwarzpaste DN (ISL Chemie)	5-8 parts by weight
PLIXXONAT® N111	140 parts by weight

²⁾ Ammonium polyphosphate

PLIXXOPOL® RI 4696W005

If flame retardants with the same chemical description but different trade names are used, it is the responsibility of the producer of the finished parts to ensure that the resultant polyurethane has the necessary fire safety classification in accordance with the relevant fire test standard.

We recommend the following temperature ranges for processing:

PLIXXOPOL® RI 4696W005	28 - 35°C
PLIXXONAT®	28 - 35°C
Mould temperature	55 - 65°C

Processing Details

The processing data were obtained from laboratory trials with the raw materials at a temperature of approx. 23 °C.

PLIXXOPOL® RI 4696W005 was aerated for 30 s at about 3,000 rpm and then stirred together with PLIXXONAT® N111 for 10 s.

PLIXXOPOL® RI 4696W005	100 Gew.-Teile
PLIXXONAT® N111	140 Gew.-Teile

Cream time	25 s
Gel time	42 s
Fee rise density	180 kg/m ³

Mould preparation

Mouldings of suitable geometry based on PLIXXOPOL® RI 4696W005 with PLIXXONAT® N111 or PLIXXONAT® N126 that are produced in heated metal moulds require little or no release agent.

PLIXXOPOL® RI 4696W005

Mechanical Properties

Mechanical, thermal and other properties were measured on specimens cut from a 1,000 x 500 x 10 mm sheet. The properties given are obtained from individual tests.

Property	BAYDUR® 60 PLIXXONAT® N111	BAYDUR® 66FR-1	Unit	Standard (according to)
Density	615	615	kg/m ³	DIN EN ISO 845
Tensile strength	20	18	MPa	DIN EN ISO 527-2
Elongation	8	7	%	DIN EN ISO 527-2
Flexural strength	37	34	N/mm ²	DIN 53423
Flexural modulus of elasticity	940	900	N/mm ²	DIN 53423
Compressive strength at 10% compression	20	19	MPa	DIN 53423
Impact strength at 22°C	18	15	kJ/m ²	DIN EN ISO 179
Surface hardness Shore D	70	67		DIN 53505
Deflection temperature under flexural and compression load (10 mm)	90	88	°C	TM900024
Heat deflection temperature Meth. B (0,45 MPa)	78	76	°C	DIN EN ISO 75
Surface resistivity	1.6 ¹⁶		Ω	ASTM D257
Volume resistivity	1.9 ¹³		Ω*m	ASTM D257
Water vapor transmission	approx. 0.5			DIN 53122
Water absorption (7 / 14 days)	approx. 0.9 / 1.5 approx. 0.8 / 1.1		weight % Vol.%	DIN EN ISO 62

These values are given as a guide and must be verified in each individual case on finished parts manufactured under the processor's production conditions.

PLIXXOPOL® RI 4696W005

Additional requirements

UL Subject 94:

BAYDUR® 66FR and BAYDUR® 66FR-1 are variants of BAYDUR® 60 containing ammonium polyphosphate as a flame retardant.

With a wall thickness above 5.9 mm, BAYDUR® 66FR (NC) at a density of 560 to 650 kg/m³ achieve UL94 V0 and UL94 5VA fire ratings in accordance with Underwriters Laboratories Inc.

With a wall thickness above 3.9 mm, BAYDUR® 66FR (BK) at a density of 560 to 650 kg/m³ achieve UL94 V0 fire ratings in accordance with Underwriters Laboratories Inc.

With a wall thickness above 5.8 mm, BAYDUR® 66FR-1 (NC) at a density of 560 to 650 kg/m³ achieve UL94 V0 fire ratings in accordance with Underwriters Laboratories Inc.

With a wall thickness above 4.0 mm, BAYDUR® 66FR-1 (BK) at a density of 560 to 650 kg/m³ achieve UL94 V0 fire ratings in accordance with Underwriters Laboratories Inc.

The products are listed by Underwriters Laboratories Inc. under File no.: E514753.

FMVSS 302:

BAYDUR® 66FR – see Directions for processing - satisfies the requirements of FMVSS 302 and EC Guideline 95/28/EG for horizontal burning rate at a part density of 500-600 kg/m³.

DIN 4102:

Without the addition of flame retardants, at a density of ~600 kg/m³ and with wall thicknesses of 6 and 10 mm the system achieve the flammability rating B2 (DIN 4102).

The methods described in this publication for testing the fire performance of polyurethane and the results quoted do not permit direct conclusions to be drawn regarding every possible fire risk there may be under service conditions. Furthermore, this does not release the producer of the finished parts from his obligation to carry out suitable tests on his end product with respect to fire performance and/or fire risk in order to guarantee conformity with the required fire safety standard.

PLIXXOPOL® RI 4696W005

Other Remarks

Shrinkage

Density: approx. 600 kg/m³

Demould time: approx. 5 min

Mould temperature: approx. 60°C (aluminium mould)

Thickness	10mm	6mm	4mm
PLIXXOPOL® RI 4696W005/ N111	approx. 0,55	approx. 0,5	
BAYDUR 66 FR-1		approx. 0,45	approx. 0,35

Molding shrinkage is influenced by changes in processing conditions and particularly when changing to different part geometries. Lengthy periods of storage at high humidity – and also at particularly low humidity – can cause greater or lesser degrees of shrinkage.

Storage, Handling & Preparation

The recommended shelf life (ex works) is 6 months. The storage temperature is between 23 - 35 °C. Drums should be protected against strong sunlight and always kept sealed to protect the contents from moisture or damp air. Material which has been stored must be thoroughly homogenized by stirring before it is processed.

Safety Instructions

When working with liquid polyols, isocyanates and/or with additives, wear suitable safety equipment in accordance with the potential health hazards involved. In addition, avoid direct skin contact with freshly manufactured polyurethane products, eg when handling or processing directly after demoulding. For more detailed information, refer to the Safety Data Sheets of the components processed.

Labeling and REACH applications

This Technical Data Sheet is only valid in conjunction with the latest edition of the corresponding Safety Data Sheet. Any updating of safety-relevant information - in accordance with statutory requirements - will only be reflected in the Safety Data Sheet which will be revised and distributed. Information relating to the current classification and labelling, applications and processing methods and further data relevant to safety can be found in the currently valid Safety Data Sheet processed.

PLIXXOPOL® RI 4696W005

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance, information and recommendations to determine to your own satisfaction whether our products, technical assistance and information are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by PLIXXENT. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale which are available upon request. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with any claim of any patent relative to any material or its use. No license is implied or in fact granted under the claims of any patent.

This product is not designated as „Medical Grade“ and therefore shall not be considered a candidate for the manufacture of a medical device or of intermediate products for medical devices, which are intended under normal use to be brought into direct contact with the patient’s body (for example skin, body fluids or tissues, including indirect contact to blood). This product is also not designated for food contact, including drinking water, or cosmetic applications (as defined in Commission Regulation EU 1935/2004). If the intended use of the product is for the manufacture of a medical device or of intermediate products for medical devices, for food contact products or cosmetic applications PLIXXENT must be contacted in advance to provide its agreement to sell such product for such purpose. Nonetheless, any determination as to whether a product is appropriate for use in a medical device or intermediate products for medical devices, for food contact products or cosmetic applications must be made solely by the purchaser of the product without relying upon any representations by PLIXXENT.

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