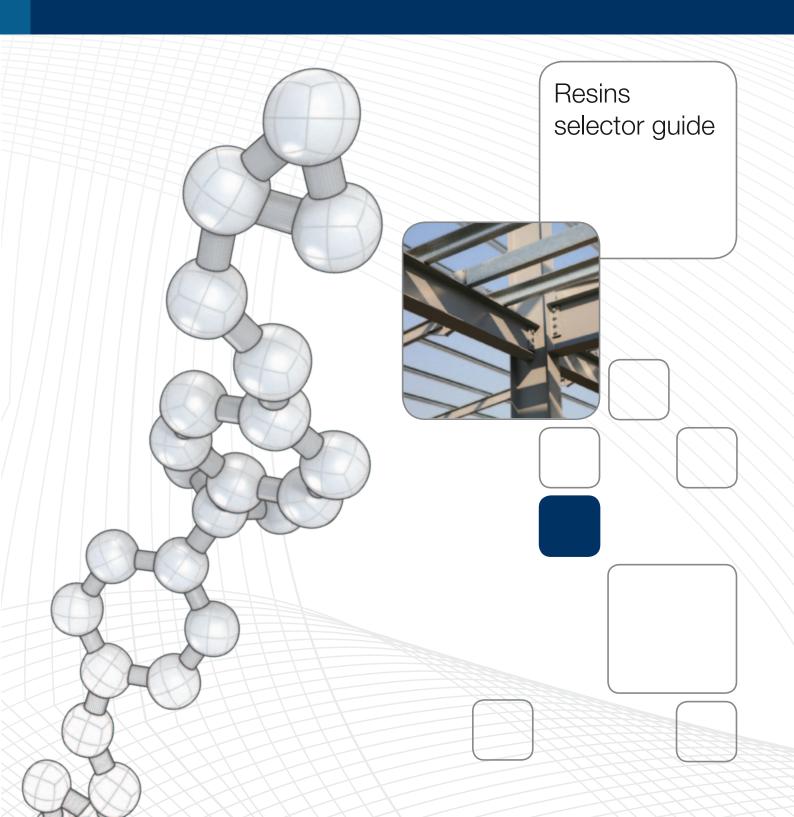




# **Advanced Materials**

# Strengthen your system







### Rely on us with confidence

For more than 60 years Huntsman Advanced Materials, as a global partner and innovator produces and develops knowledgebased specialty components for high-end-performance industrial products. Its unique portfolio including a broad range of epoxy resins and reactive diluents, hardeners, crosslinkers and matting agents appeals to formulators, chemists and scientists working in challenging markets who want to be at the forefront of innovation and product development in area such as:

#### Coatings for metallic and mineral substrates

Primers, undercoats, topcoats, heavy-duty corrosion protection, powder coatings, potable water and food industry coatings, waterborne coatings, chemical resistant coatings

#### **Building protection**

Sealers, flexible and elastic coatings, mortars, injection resins, industrial flooring, chemical anchoring

# We value your challenge with more than just products

Our know-how and expertise allow us to answer your specific formulation requirements. Huntsman Advanced Materials has a worldwide team of experts

- > to modify or develop when needed high perfomance products
- > to improve the quality, the durability and the performance of your products such as mechanical, temperature, fire, chemical or corrosion resistance and furthermore to help you in process optimization and to quickly bring your product to market.

We offer product consistency through multi-scale synthesis and mixing / blending capabilities.

All the components of the products contained in this brochure have been preregistered under REACH.



The brand

serving worldwide coatings and construction industries for more than half a century.





# **Epoxy resins**

## Basic liquid resins

Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	Gardner
Araldite® GY 240	BPA	7 000 - 9 000	5.45 - 5.56	180 - 183	≤ 2
Araldite® GY 250	BPA	10 000 - 12 000	5.30 - 5.45	183 - 189	≤ 2
Araldite® GY 260	ВРА	12 000 - 16 000	5.20 - 5.49	182 - 192	≤ 3
Araldite® GY 261	BPA, high chlorine content	12 500 - 17 500	4.90 - 5.20	192 - 204	≤ 3
Araldite® GY 266	ВРА	9 500 - 12 000	5.10 - 5.30	189 - 196	≤ 2
Araldite® GY 280	BPA, semi-solid	450 - 700 <sup>2</sup>	3.57 - 4.45	225 - 280	≤ 3 <sup>2</sup>
Araldite <sup>®</sup> GY 2600	ВРА	12 000 - 14 000	5.29 - 5.43	184 - 189	≤ 1

## Basic solid resins - high molecular weight

Product designation	Characteristics	Viscosity <sup>1</sup> 25°C	Epoxy index	Epoxy equiv.	Color <sup>1</sup>
Unit / scale		mPa·s	Eq/kg	g/Eq	Gardner
Araldite <sup>®</sup> GT 6097	BPA type 7	1 800 - 2 600	0.53 - 0.59	1 695 - 1 885	≤ 1
Araldite® GT 6099	BPA type 9	5 000 - 10 000	0.34 - 0.42	2 380 - 2 941	≤ 2
Araldite® GT 6609	BPA type 9, low viscous	2 700 - 4 800	0.34 - 0.42	2 380 - 2 941	≤ 3
Araldite® GT 6610	BPA type 10, low viscous	4 500 - 8 500	0.26 - 0.34	2 940 - 3 845	≤ 3
Araldite® GT 6810-1	BPA type 10, modified	4 000 - 7 000	0.0 - 0.10	> 10 000	≤ 3
Araldite® GT 7077	BPA type 7	1 300 - 1 900	0.61 - 0.67	1 490 - 1 640	≤ 1
Araldite® GT 16099	BPA type 9, medium viscous	4 400 - 6 200	0.34 - 0.42	2 380 - 2 941	≤ 2

## Basic solid resins - medium & low molecular weight

Product designation	Characteristics	Viscosity <sup>1</sup> 25°C	Epoxy index	Epoxy equiv.	Mettler soft point	Color <sup>1</sup>
Unit / scale		mPa·s	Eq/kg	g/Eq	°C	Gardner
Araldite® GT 6063	BPA type 2.5	350 - 500	1.37 - 1.56	640 - 730	90 - 97	≤ 1
Araldite® GT 6064	BPA type 3.5	400 - 600	1.28 - 1.37	730 - 780	96 - 101	≤ 1
Araldite® GT 6071	BPA type 1	160 - 190	2.15 - 2.22	450 - 465	70 - 75	≤ 1
Araldite® GT 6084-2	BPA type 4	550 - 700	1.12 - 1.20	833 - 895	99 - 105	≤ 2
Araldite® GT 6703	BPA type 3	230 - 320	1.35 - 1.45	690 - 740	~ 87	≤ 2
Continued on next page						

<sup>&</sup>lt;sup>1</sup> 40% in butylcarbitol • <sup>2</sup> 70% in butylcarbitol

Continued							
Product designation	Characteristics	Viscosity <sup>1</sup> 25°C	Epoxy index	Epoxy equiv.	Mettler soft point	Color <sup>1</sup>	
Unit / scale		mPa·s	Eq/kg	g/Eq	°C	Gardner	
Araldite® GT 7004	BPA type 3.5	500 - 600	1.33 - 1.40	714 - 752	95 - 101	≤ 1	
Araldite® GT 7071	BPA type 1	200 - 250	1.90 - 2.00	500 - 525	77 - 82	≤ 1	
Araldite® GT 7072	BPA type 2	280 - 340	1.68 - 1.75	570 - 595	82 - 90	≤ 1	

### Solid multifunctionals and ECNs

Product designation	Characteristics	Viscosity <sup>1</sup> 25°C	Epoxy index	Epoxy equiv.	Mettler soft point	Color <sup>1</sup>
Unit / scale		mPa·s	Eq/kg	g/Eq	°C	Gardner
Araldite® ECN 1280-1	Epoxy cresol novolac, functionality ~ 5.5	1 100 - 1 500 <sup>3</sup>	4.45 - 4.85	205 - 225	75 - 85	≤ 6
Araldite® ECN 9699	Epoxy cresol novolac, functionality ~ 4,1	7 000 - 10 000 4	4.45 - 4.85	205 - 225	80 - 100	≤ 6
Araldite <sup>®</sup> GT 7220	Modified epoxy novolac	460 - 670	1.83 - 1.93	520 - 545	~ 95	≤ 2
Araldite® GT 7255	Modified epoxy novolac	1 000 - 1 600	1.17 - 1.29	775 - 855	106 - 113	≤ 2

### Formulated solid resins

Product designation	Characteristics	Viscosity <sup>1</sup> 25°C	Epoxy index	Epoxy equiv.	Mettler soft point	Color <sup>1</sup>
Unit / scale		mPa·s	Eq/kg	g/Eq	°C	Gardner
Araldite® GT 2874-1	BPA based resin FCA 10%	350 - 550	1.15 - 1.35	740 - 870	85 - 95	≤ 2
Araldite® GT 6143	BPA based resin FCA 2.5%	250 - 375	1.51 - 1.61	620 - 660	90 - 96	≤ 3
Araldite® GT 7203	BPA based resin FCA 2.5%	300 - 400	1.55 - 1.65	605 - 645	82 - 90	≤ 1

### **Solutions**

Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Solids	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	%	Gardner
Araldite® GZ 7488 N50	High MWt. BPA in solution <sup>5</sup>	2 000 - 5 000	≤ 0.08	≥ 12 500	49 - 51	≤ 4
Aralule GZ 7400 N30	TigiTWW. DFA III SoldiloII	2 000 - 3 000	≥ 0.00	2 12 300	49 - 31	≥ 4
Araldite® GZ 7488 V40	High MWt. BPA in solution <sup>6</sup>	3 000 - 6 000	≤ 0.06	≥ 17 000	39 - 41	≤ 4
Araldite® GZ 280 X 80	Semi-solid BPA in xylene	650 - 900	3.10 - 3.40	290 - 323	79 - 81	≤ 3
Araldite® GZ 290 X 90	Modified semi-solid BPA in xylene	1 300 - 3 700	3.30 - 3.70	270 - 305	89 - 91	≤ 6
Araldite <sup>®</sup> GZ 601 X 75	Solid BPA in xylene	5 500 - 7 500	1.60 - 1.80	555 - 625	74 - 76	≤ 2
Araldite® GZ 7071 X 75	Solid BPA in xylene	8 000 - 13 000	1.50 - 1.67	600 - 670	74 - 76	≤ 2

<sup>&</sup>lt;sup>1</sup> 40% in butylcarbitol • <sup>2</sup> 70% in butylcarbitol • <sup>3</sup> 150 °C • <sup>4</sup> 130 °C • <sup>5</sup> 50% in methylethylketone/cyclohexanone/1-methoxy-2-propylacetate (81:11:8) <sup>6</sup> 40% in 1-methoxy-2-propylacetate/cyclohexanone (93:7)

## Waterborne

### Waterborne resins

Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Solids	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	%	Gardner
Araldite® PY 33757	Emulsifiable, crystallization-resistant epoxy resin	5 000 - 8 000	5.50 - 5.80	172 - 182	100	≤ 3
Araldite® PZ 323	Aqueous dispersion of polyfunctional EPN resin	sl. Thixotropic	4.00 - 4.50	222 - 250	75 - 78	white
Araldite® PZ 33757/67	Emulsified, crystallization-resistant epoxy resin	50 - 400	3.65 - 3.90	256 - 274	65 - 69	white
Araldite <sup>®</sup> PZ 3903-2	Aqueous dispersion of type 3 epoxy resin	8 000 - 20 000	1.25 - 1.40 <sup>1</sup>	715 - 800 <sup>1</sup>	53 - 58	white
Araldite® PZ 3907-1	Aqueous dispersion of t ype 7 epoxy resin	8 000 - 20 000	0.45 - 0.57 1	1 800 - 2 200 <sup>1</sup>	52 - 55	white
Araldite® PZ 3961-1	Aqueous dispersion of BPA type 1 resin	450 - 820 at 23°C	0.96 - 1.08	925 - 1048	51 - 55	white
Araldite® ECN 1400	Water-based epoxy cresol novolac resin	900 - 1 500	4.10 - 4.61 1	217 - 244 <sup>1</sup>	38 - 42	white

## **Crosslinkers**

### Crosslinkers

Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Solids	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	%	Gardner
Araldite® PT 910	Hardener for polyester or acrylic resin powder coatings	solid	6.50 - 7.10	141 - 154	100	white
Araldite® PT 912	Hardener for polyester or acrylic resin powder coatings	solid	6.50 - 7.10	141 - 154	100	white

# **Specialty epoxy resins and diluents**

## Bisphenol A with reactive diluent

Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	Gardner
Araldite® BY 157	BPA with difunctional reactive diluent	4 200 - 5 700	5.20 - 5.50	182 - 187	≤ 2
Araldite® BY 158	BPA with difunctional reactive diluent	280 - 360	6.20 - 6.50	154 - 161	≤ 3
Araldite® GY 253	BPA with difunctional reactive diluent	800 - 1 400	5.40 - 5.80	172 - 185	≤ 1
Continued on next page					

<sup>&</sup>lt;sup>1</sup> Measured on the solid products

Continued					
Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	Gardner
Araldite <sup>®</sup> GY 257	BPA with monofunctional reactive diluent	500 - 650	5.20 - 5.50	182 - 192	≤ 2
Araldite® GY 279	BPA with monofunctional reactive diluent	800 - 1 500	4.80 - 5.15	194 - 208	≤ 2
Araldite® GY 298	BPA with reactive flexibilizer	2 000 - 4 000	2.20 - 2.50	400 - 455	≤ 2
Araldite® GY 764	BPA with difunctional reactive diluent	350 - 550	5.50 - 5.80	179 - 189	≤ 2
Araldite® GY 776	BPA with monofunctional reactive diluent	2 700 - 3 800	5.10 - 5.40	185 - 196	≤ 2
Araldite® GY 784	BPA with monofunctional reactive diluent	1 200 - 1 600	4.90 - 5.20	192 - 204	≤ 2

## Bisphenol A/F with reactive diluent

Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	Gardner
Araldite <sup>®</sup> GY 783	BPA/F with monofunctional reactive diluent	800 - 1 100	5.10 - 5.40	185 - 196	≤ 2
Araldite® GY 793	BPA/F with monofunctional reactive diluent	650 - 750	5.00 - 5.40	185 - 200	≤ 2
Araldite® GY 794	BPA/F with difunctional reactive diluent	650 - 750	5.40 - 5.80	172 - 185	≤ 2
Araldite® GY 891	BPA/F with monofunctional reactive diluent	800 - 1 100	5.00 - 5.30	185 - 196	≤ 2
Araldite® PY 3483	BPA/F with monofunctional reactive diluent	1 000 - 1 600	4.80 - 5.10	196 - 208	≤ 4

## Bisphenol F and A/F pure

Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	Gardner
Araldite® GY 281	BPF	5 000 - 7 000	5.80 - 6.30	158 - 172	≤ 4
Araldite® GY 282	BPF	3 300 - 4 100	5.80 - 6.10	164 - 172	≤ 2
Araldite® GY 285	BPF	2 000 - 3 000	5.80 - 6.10	164 - 172	≤ 5
Araldite® PY 302-2	BPA/F, non-crystallizing	6 500 - 8 000	5.65 - 5.90	169 - 177	≤ 3
Araldite® PY 304	BPA/F	6 500 - 8 000	5.50 - 5.80	172 - 182	≤ 3
Araldite® PY 306	BPF, low viscosity	1 200 - 1 600	6.00 - 6.40	156 - 167	≤ 1
Araldite® PY 720	BPA/F	7 000 - 9 400	5.30 - 5.60	179 - 189	≤ 2

# Specialty epoxy resins and diluents (continued)

## Epoxy phenol novolac

Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	Gardner
Araldite <sup>®</sup> EPN 1179	Semi-solid EPN, functionality 2.5	1 100 - 1 700 1	5.60 - 5.80	172 - 179	≤ 3
Araldite® EPN 1180	Semi-solid EPN, functionality 3.6	20 000 - 50 000 1	5.50 - 5.70	175 - 182	≤ 2
Araldite® EPN 1182	Semi-solid EPN, functionality 3.6	40 000 - 50 000 <sup>1</sup>	5.50 - 5.70	175 - 182	≤ 2
Araldite® EPN 1183	Medium viscosity, modified EPN, functionality 3.3	7 000 - 13 000	6.30 - 6.90	145 - 159	≤ 3
Araldite® EPN 9880	Semi-solid EPN, functionality > 3	18 000 - 25 000 <sup>1</sup>	5.40 - 5.84	171 - 185	≤ 5
Araldite® EPN 1180X 80	EPN in xylene	1 200 - 2 000	4.40 - 4.60	217 - 227	≤ 2
Araldite® GY 289	Low viscosity EPN, functionality 2.2	9 000 - 11 000	5.70 - 6.00	167 - 175	≤ 5
Araldite® PY 307-1	Medium viscosity, EPN, functionality 2.2	30 000 - 50 000	5.60 - 5.90	170 - 179	≤ 4

### **Reactive diluents**

Product designation	Characteristics	Viscosity 25°C	Epoxy index	Epoxy equiv.	Color
Unit / scale		mPa·s	Eq/kg	g/Eq	Gardner
Araldite® DY-C	Diglycidylether of cyclohexane dimethanol	50 - 100	6.00 - 6.50	154 - 167	≤ 2
Araldite® DY-CNO	Monofunctional, aromatic reactive diluent for epoxy resins	30 - 70	1.70 - 2.40	416 - 588	≤ 13
Araldite® DY-D	Diglycidylether of butanediol	15 - 25	8.00 - 8.50	118 - 125	≤ 2
Araldite® DY-E	Monoglycidylether of C12-C14 alcohol	4 - 12	3.15 - 3.60	278 - 317	≤ 2
Araldite® DY-G	Monoglycidylether of C13-C15 alcohol	4 - 12	3.10 - 3.60	277 - 323	≤ 2
Araldite® DY-F	Diglycidylether of polyoxypropylene glycol	60 - 90	1.95 - 2.35	425 - 513	≤ 3
Araldite® DY-H	Diglycidylether of hexanediol	21 - 31	6.25 - 7.00	143 - 155	≤ 2
Araldite® DY-K	Monoglycidylether of cresol	6 - 12	5.30 - 5.70	175 - 189	≤ 2
Araldite® DY-L	Triglycidylether of polyoxypropylene glycol	160 - 240	1.25 - 1.65	556 - 714	≤ 5
Araldite® DY-P	Monoglycidylether of p-tert. butylphenol	20 - 28	4.10 - 4.50	222 - 244	≤ 3
Araldite® DY-S	Polyether based on glycerol	1 000 - 1 400	5.60 - 6.20	160 - 180	≤ 4
Araldite® DY-T	Triglycidylether of trimethyolpropane	100 - 300	7.80 - 8.20	122 - 128	≤ 3
Araldite® DY 3601	Diglycidylether of polyoxypropylene glycol	42 - 52	2.47 - 2.60	385 - 405	≤3

<sup>&</sup>lt;sup>1</sup> Measured at 52°C

#### **Nomenclature**

#### Resins

Huntsman Advanced Materials' registered trademark for commercial resins is Araldite®.

The two-letter code following the registered trademark has the following meaning:

First letter indicates the intended use of the product.

Example: Araldite® PY 302-2 CH

- B Special resin for civil engineering applications
- Modification product (reactive diluent, flexibilizer, matting agent, etc.)
- G Standard resin
- P Special resin
- EPN Epoxy phenol novolac
- **ECN** Epoxy cresol novolac

Second letter indicates the supply form. Example: Araldite<sup>®</sup> P**Y** 302-2 CH

- T Solid product
- Y Liquid product
- **Z** Resin in solution, emulsion or dispersion form

The number following this letter code is the characteristic for the product name. Example: Araldite® PY **302**-2 CH.

## Legend

#### **Acronyms legend**

**BPA** Bisphenol A epoxy resin

**BPF** Bisphenol F epoxy resin

FCA Flow control agent (in %)

#### REACH



All the components of the products contained in this brochure have been pre-registered under REACH.

# Safety and handling precautions

The Material Safety Data Sheet (MSDS) should be consulted prior to handling any of here listed products.

## **Product range**

Additional products are available upon request.

In case of minor product changes, we indicate the actual version by a figure separated from the product number by a dash.

Example: Araldite® PY **302-2** CH.

In case of resin solutions a one up to threeletter code behind the characteristic product number indicates a solvent (or solvent mixture).

Example: EPN 1180 X 80 CH.

This solvent code is followed by a number indicating the solid content of the product (in the example above it's 80% resin dissolved in xylene).

The last two letters indicate the country of origin, in these two cases **CH** for Switzerland. Example: EPN 1180 X 80 **CH**.

These appendices are in use on packaging, transport and invoicing documents but not within this selector guide.





#### With customer intimacy

We market a unique product portfolio and a broad range of forward-looking solutions for our customers. Customers and partners benefit from an advanced level of service in:

- > product development and quality
- > product trials in-house and with customers
- > customer seminars and training
- > trouble-shooting and problem-solving

Partnership with our customers is more than simply "putting them first". It requires long-term commitment to forging close relationships that create synergies of knowledge, security and adaptability to create a successful, shared future.

## With innovation

Every day, all over the world, our Technical Competence centers engage in intensive research and development focusing on one goal: to deliver innovative solutions by working hand-in-hand with our business partners. Together through a continual exchange of ideas, supported by an experienced team of sales and technical specialists, we strive to deliver innovative solutions.

We track both new market expectations and changing regulations. Protection of the environment, as well as health and safety are paramount concerns, playing an integral part in our development projects.

By providing certified technologies, combined with high quality and reliability, our chemists and experts bring enhanced value to our customers, ensuring their success.

#### With care

Sustainability is a fundamental part of our corporate and business strategy. We see a better world in which our innovations help reduce consumption of natural resources and improve the quality of life for people everywhere. We are identifying the long-term trends that affect our markets and looking to see how products and applications can play a part in supporting and providing solutions to the challenges those markets face.





Our Advanced Materials division is a leading global chemical solutions provider with a long heritage of pioneering technologically advanced epoxy, acrylic and polyurethane-based polymer products.

Our capabilities in high-performance adhesives and composites, delivered by more than 2300 associates, serve over 3000 global customers with innovative, tailor-made solutions and more than 1500 products which address global engineering challenges.

#### Global presence – 13 manufacturing sites



#### Ihr Lieferant:

### T-E-Klebetechnik

Anwendungs-, Verfahrens- und Dosiertechnik

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## HUNTSMAN

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