



# Fire Retardant resin range

MSDS Code: F or S

The Huntsman Composites range of fire retardant resins comprises halogenated unsaturated polyester and vinyl ester resins specifically designed for contact moulding. These resins can be used in both hand lay-up and spray applications.

## COMPARATIVE FIRE PERFORMANCE

The following table shows typical performance of the Huntsman Composites fire retardant resin range. For further information refer to the individual resin data sheet or contact Huntsman Composites Technology Department.

GRADE	Ignitability	AS/NZS 1530 Part 3 Performance			Actual or Estimated	Other tests	Comments
		Flame Spread	Heat Evolved	Smoke Developed			
ESTAREZ® 6428PA	16	10	10	9	Actual	Meets Vic Rail EC/F/-1	Polyester LSE
AROPOL® 6450PA	16	8	7	9	Estimated*	Meets UL 94HB Part 7	Vinyl ester blend
HETRON® FR992HSb	15	5	4	8	Estimated*	ASTM E84 Class I	Vinyl ester Unpromote d
ESTAREZ 6012P	14	0	1	5	Actual		Polyester
ESTAREZ 6012P	0	0	0	7	Actual#		Polyester

\* Note that estimations are based on the known resin composition. Unfilled, non-halogenated resins have similar fire performances and increasing halogen content directly relates to fire performance.

# Result achieved with incorporation of 100 parts ATH filler into this highly FR resin and a hot cure.

ESTAREZ® is a Registered Trademark of Huntsman Chemical Company Australia Pty. Limited  
AROPOL® and HETRON® are registered trademarks of Ashland Inc., USA.  
Huntsman Chemical Company Australia Pty. Limited is a permitted user

# Fire Retardant resin range

ESTAREZ 6012

## FR RESIN TYPES

There are two common approaches to imparting fire resistance to a polyester or vinyl ester resin:

### a) Halogenation

This involves incorporating halogens (usually bromine, less commonly chlorine) either chemically reacted in or as additives. These serve to improve fire performance in two ways:

- the evolved gases excluding/diluting oxygen at the surface
- interfering chemically with the burning mechanism

Addition of antimony compounds (commonly antimony trioxide) enhances these effects as the antimony reacts with the halogen producing a molecule that is more effective and less easily dispersed.

The main effect is to limit flame spread and thus also reduce heat evolved. Smoke from these resins tends to be blacker.

### b) ATH addition

ATH (alumina trihydrate) filler combats fire also in two ways:

- reducing resin content
- when heated the ATH evolves water vapour which cools the surface.

The main effect is delaying ignition. Once ignition occurs the resin burns freely.

This is a lower cost approach, but the laminate suffers mechanically due to the high filler content. It becomes heavier and more brittle.

For very stringent specifications a combination of these two approaches could be considered. In this way ESTAREZ 6012 has achieved very low indices to AS/NZS 1530.3 (0, 0, 0, 7) and has met BS476 Part 7 Class 1.

## FR TEST METHODS

There are an enormous number of test methods. There are industrial, marine, building and public transport based methods and there are FR requirements which do not call up a standard.

Performance against these methods will depend upon curing regime, reinforcement type, position and proportion, post baking, filler content and resin grade.

In terms of the Australian Building Code, AS/NZS 3837 Cone Calorimeter testing will fully replace AS/NZS 1530.3 as the test method referenced. At this stage the likely time for this is May 2006.

ESTAREZ® is a Registered Trademark of Huntsman Chemical Company Australia Pty. Limited  
AROPOL® and HETRON® are registered trademarks of Ashland Inc., USA.  
Huntsman Chemical Company Australia Pty. Limited is a permitted user

issued: August 2005 (KDA)  
Expires: December, 2009

Page 2 of 2

HUNTSMAN COMPOSITES is a division of HUNTSMAN CHEMICAL COMPANY AUSTRALIA PTY LIMITED ABN 48 004 146 338  
Somerville Road, Brooklyn, VIC. 3012, AUSTRALIA P.O. Box 62, West Footscray VIC. 3012, AUSTRALIA Tel: + 61 3 9316 3333 Fax: + 61 3 9314 2170

Huntsman Chemical Company Australia Pty Limited makes no representation with regard to the completeness or accuracy of the information and any recommendations contained in this data sheet, and it accepts no responsibility for loss or damage whatsoever resulting from the use of, or reliance upon, the information and any recommendations herein. Huntsman Chemical Company Australia Pty Limited's products are sold on standard terms and conditions, a copy of which is available on request.