



**Lifting the lid on
Nylon 6 and Nylon 66**

Supply & Demand

The protracted tight supply situation for all engineering polymers continues along with the inevitable consequence of price increases.

The problems in the supply of Nylon are especially critical - here is an extract from our monthly report on the polymer market called price know-how . You can access price know-how by subscribing to our content Hub at: www.plastribution.co.uk/knowhow-hub



PA6

There appears to be some small improvements in the supply of base feedstocks, however PA6 will remain tight in the short term. Most producers have rolled over pricing on PA6 for May, but costs will remain high with no reductions anticipated for the foreseeable future.



PA66

There has been some positive news with the upstream production of ADN; however it will take many months for the supply chain to be replenished. The availability of PA66 remains extremely tight with no relief expected. Further price increases into May are forecast, as supply is very tight and demand still strong even with two bank holidays.

Differences

Whilst Nylon 6 and 66 often get talked about together, they are quite different. Their chemical structure and supply chains are very distinct and this has led to the very specific issues seen in the Nylon 66 market over recent months.

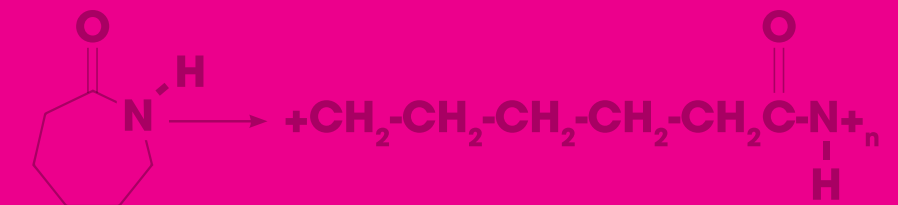
The following content aims to further explain the key differences between the two.

Polyamides (Nylon)

Nylon (PA) 6 & 66 are both synthetic polymers called polyamides, with the numbers referring to the quantity of carbon atoms in the repeat units. Nylons are semi crystalline polymers characterised by their toughness and rigidity (especially glass fibre filled), excellent wear and chemical resistance.

PA6 - Manufacture

Nylon 6 is produced by a splitting a single feedstock, Caprolactam. The ring structure is opened and then polymerised to form the long chain structure.

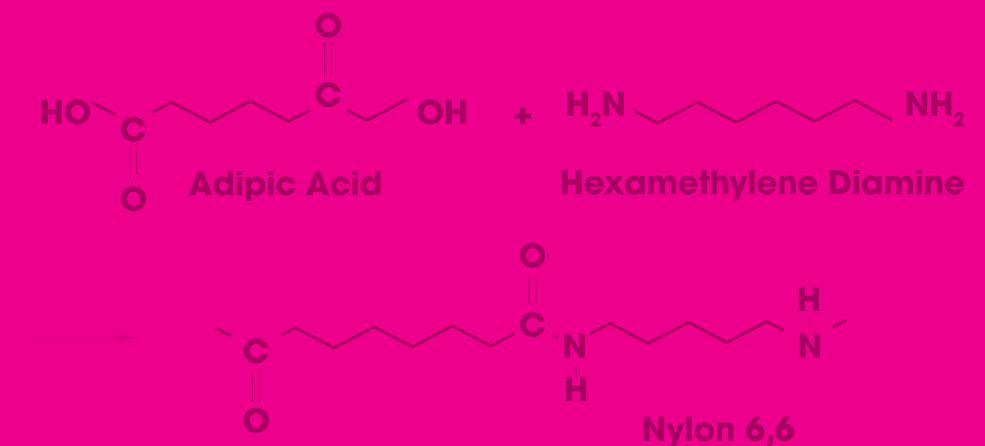


Caprolactam

Nylon 6

PA66 - Manufacture

Nylon 66 is produced using 2 feedstocks - Adipic Acid & Hexamethylene Diamine.



Nylon – Key properties

- ⚙ Good balance of properties (strength, stiffness and toughness)
- ⚙ Wear resistance (best of all thermoplastics)
- ⚙ Good long term temperature resistance
- ⚙ Low CoF
- ⚙ Impact Strength (unfilled + conditioned)
- ⚙ High Stiffness (glass filled)
- ⚙ Chemical Resistance (particularly auto fluids)
- ⚙ Temperature resistance
- ⚙ Inherent FR

Nylon - things to consider

- ⚙ Moisture Sensitivity
- ⚙ Dimensional instability
- ⚙ Narrow processing window
- ⚙ Long cycle times
- ⚙ Drying required for successful processing
- ⚙ Attacked by strong acids
- ⚙ Poor UV Resistance

PA6 vs. PA66

- ⚙ PA6 has higher impact strength than PA66
- ⚙ PA66 has higher heat resistance than PA6



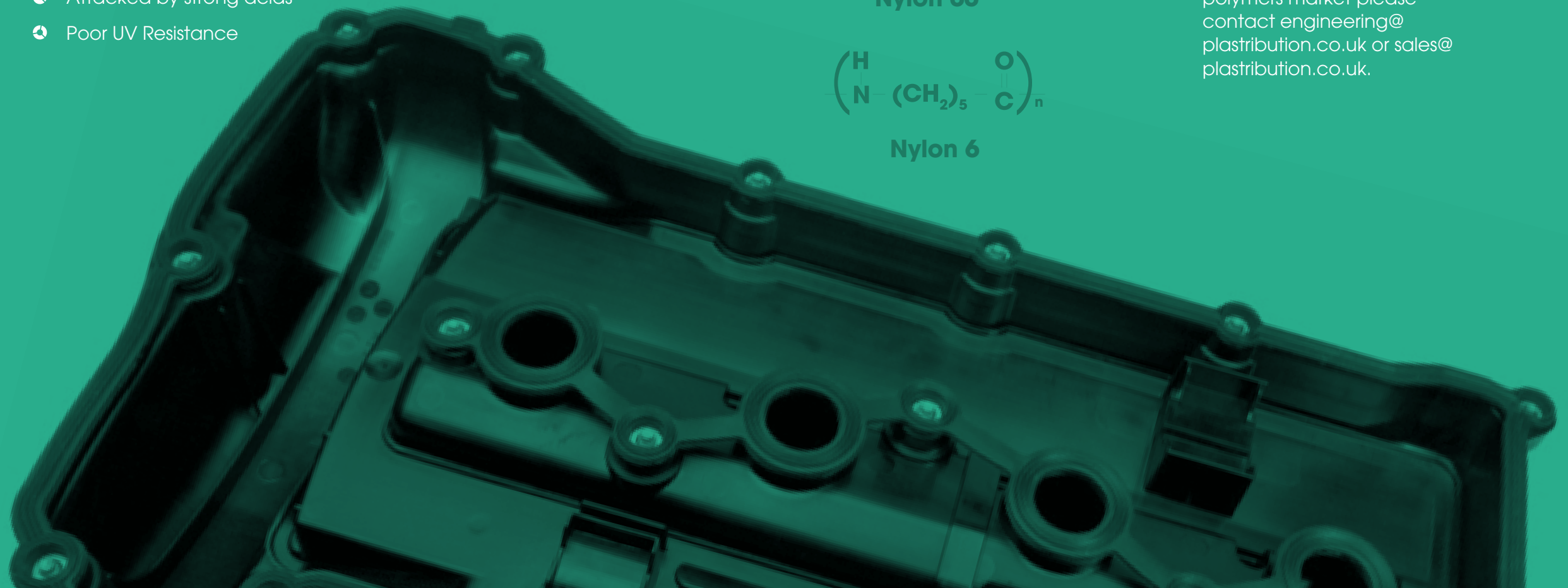
Nylon 66



Nylon 6

To find out more about the differences between Nylon 6 & 66 and how they might affect your product or business, please contact our technical manager dan. jarvis@plastribution.co.uk.

Also, if you require support in overcoming the current supply issues in the engineering polymers market please contact engineering@plastribution.co.uk or sales@plastribution.co.uk.



PA66 – The Pressure Grows

The situation and problems surrounding nylon 66 have been well documented over recent months, however it now seems that the issues may well get worse before they get better?

The inexorable rise in prices started back in early 2016, predominantly on the back of increasing demand and higher costs for other similar polymers and shared raw materials. Since then, the market has seen numerous price rises as well as Force Majeures for both PA66 base polymer and key raw materials such as adipic acid, butadiene (BD), acrylonitrile (AN), hexamethylene diamine (HMD) and adiponitrile (ADN).

Of course, some of this has been the key producers 'restoring' margins and could be seen as opportunistic, but the reality is that the price increases have been large and numerous and overall the market now looks very different to where it was 2 years ago.

The latest information is that butadiene is once again rising in cost very rapidly in Far East and US markets with Europe not far behind. For instance last week it was reported that the European butadiene (BD) contract price for June has been agreed at €1,150/tonne, up by €140/tonne from May. This is the highest contract price settlement since June 2017.

An increase from May was widely expected on the back of tight supply and strong demand which had pushed spot prices well above May levels, and this, combined with higher upstream naphtha costs means that BD prices will almost certainly continue to rise still further.

Where all this ends up is anyone's guess? However the very real possibility now is that with the PA66 market 'overheating' many users and specifiers may well be forced to 'down spec' applications wherever possible, with the major winners potentially being for example nylon 6 and/or higher performance PP grades. Whatever happens it continues to be a very interesting time for nylon 66.

