

Advanced Materials

Build your properties

Ambient curing systems

Selector guide



Nomenclature

Curing agents

Huntsman Advanced Materials' registered trademark for commercial hardeners is Aradur®. Example: **Aradur® 3467 XW 70** and **Aradur® 46-1 S**

In case of hardeners the characteristic number for the product name follows directly after the registered trademark.

Example: Aradur® **3467** XW 70

A one- up to three-letter code behind the characteristic product number indicates a solvent (mixture).

Example: Aradur® 3467 **XW** 70

This solvent code is followed by a number indicating the solid content of the product (in the example above it's 70% hardener dissolved in a xylene/butanol mixture).

Example: Aradur® 3467 XW **70**

A one-letter code (S) behind the characteristic product number (without additional solid-content number) indicates a special behavior of the hardener. S shows that the hardener is the fast version of an existing product.

Gel times

The values under «Gel time» have been measured using TECAM, 250g/23°C with Araldite® GY 250 unless otherwise specified. (n.m. = not measured).

REACH

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



All products mentioned in this publication are:

- > **Nonyl phenol-free**
- > **Phenol-free**
- > **Tert-butyl phenol-free**
- > **Bisphenol-A-free¹**
- > **Bisphenol-F-free¹**

Those products marked «○» in the column «BzOH free» are free from benzyl alcohol.

¹ Certain products may contain trace amounts where adducted with BPA or BPF epoxy resins.

Safety and handling precautions

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

Product range

Additional products are available upon request.

Curing agents

Polyamine

	Characteristics	Viscosity 25°C	Amine value	H+ active equiv.	Gel time	Color	BzOH free
Unit/scale		mPa·s	mg KOH/g	g/Eq	min	Gardner	
Aradur® 10	Polyamine	1300 – 1900	890 – 950	~ 40	12	≤ 8	○
Aradur® 15-1	Polyamine	100 – 300	170 – 230	140	18	≤ 5	○
Aradur® 21	Aliphatic polyamine	< 10	680 – 720	40	51	≤ 1	○
Aradur® 42	Cycloaliphatic polyamine	10 – 20	645 – 665	42	95	≤ 1	○
Aradur® 43-1	Cycloaliphatic polyamine	200 – 400	260 – 280	115	44	≤ 1	
Aradur® 43-1 S	Accelerated cycloaliphatic polyamine	500 – 800	265 – 285	115	19	≤ 1	
Aradur® 46-1	Polyamine adduct	130 – 230	310 – 340	95	38	≤ 3	
Aradur® 46-1 S	Cycloaliphatic polyamine	220 – 320	310 – 340	95	25	≤ 3	
Aradur® 49	Polyamine adduct	220 – 300	280 – 360	95	24	≤ 4	
Aradur® 51	Polyamine	20 – 40	440 – 480	67 – 90	20	≤ 3	
Aradur® 53 S	Polyamine adduct	300 – 400	250 – 280	~ 115	14	≤ 1	
Aradur® 70	Polyetherurethane amine	16 000 – 27 000	65 – 75	~ 900	300 – 500	≤ 5	○
Aradur® 90	Polymercaptan	10 000 – 16 000	–	200	4 – 5 (20g)	≤ 3	○
Aradur® 835	Solid isolated aliphatic polyamine adduct	600 – 1200 ¹	180 – 210	~ 200	1 000 ²	≤ 5	
Aradur® 847	Cycloaliphatic polyamine	150 – 300	350 – 375	~ 75	30	≤ 2	
Aradur® 1012	Aliphatic polyamine	90 – 120	670 – 785	~ 66	133	≤ 4	○
Aradur® 2862	Cycloaliphatic polyamine	210 – 310	255 – 265	111	25	≤ 4	
Aradur® 2963-1	Cycloaliphatic polyamine	30 – 70	325 – 350	85	40	≤ 2	
Aradur® 2965	Cycloaliphatic polyamine	100 – 300	300 – 325	~ 94	35	≤ 4	
Aradur® 2973	Aliphatic polyamine	900 – 1400	300 – 335	~ 85	40	≤ 7	
Aradur® 2992	Aliphatic polyamine	10 – 20	575 – 605	~ 55	5	≤ 2	○
Aradur® 20317	Formulated polyamine adduct	2500-6000	410 – 510	~ 65	65	≤ 0.5	
Aradur® 3243	Cycloaliphatic polyamine	220 – 360	280 – 360	95	60	≤ 1	
Aradur® 3253	Cycloaliphatic polyamine	200 – 260	290 – 320	~ 95	40	≤ 1	
Aradur® 3258	Polyamine adduct	300 – 400	350 – 400	~ 95	~ 43	≤ 2	○
Aradur® 3275	Formulated polyetherpolyamine	200 – 300	100 – 170	250	85	≤ 6	○
Aradur® 3277	Formulated polyamine adduct	250 – 450	450 – 500	91	80	≤ 6	○
Aradur® 3290	Polyamine adduct	100 – 180	820 – 900	48	22	≤ 4	
Aradur® 3296	Polyamine	350 – 650	330 – 370	75	~ 17	≤ 8	
Aradur® 3484	Polyamine adduct	300 – 550	350 – 450	95	30	≤ 6	
Aradur® 3740	Cycloaliphatic polyamine	5 – 20	645 – 700	41	58	≤ 3	○
Aradur® 3741	Cycloaliphatic polyamine	5 – 25	695 – 730	39	84	≤ 1	○
Aradur® 30 XWM 55	Isolated amine adduct in solvent ³	2 000 – 2 800	98 – 114	~ 370	> 1 000 ²	≤ 5	○
Aradur® 3776 XW 55	Isolated amine adduct in xylene/n-butanol	1 500 – 2 500	100 – 120	350	> 1 000 ²	≤ 8	○
Aradur® 33641	Formulated fast cure amine	5 000 – 8 000	450 – 520	58	~ 10	≤ 8	○
Aradur® 33642	Formulated fast cure amine	2 000 – 3 500	450 – 550	~ 55	~ 10	≤ 8	○

Phenalkamine

	Characteristics	Viscosity 25°C	Amine value	H+ active equiv.	Gel time	Color	BzOH free
Unit/scale		mPa·s	mg KOH/g	g/Eq	min	Gardner	
Aradur® 3440	Phenalkamine	1 000 – 3 000	475 – 505	~ 80	35	≤ 17	○
Aradur® 3441	Phenalkamine	10 000 – 50 000	290 – 325	~ 130	60	≤ 17	○
Aradur® 3442	Phenalkamine	1 000 – 5 000	320 – 350	~ 125	35	≤ 17	○
Aradur® 3467 XW 70	Phenalkamine adduct	1 000 – 3 000	170 – 210	180 – 220	120 ²	≤ 18	○
Aradur® 3460	Phenalkamine	2 000 – 5 000	305 – 335	120	95	≤ 17	○
Aradur® 3462	Phenalkamine	750 – 2 500	395 – 443	100	70	≤ 17	○

¹ 30% in xylene/butanol (1:1)

² With solid epoxy resin and solvent

³ Xylene/n-butanol/methoxypropanol (4:1:4)

Waterborne

Waterborne curing agents

	Characteristics	Viscosity 25°C	Amine value	H+ active equiv.	Gel time ¹	Color	BzOH free
Unit/scale		mPa·s	mg KOH/g	g/Eq	min	Gardner	
Aradur® 35-1	Polyamine adduct in water	19 000 – 35 000	100 – 120	~ 380	~ 90	≤ 6	○
Aradur® 36	Polyamine adduct 79 – 81% in water	4 000 – 7 000	185 – 225	~ 165	~ 150	≤ 6	○
Aradur® 39	Polyamine adduct 49 – 51% in water	12 000 – 20 000	120 – 140	~ 335	120 – 240	≤ 5	○
Aradur® 340	Polyamidoamine adduct 49 – 51% in water	18 000 – 23 000	155 – 175	~ 210	120 – 180	≤ 12	○
Aradur® 435	Polyamidoamine adduct 49 – 51% in water	13 000 – 23 000	160 – 200	~ 250	90 – 120	≤ 10	○
Aradur® 3985	Polyamine adduct 54 – 56% in water	1 000 – 6 000	170 – 210	~ 265	60	≤ 6	○
Aradur® 3985 S	Polyamine adduct 54 – 56% in water	3 000 – 8 000	200 – 250	~ 210	30	≤ 6	○
Aradur® 3986	Polyamine adduct 39 – 41% in water	15 000 – 35 000	90 – 110	~ 415	180	≤ 6	○
Aradur® 3987	Polyamine adduct dissolved in water	15 000 – 30 000	200 – 250	~ 147	~ 60	≤ 8	○

¹ Gel times for waterborne hardeners have been measured with Araldite® GY 776

Accelerators

	Characteristics	Viscosity 25°C	Amine value	H+ active equiv.	Gel time	Color	BzOH free
Unit/scale		mPa·s	mg KOH/g	g/Eq	min	Gardner	
Acc. 960-1	Tertiary amine	150 – 300	560 – 675	~ 20	n/a	≤ 8	○
Acc. 2950	Coreacting	2 000 – 6 000	644 – 700	~ 75	n/a	≤ 10	○
Acc. 3130	40% in ethanol	10 – 100	not an amine	–	n/a	–	○

Polyamidoamine curing agents

Polyamidoamine

	Characteristics	Viscosity 25°C	Amine value	H+ active equiv.	Gel time	Color	BzOH free
Unit/scale		mPa·s	mg KOH/g	g/Eq	min	Gardner	
Aradur® 100	Polyamidoamine	700 – 1100 at 150°C	83 – 93	475	> 1000 ¹	≤ 10	○
Aradur® 115	Polyamidoamine	3100 – 3700 at 75°C	240 – 260	240	> 1000 ¹	≤ 10	○
Aradur® 125	Polyamidoamine	700 – 900 at 75°C	340 – 370	130	120	≤ 10	○
Aradur® 140	Polyaminoimidazoline	300 – 600 at 75°C	370 – 410	95	120	≤ 10	○
Aradur® 145	Polyaminoimidazoline	2400 – 4000	380 – 420	95	180	≤ 10	○
Aradur® 223	Polyamidoamine	80 – 180	325 – 355	115 – 130	300	≤ 6	
Aradur® 224	Polyaminoimidazoline (for water contact)	4000 – 6000	260 – 330	180	> 480	≤ 10	○
Aradur® 250	Polyamidoamine	400 – 700	425 – 455	95	60	≤ 8	○
Aradur® 350	Polyaminoimidazoline	100 – 400	370 – 410	95	180	≤ 10	○
Aradur® 370	Polyaminoimidazoline	150 – 350	480 – 520	95	70	≤ 10	○
Aradur® 450	Polyamidoamine adduct	700 – 2000	250 – 290	115	78	≤ 10	
Aradur® 3282-1	Formulated polyamidoamine adduct	900 – 1900	290 – 350	115	100	≤ 10	○
Aradur® 848	Polyamidoamine	2500 – 5500	200 – 230	135 – 190	95	≤ 10	
Aradur® 33225	Polyamidoimidazoline (for food and water contact)	100 – 400	240 – 310	75 – 115	900	≤ 12	○

Polyamidoamine solutions

	Characteristics	Viscosity 25°C	Amine value	H+ active equiv.	Gel time	Color	BzOH free
Unit/scale		mPa·s	mg KOH/g	g/Eq	min	Gardner	
Aradur® 100 PP 77.5	Polyamidoamine in n-propanol	10000 – 17000	66 – 74	~ 610	> 1000 ¹	≤ 9	○
Aradur® 100 X 60	Polyamidoamine in xylene	2100 – 3500	49 – 57	~ 790	> 1000 ¹	≤ 10	○
Aradur® 100 XM 60	Polyamidoamine in xylene/methoxypropanol (4:1)	2200 – 3000	50 – 56	~ 790	> 1000 ¹	≤ 10	○
Aradur® 115 X 70	Polyamidoamine in xylene	750 – 1250	168 – 182	~ 340	> 1000 ¹	≤ 10	○
Aradur® 125 X 70	Polyamidoamine in xylene	200 – 600	235 – 265	~ 185	n.m.	≤ 10	○
Aradur® 422 XW 70	Polyamidoamine adduct in xylene/n-butanol (3:2)	6000 – 12000	140 – 170	~ 340	> 1000 ¹	≤ 10	○
Aradur® 423 XW 60	Polyamidoamine adduct in xylene/n-butanol (4:1)	800 – 1400	122 – 138	~ 520	> 1000 ¹	≤ 10	○
Aradur® 424 XW 50	Polyamidoamine adduct in xylene/n-butanol (4:1)	600 – 2400	80 – 110	~ 785	> 1000 ¹	≤ 10	○
Aradur® 460 J 90	Polyamidoamine adduct in ethanol	1800 – 5500	240 – 270	~ 190	100	≤ 10	○

¹ With solid epoxy resin and solvent

Huntsman Advanced Materials

We are a leading global supplier of synthetic and formulated polymer systems for customers requiring high-performance materials which outperform the properties, functionality and durability of traditional materials. Over 2 300 associates at 13 locations worldwide work to fulfill this promise day by day.

More than 3000 companies around the world use Huntsman Advanced Materials technologies in key markets such as adhesives and inks, aerospace, automotive, coatings, construction, electronics, medical, marine, power transmission and distribution, sports equipment and wind power generation.

Markets

Huntsman Advanced Materials produces and develops knowledge-based specialty components for high-end-performance industrial products. Its unique portfolio appeals to formulators, chemists and scientists working in challenging markets who want to be at the forefront of innovation and product development.

Global presence – 13 manufacturing sites



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Ref. No. AdMat Ambient curing 01.12_EN_EU