

Advanced Materials

ERISYS® GE-31

Specialty components

DATA SHEET

Trifunctional reactive diluent for epoxy resins																																																											
Applications	Unmodified bisphenol-A and bisphenol-A/F epoxy resins - such as Araldite GY 250, GY260, GY 261, GY 266, PY 302-2 or PY 304 - are mixed with ERISYS® GE-31 to produce low-viscosity epoxy resins for solvent-free coatings, flooring compounds and mastics. ERISYS® GE-31 should preferably be used when reactivity, hardness and resistance to warm water, solvents and ammonia are to be maintained. <ul style="list-style-type: none">• 100% Solids chemical resistant coatings• Concrete crack repair• Coatings for containment areas• High-performance adhesives																																																										
Properties	Due to their low molecular weight, reactive diluents have low viscosity. On the other hand their vapour pressure is higher and their physiological effectiveness greater than in the case of unmodified epoxy resins. The incorporation of ERISYS® GE-31 has the following effects: <ul style="list-style-type: none">• a slight reduction of viscosity• high reactivity is maintained (minimal decrease)• a fair to good improvement of flexibility• practically no reduction of hardness• a slight decrease of warm water resistance• a slight reduction of acid resistance• High resistance to solvents and ammonia. The reactive diluent in the resin component should not exceed 20%.																																																										
Key data	<table><tr><td colspan="4">Specified key data</td></tr><tr><td>Aspect (visual)</td><td colspan="3">clear liquid</td></tr><tr><td>Colour (Gardner)</td><td colspan="3">≤ 4</td></tr><tr><td>Solvent content (Gas Chromatography)</td><td>< 0.1</td><td></td><td>[%]</td></tr><tr><td>Epoxy equivalent (Titration)</td><td>150 - 170</td><td></td><td>[g/eq]</td></tr><tr><td>Viscosity at 25 °C (Brookfield)</td><td>200 - 300</td><td></td><td>[mPa s]</td></tr><tr><td colspan="4">Specified key data are individually checked throughout and guaranteed.</td></tr><tr><td colspan="4">Typical key data</td></tr><tr><td>Residual Epichloridrine</td><td>≤ 10</td><td></td><td>[ppm]</td></tr><tr><td>Easily Hydrolysable Chloride</td><td><0.1</td><td></td><td>[%]</td></tr><tr><td>Flash point (Pensky Martens, ISO 2719)</td><td>≥ 93</td><td></td><td>[°C]</td></tr><tr><td>As-supplied form</td><td>liquid</td><td colspan="2"></td></tr><tr><td>Odour</td><td>slight</td><td colspan="2"></td></tr><tr><td>Shelf life (at storage temperature between 2 - 40 °C) (see expiry date on original container)</td><td>several years</td><td colspan="2"></td></tr></table>			Specified key data				Aspect (visual)	clear liquid			Colour (Gardner)	≤ 4			Solvent content (Gas Chromatography)	< 0.1		[%]	Epoxy equivalent (Titration)	150 - 170		[g/eq]	Viscosity at 25 °C (Brookfield)	200 - 300		[mPa s]	Specified key data are individually checked throughout and guaranteed.				Typical key data				Residual Epichloridrine	≤ 10		[ppm]	Easily Hydrolysable Chloride	<0.1		[%]	Flash point (Pensky Martens, ISO 2719)	≥ 93		[°C]	As-supplied form	liquid			Odour	slight			Shelf life (at storage temperature between 2 - 40 °C) (see expiry date on original container)	several years		
Specified key data																																																											
Aspect (visual)	clear liquid																																																										
Colour (Gardner)	≤ 4																																																										
Solvent content (Gas Chromatography)	< 0.1		[%]																																																								
Epoxy equivalent (Titration)	150 - 170		[g/eq]																																																								
Viscosity at 25 °C (Brookfield)	200 - 300		[mPa s]																																																								
Specified key data are individually checked throughout and guaranteed.																																																											
Typical key data																																																											
Residual Epichloridrine	≤ 10		[ppm]																																																								
Easily Hydrolysable Chloride	<0.1		[%]																																																								
Flash point (Pensky Martens, ISO 2719)	≥ 93		[°C]																																																								
As-supplied form	liquid																																																										
Odour	slight																																																										
Shelf life (at storage temperature between 2 - 40 °C) (see expiry date on original container)	several years																																																										

In addition to the brand name product denomination may show different appendices, which allows us to differentiate between our production sites: e.g. BD = Germany, US = United States, IN = India, CI = China, etc. These appendices are in use on packaging, transport and invoicing documents. Generally the same specifications apply for all versions. Please address any additional need for clarification to the appropriate Huntsman contact.

Hazardous decomposition products
(when disposed of in fire)

Disposal

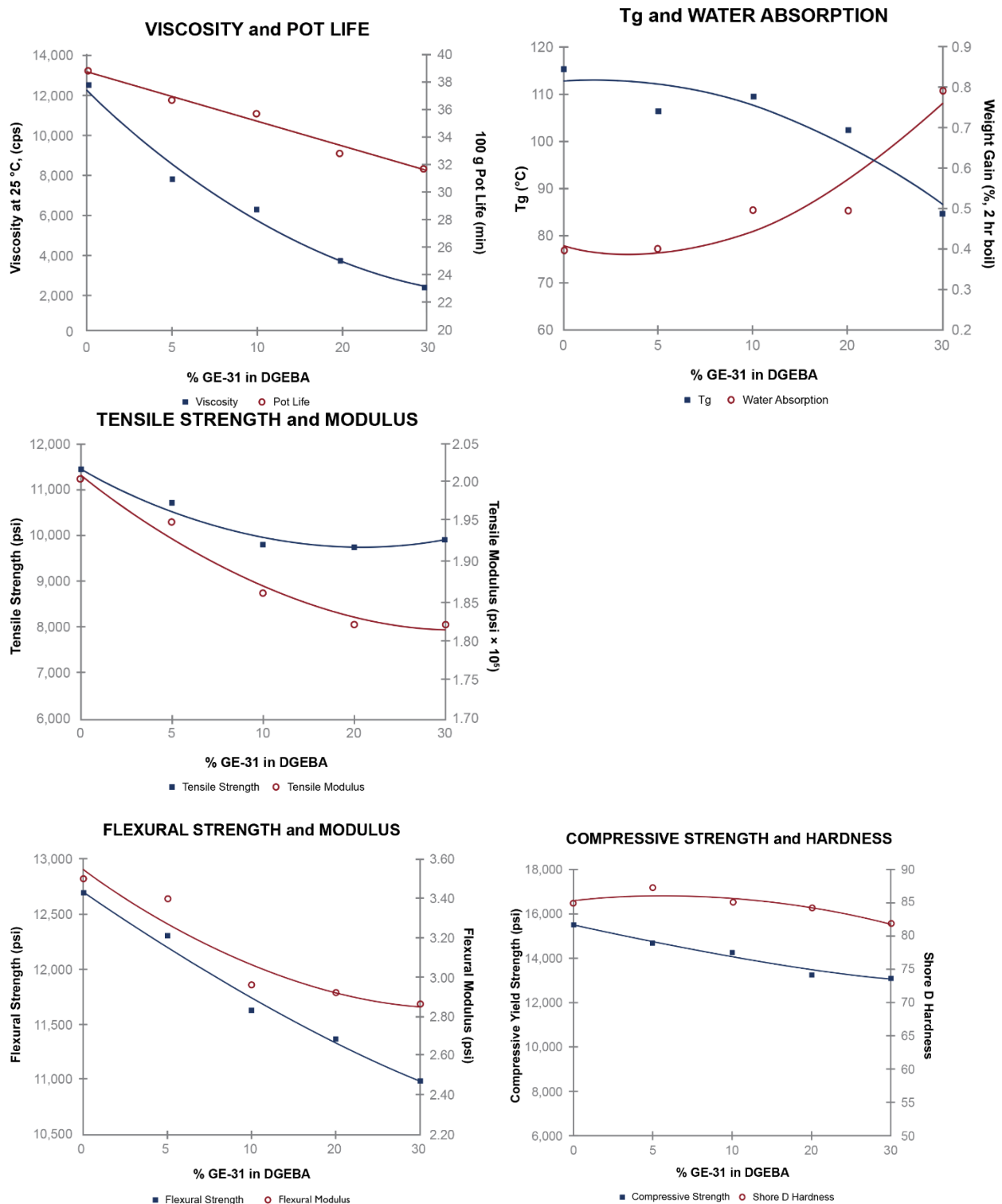
carbon monoxide, carbon
dioxide and other toxic gases
and vapours
regular procedures approved by
local authorities

Typical key data are spot checked; the values are typical for the product and are indicated for information only. The values are not guaranteed.

Formulation Properties

The use of ERISYS® GE-31 resin will affect the handling and cured properties of resin formulations. The effects of these changes are shown below.

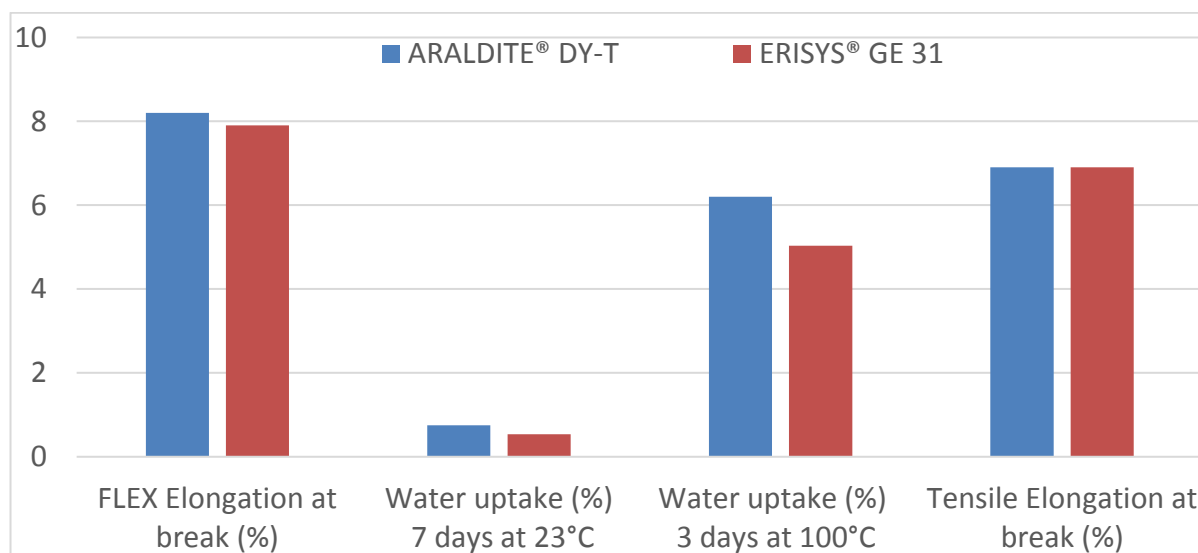
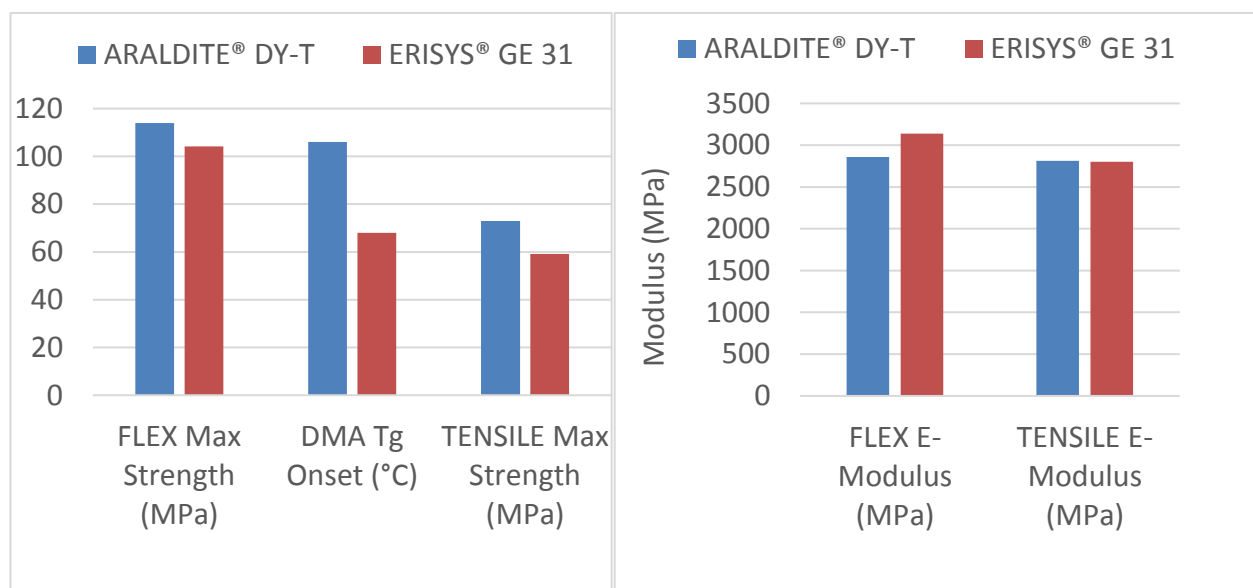
The effect of ERISYS® GE31 on the cured properties of ARALDITE® GY 260 cured with ARADUR® HY 951



Property	ERISYS® GE-31 in ARALDITE® GY 260				
ARALDITE® GY 260	100	95	90	80	70
ERISYS® GE-31	0	5	10	20	30
ARADUR® HY 951	13.0	13.0	13.2	13.4	13.8
Resin Viscosity at 25 °C (mPa.s)	12,700	7,700	6,300	3,600	2,200
100 g Gel Time (min)	39	37	36	33	32
Tensile Strength (MPa)	78	74	67	67	68
Tensile Elongation (%)	8.1	8.1	7.8	9.5	9.5
Tensile Modulus (MPa)	1379	1344	1282	1255	1255
Flexural Strength (MPa)	87	85	80	79	76
Flexural Modulus (MPa)	2420	2351	2048	2020	1979
Compressive Yield Strength	107	101	99	91	91
Compressive Modulus (MPa)	1579	1613	1579	1579	1737
Shore D Hardness	85	88	86	85	82
Tg (°C)	116	107	110	103	85
Water Absorption (28 days at RT)	0.4	0.4	0.4	0.5	0.6
Water Absorption (2 hr boil)	0.4	0.4	0.5	0.5	0.5

Comparison ERISYS® GE31 with ARALDITE® DY-T: Mechanical properties when fully cured with ARADUR® 20315.

Resin + hardener mixed at stoichiometry Cure profile: 1 h at 80°C + 1 h at 120°C + 1 h at 150°C



Storage	ERISYS® GE-31 should be stored in a dry place, preferably in the sealed original container, at temperatures between 2 and 40 °C. The product should not be stored exposed to direct sunlight.
Handling precautions	Mandatory and recommended industrial hygiene procedures should be followed whenever our products are being handled and processed. For additional information please consult the corresponding product safety data sheets and the brochure "Hygienic precautions for handling plastics products".

Huntsman Advanced Materials

(Switzerland) GmbH
Klybeckstrasse 200
4057 Basel
Switzerland

Tel: +41 (0)61 299 11 11
Fax: +41 (0)61 299 11 12

www.huntsman.com/advanced_materials
Email: advanced_materials@huntsman.com



Huntsman Advanced Materials warrants only that its products meet the specifications agreed with the user. Specified data are analysed on a regular basis. Data which is described in this document as 'typical' or 'guideline' is not analysed on a regular basis and is given for information purposes only. Data values are not guaranteed or warranted unless if specifically mentioned.

The manufacture of materials is the subject of granted patents and patent applications; freedom to operate patented processes is not implied by this publication. While all the information and recommendations in this publication are, to the best of Huntsman Advanced Material's knowledge, information and belief, accurate at the date of publication, nothing herein is to be construed as a warranty, whether express or implied, including but without limitation, as to merchantability or fitness for a particular purpose. In all cases, it is the responsibility of the user to determine the applicability of such information and recommendations and the suitability of any product for its own particular purpose.

The behaviour of the products referred to in this publication in manufacturing processes and their suitability in any given end-use environment are dependent upon various conditions such as chemical compatibility, temperature, and other variables, which are not known to Huntsman Advanced Materials. It is the responsibility of the user to evaluate the manufacturing circumstances and the final product under actual end-use requirements and to adequately advise and warn purchasers and users thereof.

Products may be toxic and require special precautions in handling. The user should obtain Safety Data Sheets from Huntsman Advanced Materials containing detailed information on toxicity, together with proper shipping, handling and storage procedures, and should comply with all applicable safety and environmental standards.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent on manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

Except where explicitly agreed otherwise, the sale of products referred to in this publication is subject to the general terms and conditions of sale of Huntsman Advanced Materials LLC or of its affiliated companies including without limitation, Huntsman Advanced Materials (Europe) BVBA, Huntsman Advanced Materials Americas Inc., Huntsman Advanced Materials (UAE) FZE, Huntsman Advanced Materials (Guangdong) Company Limited, and Huntsman Advanced Materials (Hong Kong) Ltd.

Huntsman Advanced Materials is an international business unit of Huntsman Corporation. Huntsman Advanced Materials trades through Huntsman affiliated companies in different countries including but not limited to Huntsman Advanced Materials LLC in the USA and Huntsman Advanced Materials (Europe) BVBA in Europe.

All trademarks mentioned are either property of or licensed to Huntsman Corporation or an affiliate thereof in one or more, but not all, countries.

Copyright © 2020 Huntsman Corporation or an affiliate thereof. All rights reserved.