

## Zytel<sup>®</sup> High Performing Nylon Resin Materials from Distrupol

*Your world class supplier of Celanese polymers*

Zytel<sup>®</sup> is an extensive portfolio of versatile polyamide-based polymers proven in a wide range of application industries including automotive, electrical & electronics, industrial, consumables and oil & gas. The Zytel<sup>®</sup> family of nylons has been expertly developed to demonstrate a wide range of performance requirements. The family includes Zytel<sup>®</sup> PA, Zytel<sup>®</sup> Plus, Zytel<sup>®</sup> HTN, Zytel<sup>®</sup> RS and Zytel<sup>®</sup> LCPA.

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*Distrupol, your supply partner for Celanese engineering polymers. Contact us today to find out more!*

 **Celanese**  
The chemistry inside innovation™



Distrupol is a world class supplier of Celanese polymers, offering a wide range of innovative solutions across multiple industries.

Distrupol and key supply partner Celanese are highly experienced and knowledgeable in providing revolutionary polymer solutions to designers, moulders and OEMs across Europe. With the scientific innovation and expertise of Celanese, and the technical knowledge and commercial experience of Distrupol, we provide a fully integrated approach to our customers' polymer projects.

#### **Technical Support:**

With over 50 years of experience and knowledge, we understand the many requirements, considerations and specifications that a project can have. We can help select a 'fit for purpose' solution for your application, recommending the most suitable material(s) and enabling you to get it right first time. Our development engineers can support you with conceptual design, mould flow and tooling, material sampling and process optimisation.

#### **Quality, Certification, Traceability and Confidence:**

Material authenticity and traceability is critical when it comes to the manufacture of your components. We can supply certificates of conformity and analysis, and full traceability with every delivery, giving you, and your moulders, confidence that you're using a certified and in-specification material.

## An Introduction to Zytel®

Nylon was invented and introduced it to the market in 1938. It was a major breakthrough in polymer chemistry due to its unique combination of properties which made it the most versatile plastic material available. The Zytel® portfolio that we know today is the result of over 70 years of expertise and innovation, developing nylon materials to exhibit optimal performance for an extensive variety of applications.

Zytel® offers high mechanical strength, stiffness and toughness, along with good electrical and flammability properties. The portfolio includes PA6, PA6.6, PA6.6/6, PA6.10, PA10.10 and PA6.12 materials, as well as renewably sourced (Zytel® RS), high performance polyphthalamides (Zytel® HTN), mineral filled (Minlon®) and SHIELD technology (Zytel® Plus) grades.



# Overview

## Zytel® PA

The core range of nylon materials: PA6, PA6.6 and PA6.6/6 grades. Available in a wide range of modifications, including glass reinforced, heat stabilised, toughened & super toughened, high viscosity and nucleated.

## Zytel® HTN

A family of cost-effective, high performance polyamide materials ideal for reducing weight, improving strength, enhancing durability, increasing thermal performance, and simplifying processing.

## Zytel® Plus

Featuring SHIELD technology, these materials can withstand long term exposure to heat and chemicals due to polymer modifications and performance-enhancing additives.

## Zytel® RS

Nylon materials containing up to 65% renewable content derived from a non-food crop requiring no maintenance to grow. Ideal for applications demanding sustainable solutions.

## Zytel® LCP

Long chain polyamide portfolio for excellent thermal, flexible, chemical and hydrolysis resistance properties. The longer chains mean fewer amide groups and less hydrogen bonding, which translates to increased flexibility and lower moisture absorption.

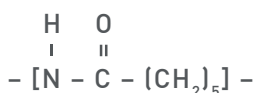
## Minlon®

Mineral/glass-reinforced nylon resins offer properties which maintain the optimum balance of strength and rigidity, while minimising the effects of warpage.

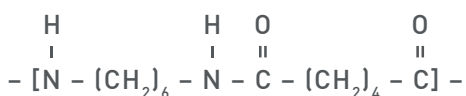


# Chemistry

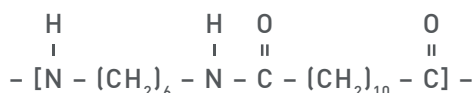
## PA6:



## PA6.6:



## PA6.12:



Polyamide is a polymer with repeating units linked by amide bonds. The repeating units can differ in monomer and relative carbon atom numbers, which defines the nylon classification (e.g. PA6, PA6.6 etc.).



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# Range Overview

SERIES	DESCRIPTION	GRADES AVAILABLE
Zytel® PA6.6	Core range of nylon materials (made from 2 monomers, each with 6 carbon atoms)	Unreinforced, heat stabilised, nucleated, high viscosity, flame retardant, toughened, super toughened, 13-50% glass/glass fibre filled, hydrolysis resistant, laser markable, 20% Kevlar® filled, mineral reinforced
Zytel® PA6	Core range of nylon materials (made from 1 monomer which has 6 carbon atoms)	Unreinforced, nucleated, 15-50% glass reinforced, heat stabilised, toughened, super toughened
Zytel® PA6.6/6	Core range of nylon materials (made as per the above)	25-33% glass reinforced, UV stabilised, flame retardant, halogen & red phosphorous free
Zytel® HTN	High performance nylon grades	Unreinforced, 15-60% glass/long glass reinforced, toughened, flame retardant, non-halogenated, hydrolysis resistant, heat stabilised, PPA
Zytel® Plus	Nylon featuring SHIELD technology	30-50% glass reinforced, hydrolysis resistant, heat stabilised
Zytel® LCPA	Long chain nylons including PA6.10, PA10.10 and PA6.12 grades	Unreinforced, 33-43% glass reinforced, heat stabilised, toughened, biobased, high viscosity, low viscosity, medium viscosity, plasticised
Zytel® RS	Nylon containing renewably sourced materials from biomass	33% glass reinforced, heat stabilised, plasticised, toughened, high viscosity, medium viscosity
Minlon®	Mineral reinforced nylon	15-40% mineral reinforced, 38-40% mineral/glass reinforced, heat stabilised, toughened

## Properties

### Zytel® PA6, PA6.6 & PA6.6/6

- High mechanical strength
- Excellent balance of stiffness, hardness and toughness
- Excellent stress crack resistance
- Good abrasion and chemical resistance
- Good electrical insulation properties
- Good high temperature performance

### Zytel® HTN:

- Low effect of moisture
- Good high temperature properties
- Surface Mount (SMT) compatibility
- Excellent electrical properties
- Dimensional stability
- Good chemical resistance

### Zytel® Plus:

- Excellent mechanical properties after prolonged periods of exposure to high temperatures, hot oil & aggressive chemicals

### Zytel® LCPA:

- Excellent chemical resistance
- Hydrolysis resistant
- Excellent thermal properties
- High stiffness & strength
- Lower permeability to fuel & gases
- 20%-100% renewable content

### Zytel® RS:

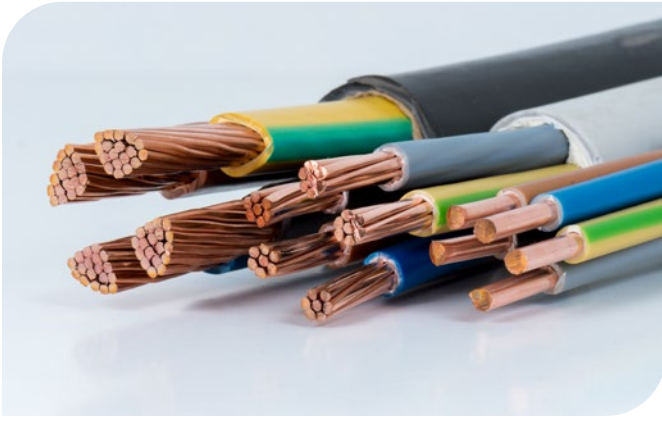
- Good strength properties
- Good fatigue & creep resistance
- Good chemical & thermal resistance
- Low wear
- Easy to process
- Dimensionally stable
- 20%-65% renewable content

### Minlon®:

- Easy flow
- Fast cycle times
- High impact strength
- Excellent chemical resistance
- Excellent surface finish



## Examples



*Zytel® replaces less durable thermoplastics for the protective thin outer sheath in wire insulation.*



*Zytel® is used to reduce weight and cost by replacing metal in many automotive applications, including engine covers.*



*Zytel® is used in sporting goods applications such as ski bindings due to its high stiffness and dimensional stability.*



*Zytel® LCPA's chemical structure provides flexible characteristics making it ideal for industrial applications such as fuel tube components.*



*With excellent flow, dimensional stability, toughness and strength, Zytel® HTN can reduce the total system cost of thinner and lighter housings for laptops, mobile phones and other handheld devices.*

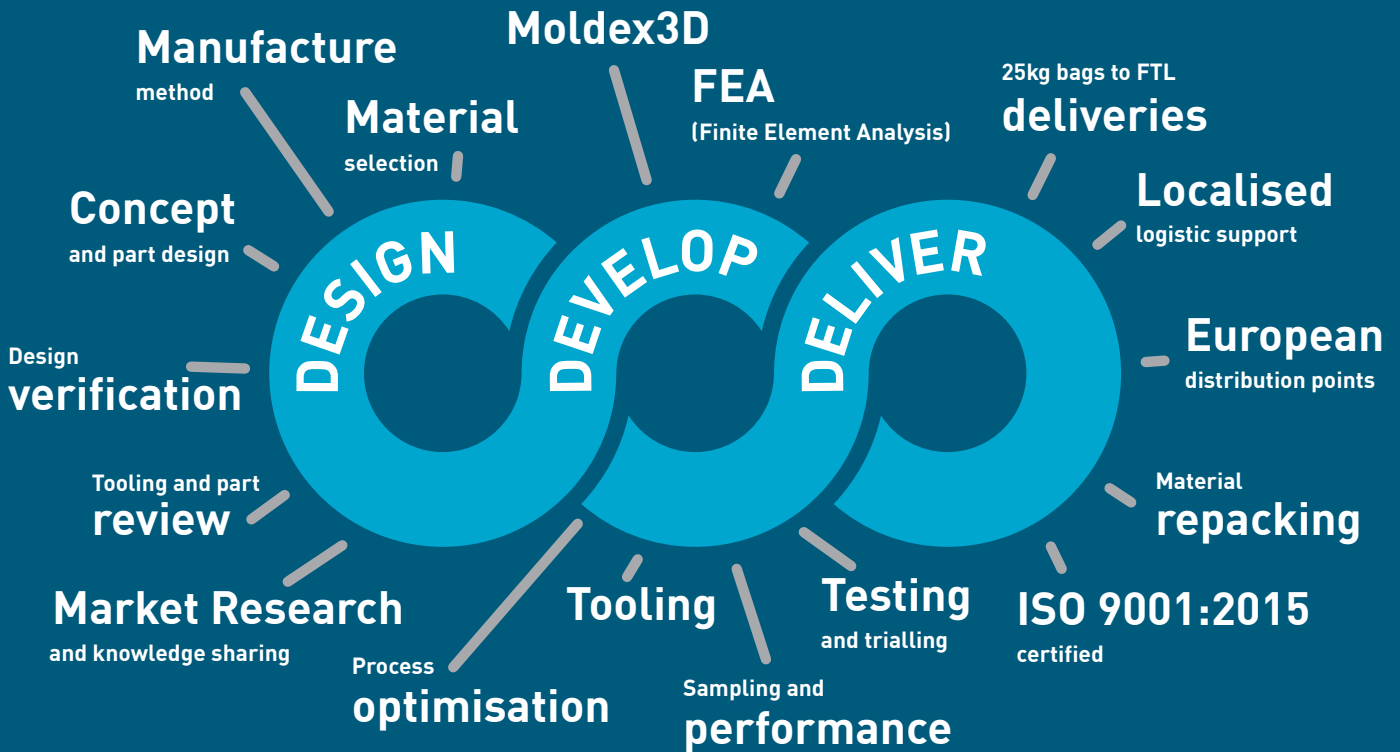


*Due to its stiffness and toughness, Zytel® RS can be used in a variety of applications, such as industrial fans, whilst also contributing to the sustainability profile of products.*

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# An Integrated Process

From concept to manufacture



Distrupol is a European leader with over 50 years of excellence, innovation and expertise in the sales and application development of thermoplastic polymers and elastomers.

Our team of highly experienced sales people is able to meet your requirements and exceed your expectations, whilst adding value to your business.

The team is supported in every market by our development engineers, who have an unrivalled knowledge of every aspect of polymer technology including design of parts and moulds, polymer selection to achieve best performance, troubleshooting and optimising the production of parts.

Our long-term partnerships with world class suppliers strengthen our knowledge and give us an extensive range of high quality products to provide a material solution for every application.

All of our suppliers are REACH compliant and all of the Distrupol businesses are fully accredited to ISO 9001:2008.

The Distrupol portfolio contains products and solutions that fulfil the requirements of leading and emerging industries.

The range is accompanied by certifications and approvals for the automotive, medical, food and electrical industry. Warehouses in the United Kingdom, Ireland, Sweden, Finland and the Netherlands support us to offer next day delivery across Europe. Materials are available from 25kg bags to full truckloads, octabins, big bags and bulk delivery. Whenever required, we can repack material in our warehouse into the desired packaging.

Discover the real value that Distrupol can add to your business.

*Design, Develop and Deliver with Distrupol.*