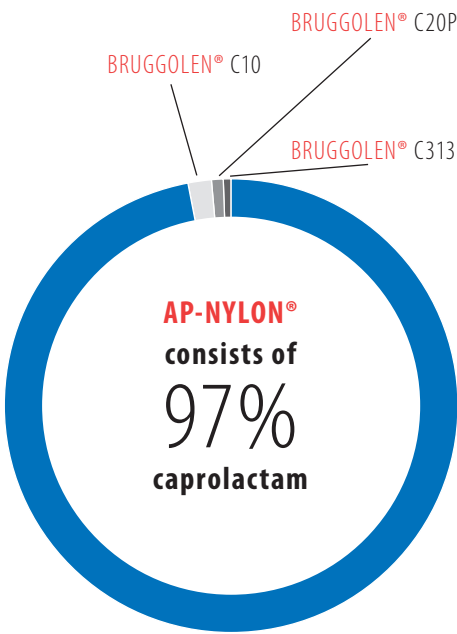
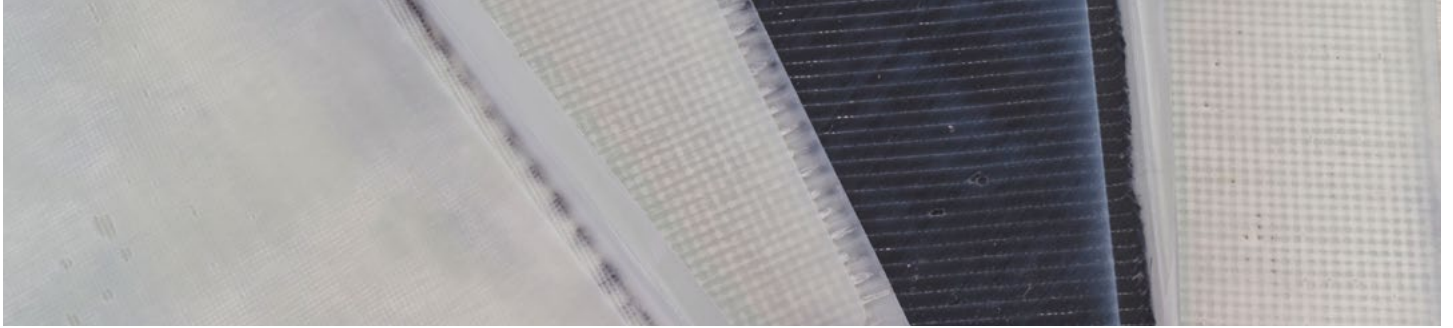


**Brüggemann**  
**Chemical**

**AP-NYLON®  
ADDITIVES**

**AP-NYLON® ADDITIVES**



## AP-NYLON® CAPROLACTAM The Ideal Base for Cast Polyamides

Cast nylon is produced via the anionic polymerization of **AP-NYLON®** Caprolactam. The products of the polymerization exhibit outstanding material properties such as high impact strength, superior abrasion resistance and vibration damping, exceptionally low inherent stresses in a material with a high degree of crystallinity.

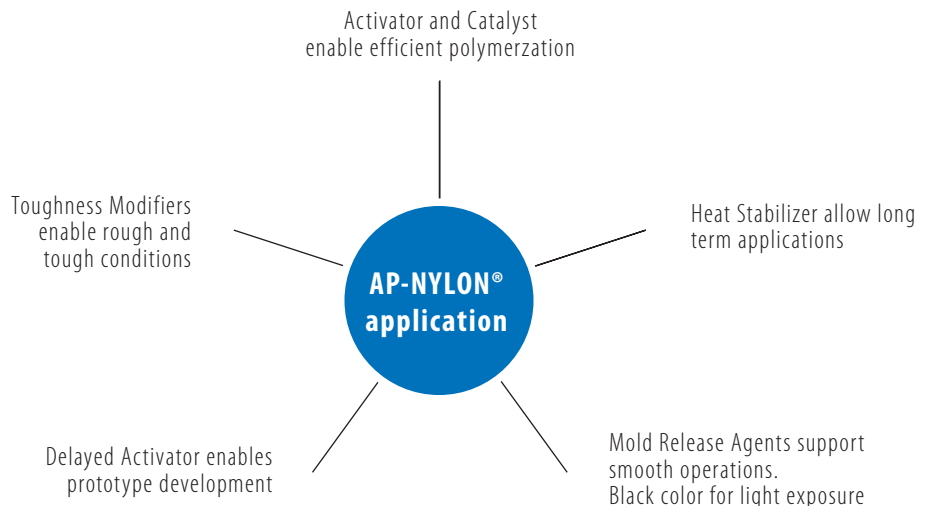
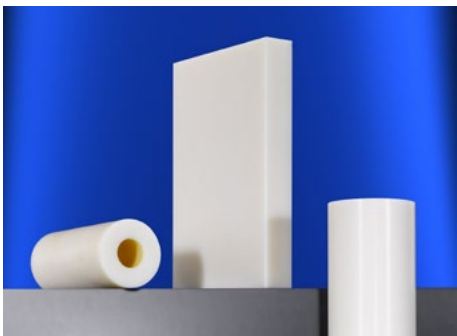
The casting process requires temperatures of 100 to 160°C and no pressure during molding. It is suitable for a variety of molding techniques - vertical and centrifugal casting, rotomolding - and also allows the production of parts with hollow geometries.

A highly efficient process requiring 2% or less of **BRUGGOLEN®** catalyst and activator to affect the polymerization, thus providing a highly cost effective system for moldings which are difficult to manufacture via other means.



## BRUGGOLEN® C Additives for AP-NYLON® Cast Polyamides

**BrüggemannChemical** supplies a portfolio of additives such as catalysts, activators for prolonged open times or toughness enhancer to assist users in realizing a host of products – including advice for application developments.





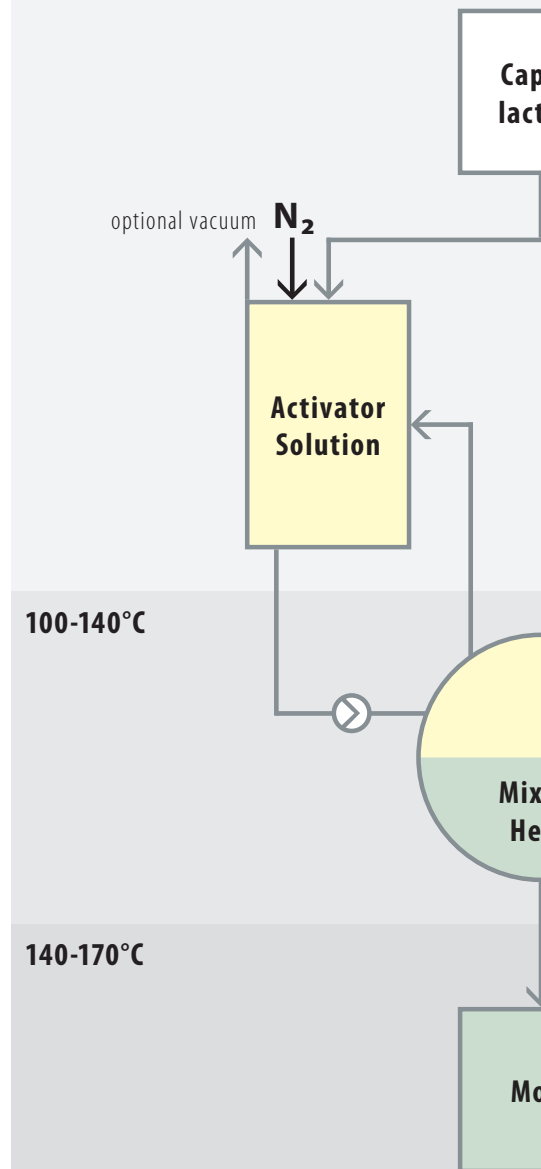
## Additives for the Activator Side:

Solid Activators for AP-NYLON®		Dosage*	Packaging
<b>BRUGGOLEN® C20P</b>	effects fastest casting	0.5 to 1.5%	70 kg plastic drums
<b>BRUGGOLEN® C25</b>	extends open time before solidification	0.5 to 1.5%	25 kg cardboard box
Polymeric Activators for NYRIM®			
<b>NYRIM® P1-30 Prepolymer</b>	viscous elastomeric activator	15 to 44%	25 kg steel drum
<b>NYRIM® P1-20A Prepolymer</b>	viscous elastomeric activator for low dosage	11 to 22%	25 kg steel drum
Liquid Activator for AP-NYLON®			
<b>BRUGGOLEN® C235</b>	N-Methylpyrrolidon-free activator	0.5 to 1.5%	60 kg steel drum
BRUGGOLEN® Heat Stabilizers and Black Color			
<b>BRUGGOLEN® C313</b>	stabilizer for temperatures up to 120°C	0.3%	25 kg cardboard box
<b>BRUGGOLEN® TP-C1608</b>	stabilizer for temperatures up to 150°C	0.3%	25 kg cardboard box
<b>BRUGGOLEN® C403</b>	black pigment	< 0.1%	15 kg cardboard box
NYRIM® Additives			
<b>NYRIM® Mold Release B</b>	release agent	0.2 to 0.5%	25 kg steel container
<b>NYRIM® Foam Stabilizer</b>	reduced macroscopic shrink	0.3%	5 kg steel container
<b>NYRIM® Additive 6 Plus</b>	improves toughness	2 to 5%	25 kg steel drum

### The Monomer for AP-NYLON®

<b>AP-NYLON® Caprolactam Flakes</b>	solid monomer for anionic polymerization
<b>Caprolactam Liquid (AP-Quality)</b>	molten monomer for anionic polymerization

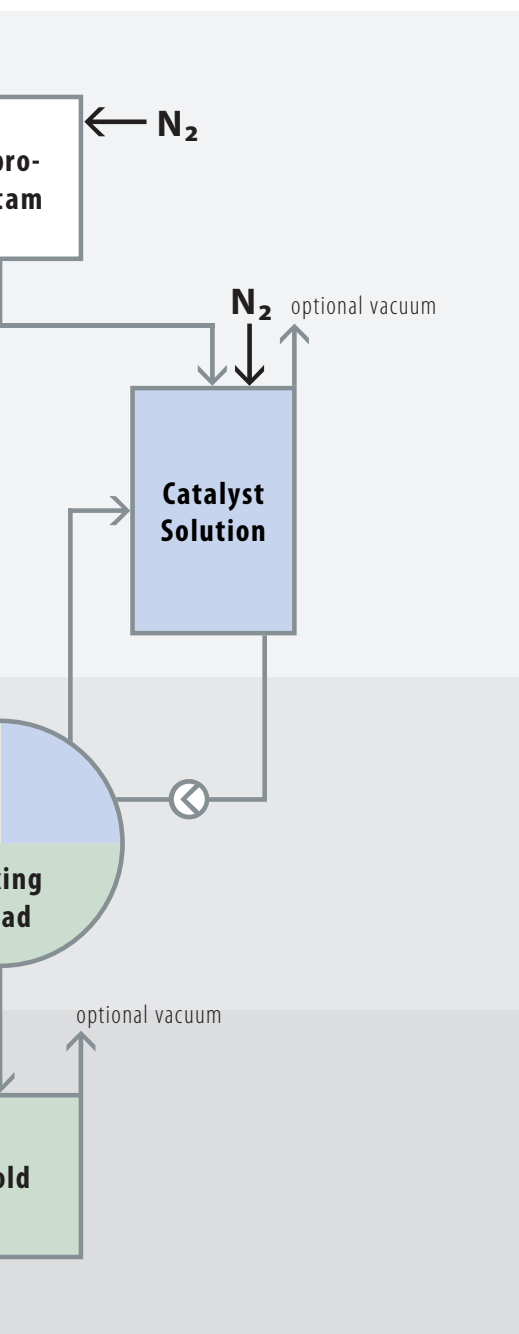
80-90°C







	Dosage*	Packaging
onic	98 to 56%	25 kg metalized plastic bags / 1250 kg per palette
	98 to 56%	full-truck-loads ca. 20t

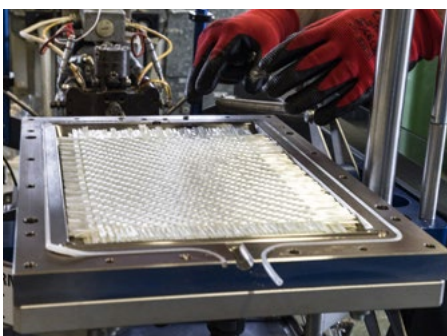
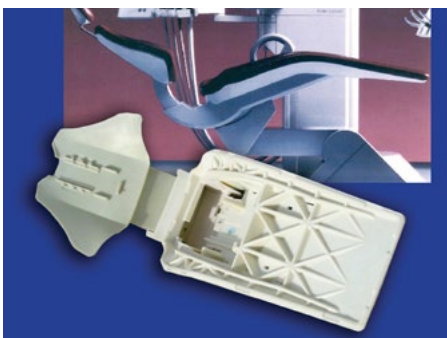
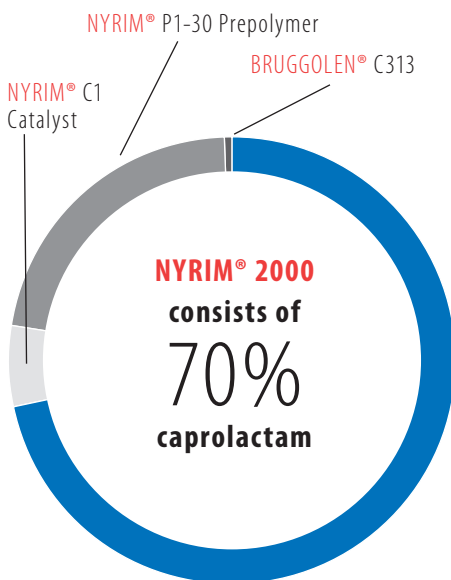


## Additives for the Catalyst Side:

Catalyst for AP-NYLON®		Dosage*	Packaging
<b>BRUGGOLEN® C10</b>	solid sodium based catalyst	0.8 to 2.2%	20 kg plastic bag
Catalyst for NYRIM®			
<b>NYRIM® C1 Catalyst</b>	solid magnesium based catalyst	4 to 8%	20 kg plastic bag
Toughness Modifier for AP-NYLON® for the Catalyst Side			
<b>BRUGGOLEN® C540</b>	viscous elastomer	1.5 to 25%	200 kg steel drum

External Mold-Release for NYRIM® and AP-NYLON®			
<b>NYRIM® Mold Sealer</b>	reduces sticking to the mold	Once per shift	5 l steel container

\*dosage percentage based on total casting weight



## NYRIM®

### Impact Resistance Down to the Extreme Cold

**NYRIM®** is a thermoplastic material noted for its exceptionally high shape stability over a temperature range of  $-40$  to  $140^{\circ}\text{C}$ . It distinguishes itself by its outstanding impact strength and impact resistance and lend it to “rough and tough” applications not accessible to other materials.

The unique nature of **NYRIM®** is due to the incorporation of elastomers into its Polyamide 6 backbone. The level of elastomer determines the characteristics of this copolymer and is adjusted by the elastomeric activator during the polymerization reaction - a 10% level from **NYRIM®1000** up to 40% from **NYRIM®4000**.

	AP-NYLON®	NYRIM®		
		1000	2000	4000
Impact resistance (Izod) at $23^{\circ}\text{C}$ [ $\text{kJ}/\text{m}^2$ ]	4	10	30	no fracture
Impact resistance (Izod) at $-40^{\circ}\text{C}$ [ $\text{kJ}/\text{m}^2$ ]	2	7	9	no fracture
Elongation at fracture [%]	6	40	270	420
Hardness (Shore D) [-]	85	79	74	59
Modulus of elasticity (tensile test) [ $\text{MPa}$ ]	3500	2500	1700	500
Tensile strength [ $\text{MPa}$ ]	80	58	47	26

## BrüggemannChemical Your “One-Stop” Supplier

**BrüggemannChemical** provides all the necessary base materials for production of **AP-NYLON®** and **NYRIM®** parts. Recent developments of **AP-NYLON®** based composites reveal the opportunity to extend the application range into the future.

As a leading global supplier of these specialty products, we are your “one-stop” source, backed up by our in-house R&D and advanced application laboratory in Heilbronn. Our team of experts can support and assist you with any new application, providing advice and trial service all the way through to the production stage.

In order to support your developments we can also supply dedicated small scale samples.

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