

STARFLAM[®]
FLAME RETARDANT POLYAMIDE
(NYLON - 6, -66, PPA)

FORMULATED POLYMERS LIMITED, the professionally managed company established in 1993 with an objective to design and manufacture a comprehensive range of Thermoplastic Compounds, specialising in Engineering Plastics under the brand name **FORMPOLY**.

Over the years, **FPL** has established 400 grades in 10 engineering polymers mostly specialising in niche compounds. **FPL** has approvals from various OEMs serving large sectors of industries with product reach internationally.

FPL is powered by cutting-edge expertise paving its way to cost effective manufacturing and has grown into a mammoth figure in the industry with a wide-spread reach.

FPL facilities are certified to **ISO 9001; ISO/TS 16949** and **ISO 14001** quality systems. **FPL** combining a strong technology base with application expertise, design and manufacture Engineering Plastic from relatively inexpensive compounds to sophisticated high end engineering plastic compounds. Visit www.formulatedpolymers.com for more details.

EUROSTAR ENGINEERING PLASTICS, history is linked to four decades of innovation in the field of engineering plastics compounds. Since 1972 the company based in Fosses (France) has been Manufacturing Plastics Compounds based on most of the Thermoplastics Resins available on the market.

The company recognition comes also from its unique know-how in the development and commercialization of halogen free flame retardant compounds. The use of these type of compounds in electrical circuit protection device is a well established fact for all the key players in this field.

Eurostar-EP Compounds are also key solutions in E&E, Transportation, Photovoltaics, Appliance Market Segments. OEM involved are mainly global players, for them compliance with international standard is a must. Above the conformity to EU RoHS directive technical standards that might apply are IEC 60695, UL 94, UL 508, NF16-101 and 16-102 for instance.

Visit www.eurostar-ep.com for more details

40 Years History of Eurostar

1972	Creation of Eurostar
1983	Buy out of Eurostar by Ferro: the company becomes Ferro-Eurostar
1995	Buy out of Ferro-Eurostar by LNP: the company becomes LNP-Eurostar
2002	Buy out of LNP by GE Plastics
2007	Buy out of GE Plastics by SABIC
2010	MBO, company becomes Eurostar Engineering Plastics



Technical Collaboration

Formulated Polymers Limited (**FPL**) India and Eurostar Engineering Plastics (**EPP**) France have signed a technical collaboration agreement for design and manufacturer of **STARFLAM**® Flame Retardant Polyamide compounds for Electrical and Electronic market. The whole product range would be available through **FPL**.



STARFLAM® Product Range

STARFLAM® Flame Retardant Polyamides (Nylon 6, Nylon 66, PPA etc.,) are offered in a wide range of selection from Unfilled to Mineral Reinforced to Glass Fiber Reinforced with UL 94 V0, V1, V2, 5V selection from thickness 0.4 mm. The range includes Halogen based, Phosphorus based, non-halogen & non-phosphorus based including next generation products. Below table gives the summary.

STARFLAM® Highlights

Flame Retardant Polyamide
(from unfilled to glass/mineral reinforced)



120+ Yellow Cards / Recognized by UL

STARFLAM® compounds are designed to meet the most stringent environmental requirements, combined with highest Flame, Electrical and Mechanical performances.

Major Reinforcements :

Glass fibers, Glass beads, Minerals

Property Highlights:

- Robust Flammability : UL 94 V2 to VO @ 0.4 mm thickness
- High CTI : > 450 V > 600 V
- GWT : 960 C @ 0.8 mm
- HDT : up to 250 C
- Coloreable
- Laser markeable

STARFLAM : BROADEST PRODUCT PORTFOLIO IN POLYAMIDE

UL					
ECO FR					
Red Phosphorous	Brominated	Mineral Flame Retardant	Organo Phosphorus	Melamine Cyanurate	Organo Phosphorous XGEN
Proven Capabilities in Electrical	Robustness	Outstanding Electrical Properties	GWIT 775°C VDE Approved	Standard in Circuits Protection	Outstanding Flame Electrical Mechanical Properties Aesthetics
Only available Dark Colour	Halogen Based Limited Electrical Properties	Limited Mechanical Properties	Limited Electrical Properties	Limited to UL 94 V2 Rating For Filled Products*	Premium
UL Listed V0..1.6mm RTI..110°C CTI..600V	UL Listed V0..0.8mm RTI..65°C CTI..275V	UL Listed V0..1.6mm RTI..130°C CTI..600V	UL Listed V0..1.6mm RTI..65°C CTI..250V	UL Listed V0..0.4mm V2..0.8mm* GWFI 960°C RTI..125°C CTI..>450V	UL listed V0..0.4 mm 5VA..1.6 mm RTI..140°C CTI..600V
AFR450X1 AFR450X2 AFR470C2	AFR200B AFR450B AFR560B1	RF0023E	RF0055E	RF0002E RF0002E RF0052E* RF0043E* RF0052E*	RF0057E RF0057E RF0077E RF0097E

BRINGING BRAND PROTECTION TO YOUR PRODUCTS

- STARFLAM® Security Solution

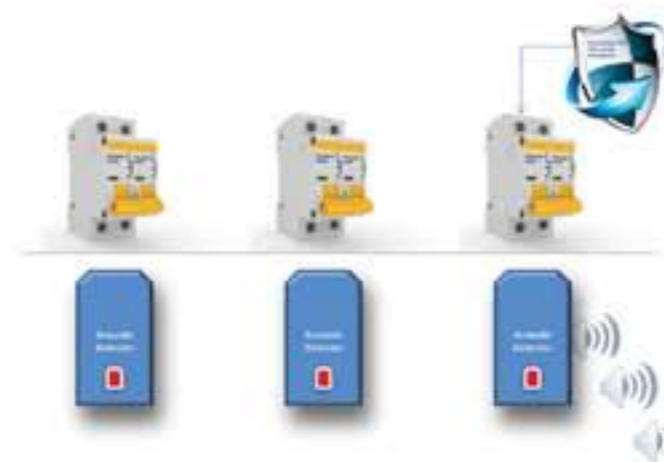
Adding specific and invisible Marker in any of STARFLAM® makes your product immediately recognizable. By adding markers that are imperceptible to the naked eye but observable to Acoustic Detector, makes your original product audible. When examining a product if it contains the specific marker the detector react with an acoustical signal.



STARFLAM® Security Solution



No impact on product properties (mechanical, flame retardant. etc.,) when the invisible marker is added. Imperceptible to naked eye



when examining a product that contains the specific marker, the detector react with an acoustical signal

For Product Data Sheet, UL Card, MSDS etc., download from
<http://www.eurostar-ep.com/en-us/products/index.aspx>

STARFLAM® Grades

STARFLAM® range is offered in Nylon – 6, Nylon -66 and in PPA. Some of the grades are listed here. The complete range can be selected and its data sheets can be downloaded from website <http://www.eurostar-ep.com/en-us/products/index.aspx>.

GRADE	DESCRIPTION
A28UL	Unfilled, Halogen Free and Red Phosphorous Free, Flame Retardant, Polyamide 66 Injection Moulding Resin
AFR200Y	Unfilled, Halogen Free and Red Phosphorous Free, Flame Retardant, Polyamide 66 Injection Moulding Resin
AFR450B	Flame Retardant, 25% Glass Fiber Reinforced Polyamide 66 Injection Moulding Resin
AFR450X1	Red Phosphorous Flame Retardant, Glass Fiber Reinforced Polyamide 66 Injection Moulding Resin
AFR460B	Flame Retardant Glass Fiber Reinforced Polyamide 66 Injection Moulding Resin
AFR470X2	Red Phosphorous Flame Retardant, Glass Fiber Reinforced Polyamide 66 Injection Moulding Resin
AFR560B1	Flame Retardant, Mineral Filled and Glass Fiber Reinforced, Polyamide 66 Injection Moulding Resin
AFR662B1	Flame Retardant, Mineral Filled Polyamide 66 Injection Moulding Resin
B28UL	Unfilled Halogen Free and Red Phosphorous Free Flame Retardant Polyamide 6 Injection Moulding Resin
BFR200Y	Unfilled, Halogen Free and Red Phosphorous Free Flame Retardant Polyamide 6 Injection Moulding Resin
BFR330A	Flame Retardant Glass Bead Reinforced Polyamide 6 Injection Moulding Resin
BFR430A	Flame Retardant, Glass Fiber Reinforced Polyamide 6 Injection Moulding Resin
BFR552Y6	Halogen and Red Phosphorous Free Flame Retardant, Glass Fiber Reinforced, Mineral Filled Polyamide 6 Injection Moulding Resin
P10002E	Unfilled, Halogen Free and Red Phosphorous Free, Flame Retardant Polyamide 6 IM Resin (also known as P1000Z220)
PF0023E	Mineral Flame Retardant, Halogen Free Red, Phosphorous Free, Glass Fiber Reinforced, Polyamide 6 Injection Moulding Resin
PF0047E	Halogen Free and Red Phosphorous Free, Flame Retardant, Glass Fiber Reinforced, Polyamide 6 Injection Moulding Resin
PF0057E	Halogen Free and Red Phosphorous Free, Flame Retardant, Mineral Filled, Polyamide 6 Injection Moulding Resin
PFB139E	Flame Retardant Glass Bead and Glass Fiber Reinforced Polyamide 6 Injection Moulding Resin
PK0022E	Halogen Free Red Phosphorous Free Flame Retardant, Mineral Filled, Polyamide 6 Injection Moulding Resin
PK0052E	Halogen Free and Red Phosphorous, Free Flame Retardant, Mineral Filled, Polyamide 6 Injection Moulding Resin
PX06020	Unfilled, Halogen Free and Red Phosphorous Free, Flame Retardant, Polyamide 6 Injection Moulding Resin
PX07037	Unfilled, Halogen Free and Red Phosphorous Free, Flame Retardant, Polyamide 6 IM Resin (IR laser marking grade)
PZ0042E	Halogen Free and Red Phosphorous Free, Flame Retardant, Glass Reinforced Polyamide 6 Injection Moulding Resin
PZ0052E	Halogen Free and Red Phosphorous Free, Flame Retardant, Glass Reinforced Polyamide 6 Injection Moulding Resin
PZ0062E	Halogen Free and Red Phosphorous Free, Flame Retardant, Glass Reinforced Polyamide 6 Injection Moulding Resin
R10002E	Unfilled, Halogen Free and Red Phosphorous Free, Flame Retardant, PA66 / PA 6 IM Resin (also known as R1000Z220EM)
RF0023E	Mineral Flame Retardant Halogen Free Red and Phosphorous Free, Glass Fiber Reinforced, PA66 and PA6 IM Resin
RF0052E	Halogen Free and Red Phosphorous Free Flame Retardant, Glass Reinforced, Polyamide 66 / Polyamide 6 IM Resin
RF0057E	Halogen Free and Red Phosphorous Free Flame Retardant, Glass Reinforced, PA66 IM Resin (also known as RF1005Z270)
RF0069	Flame Retardant, Glass Fiber Reinforced, Polyamide 66 Injection Moulding Resin
RF0077E	Halogen Free and Red Phosphorous Free Flame Retardant, Glass Reinforced, PA 66 IM Resin (also known as RF1007Z270)
UF0033	Mineral Flame Retardant Halogen Free and Red Phosphorous Free, Glass Reinforced, Polyphthalamide Injection Moulding Resin

PACKING

All STARFLAM® products are in pellet form and offered in standard 25 Kg and 500 Kg moisture proof bags. MOQ for Produced for stock grades are based on packing size mentioned here, and for produced against order depends on the colour, polymer and the same provided by your nearest supply chain executive.

PROCESSING

STARFLAM® grades are designed and manufactured carefully to achieve easy flow, permit thin section moulding, fast solidification and best release property in case of injection moulding and uniform flow with excellent dimension stability in case of extrusion. STARFLAM® grades are process stabilised for easy processing under wide temperature range.

More details of processing can be seen in compact disc provided for each grade or can be downloaded from website. Ask for assistance to nearest technical services staff to establish the processing and in case of difficulties.





Connector

P10002E

UL-94 V0
RTI 120°C



Miniaturization

RF0057E
R10002E

UL-94 V0 @ 0.4 mm
GWFI 960°C @ 0.4 mm
CTI 600 V



Transportation & Seats

PF0047E

Low Smoke & Toxicity
DIN 5510
NF F 16 101102
Aesthetics

Photovoltaics

RF0057E

UL94 5VA
UL F1 rating
RTI 140°C
CTI 600 V



Circuit Protection

PK0052E
PZ0042E
PZ0052E

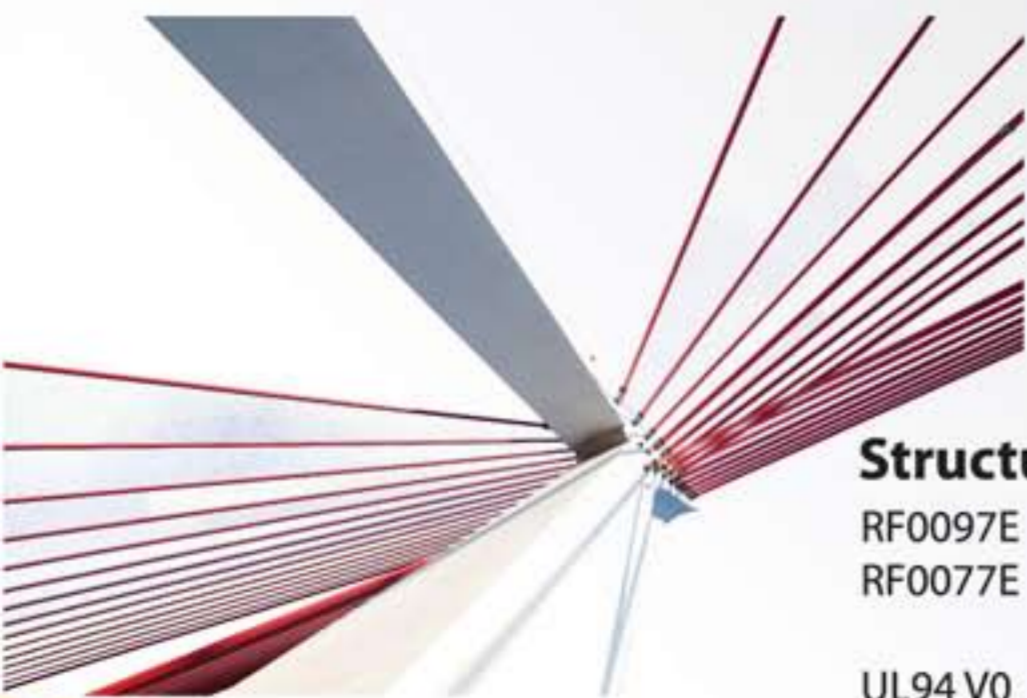
GWFI 960 C
CTI > 450 V



Appliances

RF0055E

UL94 V0
VDE GWIT 775°C



Structural

RF0097E
RF0077E

UL94 V0
Modulus > 13000 MPa
RTI mech = 150°C



Contactors

AFR450X2

UL94 V0
RTI 120°C
CTI 600 V

Applications



FORMPOLY® Product Range

POLYMERS

- Polyamide – 6 (Nylon 6)
- Polyamide – 66 (Nylon 66)
- Polyamide – 46 (Nylon 46)
- Polyamide – 12 (Nylon 12)
- Mod. Poly Phenylene Ether (m-PPO)
- Poly Phenylene Sulphide (PPS)
- Polypropylene – Homo & Co (PP)
- Acrylonitrile Butadiene Styrene (ABS)
- Styrene Acrylonitrile (SAN)
- Polyacetal – Homo & Co Polymer (POM)

RANGE OFFERED

- Glass Fibre Reinforced
- Mineral Reinforced
- Flame Retardant (Halogen and Halogen Free)
- Impact Modified
- Electrically Conductive
- UV Stabilised
- Heat Stabilised
- Antistatic
- Lubricated
- Pre Coloured
- RoHS compliance
- Alloys and Blends

Recent Awards and Recognitions



National Award of Innovation 2010
Technology Management
from Govt. of India



TQM - 5S Excellence
Award 2011
from CII



10th MMA Award
for Managerial
Excellence 2011



National Award of
Innovation 2010
Plastic Raw Material
from Govt. of India



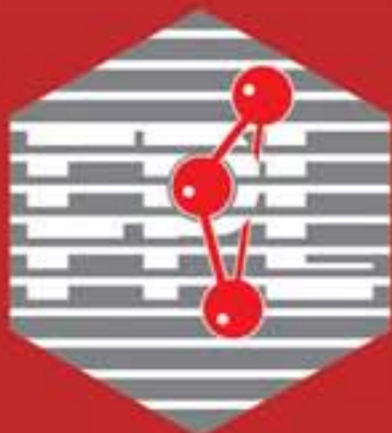
National Award 2009
for Outstanding
Entrepreneurship
from Govt. of India



Plasticon Award 2009 of
Excellence - "Fastest Growing
Engineering Plastic
Manufacturer in India"



ISQA 2011 Quality Award
from IEEMA



FORMULATED POLYMERS LIMITED

Manufacturers of Engineering Plastic Compounds

Head Office and Plant:

59, SIDCO Industrial Estate, Thirumazhisai, Chennai- 600 124, INDIA.

Position : N 13° 02' 37.56" E 80° 03' 17.58"

Phone : +91 44 2681 1236, 237, 238

Fax : +91 44 2681 1275

E-Mail : info@formulatedpolymers.com



Branch North India:

Rao Market, Plot No. 5, 2nd Gali, Sarhaul Village,
Sector 18, Gurgaon - 122 001, INDIA.

Phone : +91 124 427 8018

Fax : +91 124 427 8018

E-mail : fpl-gg@formulatedpolymers.com

Branch South India:

No.67/49,
4th Cross, Begur Road, Bommanhalli,
Bengaluru-560 068, INDIA.

Phone : +91 85530 06600

E-mail : bangalore@formulatedpolymers.com

Branch West India:

144/1 Patilvasti, Jambulkar Nagar
Hinjewadi, Pune - 411 057, INDIA.

Phone : +91 20 3293 4243

Fax : +91 20 3293 4243

E-mail : west@formulatedpolymers.com

Technical Assistance

Mobile : +91 98408 21009

E-mail : techserv@formulatedpolymers.com

Development Assistance

Mobile : +91 98408 21015

E-mail : marketing@formulatedpolymers.com