

# POLYURETHANE SYSTEMS

## Industrial Applications





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# MARKETS SUPPLIED BY SYNTHESIA INTERNACIONAL

**1. A - RIGID FOAM: LOW DENSITY**



**1. B - RIGID FOAM: WOOD IMITATION**



**2 - FLEXIBLE FOAM**



**3 - INTEGRAL SKIN FOAM**



**4 - HIGH DENSITY PU**



**5 - ELASTOMERS**



**6 - HOT CAST ELASTOMERS**



**7 - HIGH DENSITY SPRAY**



**8 - SPECIALTIES**







MARKETS SUPPLIED BY

## PRODUCTS

MARKETS	SYNTHESIA SYSTEMS	APPLICATIONS
RIGID FOAM: LOW DENSITY	POURING SYSTEMS	Industrial Insulation: Panels, refrigeration equipment, thermal tanks, .... Filling of all type of cavities.
RIGID FOAM: WOOD IMITATION	SYNTHEMAD®	Furniture: Imitation Wood, Chairs, Sofas, Armchairs, Armrests, .... Decoration: Pictures frames, Beams, ...
FLEXIBLE FOAM	SYNTHEFLEX®	Furniture and Automobile Industries: Seats, backrests, .... Viscoelastic foams.
INTEGRAL SKIN FOAM	SYNTHEOFAM®	Furniture and Automobile Industries: Seats, backrests, stools, steering wheels, ...
HIGH DENSITY PU	DUROMER ISOCYANATE	Moulded pieces with high hardness and good physical and mechanical properties.
ELASTOMERS	URELAST®	Moulded pieces with different shore hardness. Good physical and mechanical properties.
HOT CAST ELASTOMER	SYNTHICAST®	Moulded pieces for Industrial wheels and solid tyres. Abrasion resistant linings, etc.
HIGH DENSITY SPRAY	H D SPRAY	Designed to improve the final properties of several types of PU. Excellent adhesion to all substrates.
SPECIALTIES	OTHER SYSTEMS	Packaging, Floral foams, Surfboards, Shutters, Window profiles, Shoe pieces, Spoilers, Adhesives, etc.

PRODUCTS



## Rigid Foam:

### 1. A Low Density

# POURING SYSTEMS

### CHARACTERISTICS:

#### Two Components:

- Polyol A + Isocyanate B
- High Suitable Systems for the production of rigid foams.
- Indicated for the insulation and filling of all type of cavities.
- Free of CFCs and HCFCs.
- Densities between 30 – 60 kg/m<sup>3</sup>.
- Broad range of working times: 6 – 40 s depending on the system.
- Initial Thermal Conductivity Coefficient 0,022 W/mK.



### MAIN REFERENCES:

POURING SYSTEM (Polyol / Isocyanate)	FREE DENSITY (Kg/m <sup>3</sup> )	MIX RATIO Pol : Iso (Weight)	CREAM TIME (s)	APPLICATIONS
9395 / H25C	31	100:135	12	PUR Panels.
7083 / H25C	40	100:180	13	PUR Panels.
7194 / H600	35	100:160	10	PIR Panels.
9425 / H25C	33	100:125	12	Filling all type of cavities, thermal tanks, etc.
9309 / H25C	31	100:140	16	Filling all type of cavities, thermal tanks, etc.
9762 / H25C	36	100:110	20	Filling all type of cavities, thermal tanks, boats, etc.
9758-X / H25C	35	100:100	20	Filling all type of cavities with good behavior in fire (TAC; B2).
9932 / H25C	32	100:105	40	Filling all type of big cavities.
9154 / H25C	42	100:105	45	Filling all type of big cavities with high density.
560BL / H25C	46	100:105	34	<b>Furniture Industry:</b> Low density wood imitate, Beams, adornments, etc.



## Rigid Foam:

### 1. B Wood Imitation

## SYNTHEMAD®

### CHARACTERISTICS:

Two Components:

- Polyol A + Isocyanate B.

- These Systems are designed for the production of moulded pieces in a broad range of densities.
- Free of CFCs and HCFCs.
- Densities between 70 – 750 kg/m<sup>3</sup>
- Broad range of working times: 20 – 50 s depending on the system.



### MAIN REFERENCES:

SYNTHEMAD (Polyol / Isocyanate)	FREE DENSITY (Kg/m <sup>3</sup> )	MIX RATIO Pol : Iso (Weight)	CREAM TIME (s)	APPLICATIONS
9372-A-70 / H30	70	100 :120	22	Beams, mouldings, adornments, frames, etc.
9654-A-80 / H30	85	100 :110	23	Beams, mouldings, adornments, frames, etc.
9111-X-AE / H30	110	100 :125	30	Several sectors: Furniture industry, car industry, etc. Good behavior in fire (B2).
9295-A-120 / H30	120	100 :100	30	Several sectors: Furniture industry, car industry, etc.
9369-X-150 / H30	155	100 :100	26	Several sectors: Furniture industry, car industry, etc.
490-X-200 / H30	200	100 :100	30	Several sectors: Furniture industry, car industry, technical parts, etc.
9411-AE / H30	235	100 :100	27	Several sectors: Furniture industry, car industry, technical parts, etc. Good behavior in fire (B2).
9475-S-350 / H30	350	100 :100	29	Several sectors: Furniture industry, car industry, technical parts, etc.



## SYNTHEFLEX®

### CHARACTERISTICS:

Two Components:

- Polyol A + Isocyanate B.
- These Systems are designed for the production of coldmoulded flexible foams
- Densities between 45-60 kg/m<sup>3</sup>. Some of them > 100 kg/m<sup>3</sup>.
- Broad range of working times: 8 - 20 s depending on the system.



### MAIN REFERENCES:

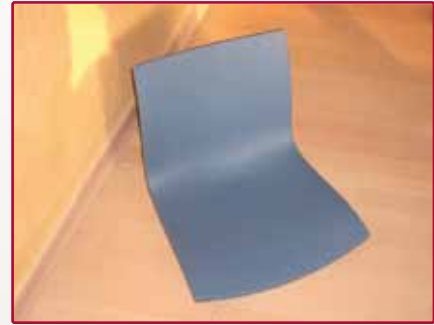
SYNTHEFLEX (Polyol / Isocyanate)	FREE DENSITY (Kg/m <sup>3</sup> )	MIX RATIO Pol : Iso (Weight)	ISO	APPLICATIONS
9735-M-40 / 5669	40	100:75	MDI	Furniture and Automobile Industries: Seats, backrests, headrests, etc
9735-M-50/ 5669	50	100:60	MDI	Furniture and Automobile Industries: Seats, backrests, headrests, etc
9735BS-M-57/ 5669	56-62	100:60	MDI	Furniture and Automobile Industries. Good behavior in fire (BS5852 fulfilled)
9145P-M-60/ 5669	55	100:60	MDI	Furniture and Automobile Industries: Seats, backrests, headrests, etc.
9676 / 5652	45	100:55	TDI	Furniture and Automobile Industries: Seats, backrests, headrests, bicycle seats, etc
9676BS / 5652	55	125:55 ó 100:45	TDI	Furniture and Automobile Industries: Seats, backrests, headrests, bicycle seats, etc. Good behavior in fire (BS5852 fulfilled)
9752-M-135 / 5669	135	100:44	MDI	Manufacture of articles for the toy industry
7023BD / 5669	60	100:45	MDI	LOW Viscoelastic effect foam.
7023BD / 5652	60	100:38	TDI	MEDIUM Viscoelastic effect foam.
7173 / 5447	60	100:34	MDI	HIGH Viscoelastic effect foam.



## SYNTHEFOAM®

### CHARACTERISTICS:

- Two Components:
  - Polyol A + Isocyanate B.
- These Systems are designed for the production of semirigid integral skin foams.
- Free of CFCs and HCFCs.
- Densities between 120-450 kg/m<sup>3</sup>.
- Broad range of working times: 15 - 25 s depending on the system.



### MAIN REFERENCES:

SYNTHEFOAM (Polyol / Isocyanate)	FREE DENSITY (Kg/m <sup>3</sup> )	MIX RATIO Pol : Iso (Weight)	CREAM TIME (s)	APPLICATIONS
9876-X-110 / 5669	120	100 : 50	20	Furniture and Automobile Industries: Armrests, stools with comfort requirements
9368-X-140 / HT16	150	100 : 48	20	Furniture and Automobile Industries: Armrests, stools, steering wheels, finishes, etc
9368L-X-140 / HT16	140	100 : 48	20	Furniture and Automobile Industries: Armrests, stools, steering wheels, finishes, etc
9564AE-150/ HT16	158	100 : 43	20	Furniture and Automobile Industries: Armrests, stools, steering wheels, finishes, etc. Good fire behavior ( UNEEN 1021-2:2006)
7026/ 5700	200	100 : 52	20	Furniture and Automobile Industries: Armrests, stools, steering wheels, finishes, etc
7119 / 5700	235	100 : 50	20	Elastic compact pieces: Elastic molds for concrete, ceramic, etc





## DUROMER

### CHARACTERISTICS:

#### Two Components:

- Polyol A + Isocyanate B.
- These Systems are designed for the production of high density pieces
- Moulded pieces with high hardness and good physical and mechanical properties
- Densities between 1000- 1300 kg/m<sup>3</sup>.
- Broad range of working times: 60- 240 s depending on the system.



### MAIN REFERENCES:

RIGIMERO (Polyol / Isocyanate)	FREE DENSITY (Kg/m <sup>3</sup> )	MIX RATIO Pol : Iso (Weight)	WORK TIME (s)	SHORE HARDNESS (Sh D) DIN 53505
9560 / H30	1250	100 : 60	70-100	80
9560 / HT16	1250	100 : 70	80-110	80
9560 / 5561	1180	100 : 100	90-120	75
9560 / 5563	1250	100 : 100	120-150	75
9560-80 / HT16	1250	100 : 80	80-110	80-85
9190 / HT16	1200	100 : 70	120-180	80
9190 / 5561	1200	100 : 100	240-300	75
7011 / H30	1050	100 : 56	150	75



## URELAST®

### CHARACTERISTICS:

#### Two Components:

- Polyol A + Isocyanate B.

- Moulded pieces with good physical and mechanical properties
- Densities between 1000- 1100 kg/m<sup>3</sup>.
- Broad range of working times: 5 - 60 min depending on the system.



### MAIN REFERENCES:

URELAST (Polyol / Isocyanate)	DENSITY (Kg/m <sup>3</sup> )	MIX RATIO Pol : Iso (Weight)	WORK TIME (min)	SHORE HARDNESS (Sh A)	TENSILE STRENGTH (kg/cm <sup>2</sup> )	ELONGATION (%)	TEAR RESISTENCE (kg/cm)
9860-40 / 5700	1100	100 : 18	6	30-40	30 ± 10	250 ± 50	12 ± 2
9860-75 / 5700	1100	100 : 43	4	75	120 ± 20	300 ± 50	25 ± 5
9860-95 / 5700	1100	100 : 65	4	95	150 ± 10	150 ± 50	50 ± 10
9860-40HQ / 5700	1100	100 : 19	6	30-40	35 ± 10	350 ± 50	14 ± 2
9860-55HQ / 5700	1100	100 : 24	3	55	45 ± 10	300 ± 50	18 ± 2
7003 / 5700	1200	100 : 30	15-30	65-75	75 ± 10	250 ± 50	30 ± 5
650 / HE16	1200	100 : 17-30	25-50	25-75	12 - 40	160 - 30	3 - 5



## SYNTHECAST®

### CHARACTERISTICS:

#### Two Components:

- Prepolymer A + Cure Agent B
- SYNTHECAST, range of prepolymers:
  - TDI / PTMG
  - TDI / Polyester
  - MDI / Polyester
  - MDI / PTMG



Can be used to produce elastomers with outstanding toughness, abrasion, cut and heat resistance.  
(Potential Alternative for TPU's)

High Vacuum and high T° are required

Special machines and molds are required



### MAIN REFERENCES:

SYNTHECAST (Prepolymer)	TYPE	INCO (%)	VISCOSITY (100 ° C) mPa s	MIX RATIO PREPOLYMER: ETHACURE 300 (Weight)	WORK TIME (min)	SHORE HARDNESS (Sh A)
PT - 2080	TDI-PTMG	3 -3,3	<3000	100 : 7.5	5-10	79 - 84
PT - 2090	TDI-PTMG	4 - 4,3	<1000	100 : 9.7	5-10	87 - 92
PT- 2095	TDI-PTMG	6,1 - 6,5	<600	100 : 15.2	4-10	92 - 97
PS - 2185	TDI-Poliéster	3 - 3,4	<2000	100 : 7.8	5 - 10	80 - 85
PS - 2190	TDI-Poliéster	3,6 - 4,2	<1500	100 : 9.7	4 - 10	87 - 92
PS - 2195	TDI-Poliéster	5 - 5,5	<1500	100 : 13.3	5 - 10	92 - 97
PS - 1193	TDI-Poliéster	4,6 - 5	<3000	100 : 11.7	7 - 14	91 - 96
PS - 2090	TDI-Poliéster	3,6 - 4,3	<1000	100 : 9.7	7 - 14	76 - 81
PS - 3085	MDI-Poliéster	3,8 - 4,3	<2500	100 : 9,8	2 - 5	85 - 90



## H.D. SPRAY

### CHARACTERISTICS:

#### Two Components:

- Polyol A + Isocyanate B.
- These Systems are designed for the projection of high density foams for decoration, substrate protection, etc.
- Densities between 100 - 1000 kg/m<sup>3</sup>
- COATINGS: Elastomer Polyurethane (F-75) & Hybrid Polyurea (F-100) & Pure Polyurea (P-500)
- Excellent adhesion to all substrates
- These systems must be applied with a polyurethane projection machine.



### MAIN REFERENCES:

POURING SYSTEM (Polyol / Isocyanate)	FREE DENSITY (Kg/m <sup>3</sup> )	MIX RATIO Pol : Iso (Weight)	CREAM TIME (s)	APPLICATIONS
S 1003 / H	80	100 : 100	3	The main applications are for decoration, finished pieces in high-density Insulation.
S 2003 / H	160	100 : 100	3	The main applications are for decoration, finished pieces in high-density Insulation.
9452 / H	240 - 280	100 : 100	3-5	The main applications are for decoration, finished pieces.
S 4003 / H	300	100 : 100	4	The main applications are for decoration, finished pieces.
S 004 / H	1000	100 : 100	2-4	The main applications are an industrial and construction.
URESPRAY F 75 / ISO F 75 -N	1000	100 : 100	3-5	The main applications are in industrial and building, fields for thermal insulation such as polyurethane rigid foams.
URESPRAY F -100 / 5332	1000	100 : 100	3-5	The main applications are in industrial field, mostly for coatings of metallic and mineral surfaces.
URESPRAY P- 500 / 5332	1000	100 : 100	3-5	The main applications are in industrial field, mostly for coatings of metallic and mineral surfaces.





## OTHER PRODUCTS



### CHARACTERISTICS:

#### Two Components:

- Polyol A + Isocyanate B.
- These Systems are designed for the production of different density pieces, depending on the applications.
- Moulded pieces with high hardness, excellent adhesion or good physical and mechanical properties depending on the application.
- Densities between 50- 1000 kg/m<sup>3</sup>.
- Broad range of working times: 6 seconds until 50 minutes depending on the system families.



### MAIN REFERENCES:

POURING SYSTEM (Polyol / Isocyanate)	FREE DENSITY (Kg/m <sup>3</sup> )	MIX RATIO Pol : Iso (Weight)	CREAM TIME (s)	APPLICATIONS
9774 M / H30	27	100 : 110	20	Suitable for the manufacture of floral foams
9576 / H30	20-23	100 : 100	14	Suitable for the manufacture of floral foams
9406 / H30	32	100 : 130	35	Suitable for making floral foam block
9907 / 1517-B	45	100 : 300	27	Surf Boards
9290 / H30	50	100 : 140	6	Sutters
9669-X-85 / NH-10	85	100 : 110	19	Window Profiles
9914-X-160 / P-3010	160	100 : 40	15	Suitable for the manufacture of templates, shoe inserts, etc
9163 / HT16	900	100 : 85	140	Suitable for the manufacture of mannequins, spoilers, etc
RIM 9917D3 / 5700	1000	100 : 100	30	Automotive industry: Suitable for the production of pieces with good resistance to impact.
SK 11 / H25C	1000	100 : 23	60-90 min	Adhesives: Excellent adhesion to various substrates (plastics, wood, etc)



Silicone  
**syntheflex**

foam  
**synthemad**

foam  
**syntheflex**

Polyol,



**synthemad**  
duromer

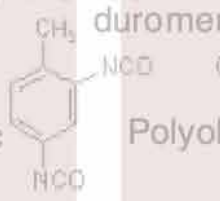
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Isocyanate

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**synthemad**

Isocyanate



**synthemad**

Polymeric

Polyol H<sub>2</sub>O

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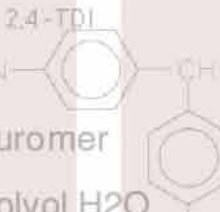
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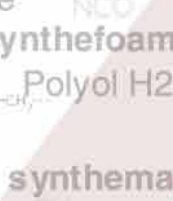
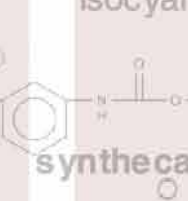
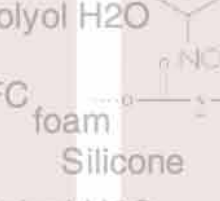
NH<sub>2</sub>

Isocyanate

duromer

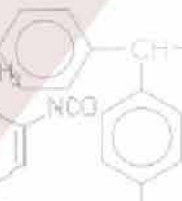
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Polyol,

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Polyol H<sub>2</sub>O

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Polymeric



2,4-TDI

2,6-TDI

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Polyol,

HFC

NH<sub>2</sub>

Silicone

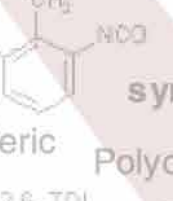
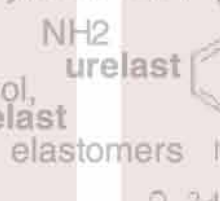
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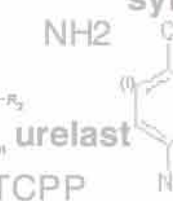
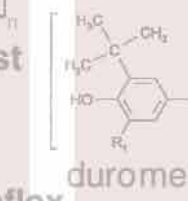
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Silicone

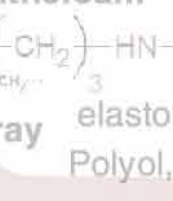
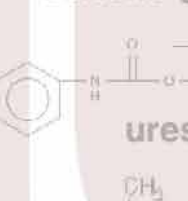
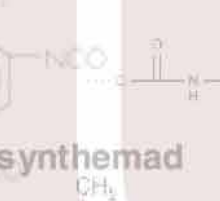
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Polymeric

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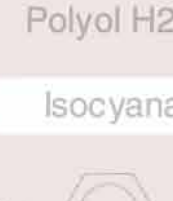
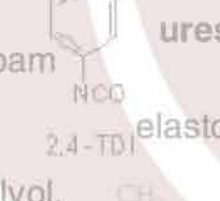
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flexible

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Polyol,

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Polyol,

**synthecast**

Silicone

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duromer

Isocyanate

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**synthemad**

Polyol H<sub>2</sub>O

**urespray**

TCPP

NH<sub>2</sub>

**synthefoam**

HFC

foam

flexible

**syntheflex**

2,4-TDI

2,6-TDI

NH<sub>2</sub>

foam

flexible

**syntheflex**

2,4-TDI

2,6-TDI



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