

high performance epoxy curing agents for the formulation of single and multi-component systems

# H129

epoxy curing agent [ aliphatic amine ]

## General Description

**H129** is one of a series of unmodified aliphatic amines that may be used as an epoxy curing agent in conjunction with liquid epoxy resins. It is a polyoxypropylene diamine.

**H129** is characterised by good colour, low viscosity and relatively low reactivity. It has a high primary amine content and exhibits good resistance to blushing.

## Applications

**H129** can be formulated into a variety of systems including adhesives, decoupage, fibre re-enforced components, electronics encapsulation and potting systems, and industrial flooring and grouting.

## Key Properties

- Low viscosity
- Good colour and colour retention
- Relatively low reactivity – long pot life
- A degree of flexibility and impact resistance
- Excellent electrical and mechanical properties
- Good resistance to amine blush



**Specification**

**H129** polymer specification and supplementary physical and handling properties. Table 1 provides details of some of the product characteristics. The values highlighted by the circular symbols [ left hand column of table ] are properties tested on a batch basis and reported in the certificate of analysis. All other properties are typical of batch manufacture and are for technical information only. They do not constitute a specification.

**Table 1**

| Physical Property                      | Units           | Method (1)      | Minimum | Maximum |
|--|-----------------|-----------------|---------|---------|
| • Appearance - [ To Defined Standard ] | (2) -           | BSMT A 1001-001 | ETS (3) | -       |
| • Colour                               | - Gardner       | BSMT A 1002-001 | -       | 1       |
| • Viscosity                            | (4) Centi-poise | BSMT A 1003-005 | -       | 30      |
| • Amine Value                          | - Mg/KOH/gm     | BSMT A 1019-001 | 450     | 500     |

**Property key**

- (1) BSMT – Bitrez Standard Method of Test
- (2) FFFM – Free from Foreign Matter
- (3) ETS – Equal to Standard
- (4) Evaluated at 25°C/77°F



### Mix Ratio – Stoichiometry

It is customary to formulate systems with numerous additives that may be employed to enhance processing or application properties. Irrespective of the additional materials used, the ratio of reactive components should be maintained in accordance with the stoichiometric levels suggested.

- **AHEW** [ Active Hydrogen Equivalent Weight ] **60**
- **Mix Ratio** [ PHR – Parts Per Hundred of Epoxy Resin with an EEW 190 ] – *by weight* **32**

The mix ratio quoted is based on the usage of the epoxy curing agent in a stoichiometric ratio with an epoxy resin with an EEW of 190. In the event that the system is formulated with alternate epoxy resin and systems of differing EEW values the ratio should be calculated based on :-

$$\left[ \frac{\text{AHEW of ARAMINE grade}}{\text{EEW of epoxy resin}} \times 100 = \text{use ratio with 100 pts epoxy component} \right]$$



### Cure Schedules

Several cure schedules may be employed including ambient cure. The rate of cure may be accelerated through application of heat. With ambient cure systems whilst the initial set time may be a matter of hours it may well take several days for the full development of properties. Further performance enhancement may be obtained with post-curing operations.

| Suggested cure schedule options |                                  |
|---------------------------------|----------------------------------|
| # 1                             | 7 days @ ambient *               |
| # 2                             | 2 hours @ 80°C + 3 hours @ 125°C |

\* **NB:** typically with the addition of accelerators or further modification

### Mechanical Properties

H129 supplementary properties. All of the values quoted below are typical of batch manufacture and are for technical information only. They do not constitute a specification.

Table 2

| Mechanical Property    | Units   | Method (1)      | Typical result |
|------------------------|---------|-----------------|----------------|
| • Hardness             | Shore D | BSMT B 3001-001 | 86             |
| • HDT                  | C       | BSMT B 3005-001 | 78             |
| • Elongation           | %       | BSMT B 3006-001 | 10.6           |
| • Tensile Strength     | N/mm2   | BSMT B 3006-001 | 56             |
| • Tensile Modulus      | N/mm2   | BSMT B 3006-001 | 2800           |
| • Flexural Strength    | N/mm2   | BSMT B 3007-001 | 105            |
| • Flexural Modulus     | N/mm2   | BSMT B 3007-001 | 3100           |
| • Compressive Strength | N/mm2   | BSMT B 3008-001 | >100           |

Cure schedule employed for mechanical testing – Table 2

|  |                 |
|--|-----------------|
| Initial cure   | 2 hours @ 80°C  |
| Post cure  | 3 hours @ 126°C |
| Test pieces prepared with standard liquid epoxy resin and the aforementioned mix ratio |                 |

### Packaging

**H129** is supplied in the following standard pack sizes. [ Alternate packaging may be available upon request.]

210 lt drums – tight head @ 200 KG net weight

IBC units @ 1000 KG net weight

### Storage

**H129** should be kept in the original containers and sealed. Containers should be stored in a cool, dry place in compliance with the appropriate legislative controls.

Material may darken with exposure to air without detriment to properties or performance.

### Shelf Life

If stored in accordance with the guidelines provided this grade has a minimum shelf life of **12 months**. If material is held beyond this period of time then it should be evaluated to confirm that it remains suitable.

### General

In the event that the system detailed herein does not satisfy any particular requirements, either in terms of the physical, mechanical or chemical resistance properties then we would be pleased to discuss alternative grades. In the event that further information is required, our technical sales staff will be pleased to establish if the information is available and offer assistance.

### Health and Safety

Prior to using any material supplied by **ebalta** UK Limited, information should be sought from our general guidance notes and specific safety data reviewed from the Material Safety Data Sheets [ MSDS ]. MSDS information is periodically updated and revised copies will be forwarded as changes are made.



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**ebalta UK Limited** . B2 Langham Park, Trent Lane . Castle Donington . Derbyshire DE74 2UT  
t: +44 1332 814700 . f: +44 1332 814775 . e: info@ebalta.co.uk . w: www.ebalta.co.uk

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