



## **Epoxy system** hand lamination-room temp. curing

New improved all-round handlamination systems

Improved thixotropy, increased adhesion to metal and other substrates.

All curing agents within the range can be intermixed in order to obtain customer specific pot-life.

Bodocure CA43-60 curing agents are tolerant to moisture and cures well at low temperatures and are therefore very suitable when no post curing is possible

<b>Bodopox 5000H</b>	<b>Bodocure CA 43 Fast</b>	<b>Bodocure CA 43 Medium</b>	<b>Bodocure CA 43 Slow</b>	<b>Bodocure CA 43 X-slow</b>
Mixing ratio by weight	100:43	100:43	100:43	100:43
Mixing ratio by volume	100:50	100:50	100:50	100:50
Viscosity of mixture: (at 23 C)	2500-3500 mPas	2500-3500 mPas	2500-3500 mPas	2500-3500 mPas
Time to gelation min (23°C-200g.)	20-30min	35-45 min	85-100 min	240-300 min
Time to 50 C min (23 C 200 g)	15-25 min	30-40 min	70-85 min	220-240 min
Min. cure temp °C	5	5	5	5
Thin film set-time	4h	6h	10h	18h
Elong to break %	3-4%	4-5 %	4-5 %	5-6 %
Tolerance to moisture	+++	+++	+++	+++
Tg – DSC *)	~60°C	~60°C	~60°C	~55°C

\*) after 6h curing at 50gr.C



## Epoxy system hand lamination – post curing (high Tg)

The system is an easy applicable lamination system which exhibits excellent mechanical properties. The system includes 5 different hardeners, which are all compatible in all ratios. Curing will take place at temperatures down to 15 C and will provide good mechanical properties after 24 – 48 hours of curing at normal ambient temperature. However it is recommended that the system is post cured at min 50 dgC for a min of 16 H, which in return will secure excellent mechanical and chemical resistance properties. Post curing at temperatures  $\geq 40$  C for a min of 24 H is necessary when applying the slow or x-slow hardeners.

<b>Bodopox 5000H</b>	<b>Bodocure INF 32 X-Fast</b>	<b>Bodocure INF 32 Fast</b>	<b>Bodocure INF 32 MEDIUM</b>	<b>Bodocure INF 32 SLOW</b>	<b>Bodocure INF 32 X-SLOW</b>
Mixing ratio by weight	100:32	100:32	100:32	100:32	100:32
Mixing ratio by volume	100:38	100:38	100:38	100:38	100:38
Viscosity of mixture: (at 23 C)	2500 – 2000 mPa*s	2500 – 2000 mPa*s	2500 – 2000 mPa*s	2300 – 1800 mPa*s	2300 – 1800 mPa*s
Time to 50 C min (200g/23 C)	20-30	45-55	95-115	200-220	250-300
Time to gelation min (200 g/ 23 C)	25-35	55-65	110-130	220-240	300-350
Thin film set-time Minimum .	Ca. 4 H	Ca. 6 H	Ca. 8 H	Ca. 12 H	Ca. 18 H
Min. cure temp	15 dgC	15 dgC	15 dgC	15 dgC	15 dgC

### Mecanical properties

<b>Hardners</b>	<b>INF 32 X FAST</b>	<b>INF 32 FAST</b>	<b>INF 32 MEDIUM</b>	<b>INF 32 SLOW</b>	<b>INF 32 XSLOW</b>
Tg – DSC (*) oC	Ca. 95	Ca. 95	Ca. 95	Ca. 95	Ca. 80

(\*): DSC at 2<sup>nd</sup> run after 30 C - 180 C with 10 C pr. min.



## Epoxy system vacuum infusion – room temp. curing

The system is based upon a high quality BPA/F blend, modified for reduced viscosity.

As always it is an advantage using heated moulds and preheated epoxy for infusion (30-35 C), thus reducing infusion time and improving penetration and wetting.

All curing agents within the range can be intermixed in order to obtain customer specific pot-life.

Bodocure CA43-60 curing agents are tolerant to moisture and cures well at low temperatures and therefore very suitable when no post curing is possible

<b>Bodopox AF1200</b>	<b>Bodocure CA 43 Fast</b>	<b>Bodocure CA 43 Medium</b>	<b>Bodocure CA 43 Slow</b>	<b>Bodocure CA 43 X-slow</b>
Mixing ratio by weight	100:43	100:43	100:43	100:43
Mixing ratio by volume	100:50	100:50	100:50	100:50
Viscosity of mixture:	350-450 mPas	350-450 mPas	350-450 mPas	350-450 mPas
Time to gelation min (200 g at 23 C)	20-30min	35-45 min	85-100 min	240-300 min
Time to 50 C min (200 g at 23 C)	15-25 min	30-40 min	70-85 min	220-240 min
Min. cure temp °C	5	5	5	5
Thin film set-time	4h	6h	10h	18h
Elong to break %	3-4%	4-5 %	4-5 %	5-6 %
Tolerance to moisture	+++	+++	+++	+++
Tg – DSC *)	~60°C	~60°C	~60°C	~55°C

\*) after 6h curing at 50gr.C



## Epoxy system vacuum infusion - post curing (high Tg)

The system is based upon a high quality BPA/F blend, modified for reduced viscosity. Curing agents are developed for the infusion process. Based upon long experience with vacuum- and RTM process, and designed to give best possible combination of strength and good processability. As always it is an advantage using heated moulds and preheated epoxy for infusion, thus reducing viscosity. Typically to 30-35°C The system is post cured at min 50 dgC for a min of 16 H, which in return will secure excellent mechanical and chemical resistance properties. Post curing at elevated temperatures for a min of 24 H is essential when applying the slow or x-slow hardeners.

<b>Bodopox AF 1200</b>	<b>Bodocure INF 32 X-Fast</b>	<b>Bodocure INF 32 Fast</b>	<b>Bodocure INF 32 MEDIUM</b>	<b>Bodocure INF 32 SLOW</b>	<b>Bodocure INF 32 X-SLOW</b>
Mixing ratio by weight	100:32	100:32	100:32	100:32	100:32
Mixing ratio by volume	38:100	38:100	38:100	38:100	38:100
Viscosity of mixture: (at 23 C)	250-350 mPas	250-350 mPas	250-350 mPas	250-350 mPas	250-350 mPas
Time to 50 C min (23 C 200 g).	20-30	45-55	95-115	200-220	250-300
Time to gelation min (23 C 200 g)	25-35	55-65	110-130	220-240	300-350
Thin film set-time Minimum .	Ca. 4 H	Ca. 6 H	Ca. 8 H	Ca. 12 H	Ca. 18 H
Min. cure temp	15 dgC	15 dgC	15 dgC	15 dgC	15 dgC

### Mecanical properties

<b>Curing agent</b>	<b>INF 32 X FAST</b>	<b>INF 32 FAST</b>	<b>INF 32 MEDIUM</b>	<b>INF 32 SLOW</b>	<b>INF 32 XSLOW</b>
Tg – DSC (*) oC	Ca. 95	Ca. 95	Ca. 95	Ca. 95	Ca. 80

(\*): DSC at 2<sup>nd</sup> run after 30 C - 180 C with 10 C pr. min.



## **Epoxy system** vacuum infusion – GL approved for Yachts and Windturbines

Bodopox 1500 is a low viscosity infusion system which is intended for manufacturing processes like RTM and VARTM.

Typical applications are yacht hulls and rotor blades.

The system includes two hardeners of different reactivity allowing manufacturing of large parts requiring long working time to small parts where a more rapid process is appropriate.

The Bodopox 1500 systems holds Germanischer Lloyd approvals under the number: **WP 0920019 HH**

The resin of the system consist of an A-component based on a combination of Bisphenol A-and F diluted with reactive glycidylethers. The hardeners are based on a combination of modified aliphatic and cycloaliphatic amines.

### **Data of resin components:**

<b>Bodopox 1500</b>	<b>Bodopox 1500</b>	<b>Bodocure INF32 Medium</b>	<b>Bodocure INF32 Slow</b>
<b>Viscosity (mPa*s/25 C)</b>	1500-1800	20-30	15-25
<b>Density (g/cm<sup>3</sup>)</b>	1,1 – 1,2	0,93 – 0,98	0,93 – 0,98
<b>EEW (g/eq)</b>	175 – 180	-	-
<b>AHEW(g/eq)</b>	-	58	57
<b>Classification</b>	Xi,N	C	C



### Data of mixed Components:

<b>Bodopox 1500</b>	<b>Bodocure 32 Medium</b>	<b>Bodocure 32 Slow</b>
<b>Mixing ratio by weight</b>	32	32
<b>Mixing ratio by volume</b>	38	38
<b>Mixed viscosity (mPa*s/ 25 C)</b>	290 – 310	280 – 300-
<b>Mixed density (g/cm3)</b>	1,08 – 1,10	1,08 – 1,10
<b>Time to gelation min (1000 g 23 C)</b>	100 – 120	160 – 180
<b>Exotherm max By 1000g</b>	Ca. 160 C	Ca. 160 C
<b>Time to 50 C min (200 g at 23 C)</b>	250 – 300	350 – 420
<b>Time to gelation min (200 g at 23 C)</b>	420 – 500	600 – 700

### Curing:

In order to obtain demanded chemical and mechanical properties The Bodopox 1500 systems should be cured at elevated temperatures.

Recommended curing schedule: 50 C 16 hours or 80 C 7 hours



### Data of cured systems:

Curing Condition	50 C / 16 hours	
Epoxy component	Bodopox 1500	
Hardener	Bodocure 32 Medium	Bodocure 32 Slow
Density (g/cm <sup>3</sup> )	1,155	1,155
Water absorbtion mg 168 hours	29,5	31,4
Tensile Strength (Mpa)	71,9	69,7
Tensile Modulus (Gpa)	3,36	3,35
Elongation at break (%)	3,5	3,9
Flexural Strength (Mpa)	129	125
Flexural Modulus (Gpa)	3,10	3,42
Tg *	84 C	80 C
HDT **	76 C	73 C
Izod Impact test	To be determined	To be determined

**\*: Determined after curing at 70 C for 6 hours**

**\*\* : Determined after curing at 80 C for 7 hours**

### Handling precautions:

In case the products comes into contact with skin or eyes wash the contaminated skin with soap and water; if it gets into the eyes flush with plenty of water and seek medical attention. For more details please consult the belonging MSDS or contact Bodotex at below stated phone no.

### Storage:

When stored at temperature from 10 to 25 C and in dry covered places without access of direct sun light the shelf life will be at least one year.

### Contact:

In case you need assistance or answers please do not hesitate to contact Bodotex as stated below.