RILSAN®
POLYAMIDE FAMILY

AN EXTREME WORLD NEEDS EXTREME MATERIALS
POLYAMIDE PORTFOLIO

RILSAN® POLYAMIDE FAMILY

RILSAN® RESINS
RILSAN® FINE POWDERS
ORGASOL® POWDERS

RILSAMID® ORGALLOY® RESINS

PLATAMID® RESINS
Ultra high performance PA 11 resins, alloys and ready-to-use powder coatings. Tremendous toughness and durability in extreme environments and higher temperatures.

Ideal for 3D printing (additive manufacturing) of highly durable parts. PA 10.10 and PA 6.10 also available.

Tightly controlled particle size distribution PA powder additive. Unique spherical shape offers extreme surface protection and appearance modification (“soft touch”, matte finish, fine texture), controlled absorption/release.

Rilsamid® PA 12 and 6.12 high performance polyamide resins designed for a combination of flexibility, toughness and chemical resistance. Orgalloy® low permeability PE/PA alloys.

High efficiency plasticizer-free thermoplastic hot melt adhesives for both woven and non-woven substrates. Also soluble in select solvents for highly effective barrier coatings.
RILSAN® PA11
ULTRA-HIGH PERFORMANCE, BIOBASED POLYAMIDE RESINS

AN EXTREME WORLD NEEDS EXTREME MATERIALS

ARKEMA
INNOVATIVE CHEMISTRY
PERFORMANCE + SUSTAINABILITY

AN EVOLVING PORTFOLIO

FLAGSHIP APPLICATIONS

SOLVING PROBLEMS TOGETHER
THE RILSAN® STORY

RILSAN PA11 WAS FIRST POLYMERIZED IN SERQUIGNY, FRANCE IN 1947

HIGHER M.P., LOWER PERMEABILITY AND BETTER IMPACT PROPERTIES THAN PA 12

BIOBASED, LOW GLOBAL WARMING POTENTIAL*

FLEXIBLE
EXCELLENT CHEMICAL RESISTANCE

GLOBAL INTEGRATED

MORE THAN 50 YEAR LEGACY IN EXTREME APPLICATIONS

LOW MOISTURE PICKUP, GOOD DIMENSIONAL STABILITY

GLOBAL INTEGRATED

C18

C10

C8

C7

C11

C10+

C8+

C7

C11

Octanoic

Undecanoic

Sebacic

Heptanoic

Castor Oil Derivative
WORLD BIOBASED LEADER

OVER 50 YEARS OF EXPERTISE → LARGEST CONSUMER OF CASTOR OIL → FULLY INTEGRATED
A SUSTAINABLE STORY

BIOMASS FROM PLANTS ~1 YEAR CROP CYCLE

FOSSIL RESOURCE FROM BIOMASS ~1 MILLION YEARS

CASTOR BEAN IS AN INEDIBLE CROP

NO DEFORESTATION - GROWS IN ARID AREAS

NON-GMO

ARKEMA IS A MEMBER OF SUSTAINABLE CASTOR INITIATIVE

<0.5% of world’s plastic is biobased
<table>
<thead>
<tr>
<th>BRAND</th>
<th>DESCRIPTION</th>
<th>% BIO BASED</th>
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</thead>
<tbody>
<tr>
<td>RILSAN® PA11</td>
<td>POLYAMIDE 11</td>
<td>100</td>
</tr>
<tr>
<td>RILSAN® T</td>
<td>POLYAMIDE 1010</td>
<td>100</td>
</tr>
<tr>
<td>RILSAN® S</td>
<td>POLYAMIDE 6.10</td>
<td>60</td>
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</table>

<table>
<thead>
<tr>
<th>BRAND</th>
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<tbody>
<tr>
<td>RILSAN® HT</td>
<td>FLEXIBLE PPA (Polyphthalamide)</td>
<td>Up to 70</td>
</tr>
<tr>
<td>RILSAN® CLEAR</td>
<td>TRANSPARENT</td>
<td>~50*</td>
</tr>
<tr>
<td>RILSAN® TIE FLEX</td>
<td>TIE LAYER ALLOYS</td>
<td>VARIOUS*</td>
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* Depending on grade selected.
FLAGSHIP APPLICATIONS

SUBSEA
Extreme chemical & flex/fatigue resistance

AUTOMOTIVE
Fuel Storage and Delivery; Metal & Rubber Replacement; Huge Range of Applications

NATURAL GAS DISTRIBUTION
Extruded pipe, Lined pipe & Molded Fittings

HEAVY TRUCK
Air Brake Tubing - Mono & Multilayer Transmission Oil Cooling Lines

SPORTS & OPTICS
Lightweight Footwear Skis, Ski Boots Sunglasses

PRESSURE HOSE
Industrial, Pneumatic Tubing & Pressure Hose
EXTREME PERFORMANCE

Improved dimensional stability

Better impact resistance

% Moisture Absorption at 23°C

Impact Strength (KJ/m²)

PA 11  PA 12  PC  PA 6.10  PA 6  PA 6.6  PBT  POM
EXTREME PERFORMANCE ➔ TOUGH & FLEXIBLE

Weight Loss after Abrasion (mg, Taber – CS17 – 1000rev/1kg)

<table>
<thead>
<tr>
<th></th>
<th>PA12</th>
<th>PA11</th>
<th>PA6</th>
<th>PA6.6</th>
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<tbody>
<tr>
<td>% Moisture Absorption at 23°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@ 50% RH</td>
<td>0.7</td>
<td>0.8</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>@ 100% RH</td>
<td>1.6</td>
<td>1.9</td>
<td>9.5</td>
<td>8.5</td>
</tr>
<tr>
<td>Density (g/cm³)</td>
<td>1.01</td>
<td>1.03</td>
<td>1.14</td>
<td>1.14</td>
</tr>
<tr>
<td>Tc, Crystallization Rate (injectability) °C</td>
<td>178</td>
<td>189</td>
<td>220</td>
<td>260</td>
</tr>
<tr>
<td>Impact - Notched Charpy @ +23°C (kJ/m²)</td>
<td>6-20</td>
<td>10-40</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>@ –40°C (kJ/m²)</td>
<td>6</td>
<td>13</td>
<td>3.5</td>
<td>3</td>
</tr>
<tr>
<td>Falling weight impact @ –30°C (J)</td>
<td>60-80</td>
<td>70-90</td>
<td>20-50</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Tensile elongation, dry (%)</td>
<td>250-400</td>
<td>250-400</td>
<td>10-15</td>
<td>15-30</td>
</tr>
<tr>
<td>Tensile Modulus (MPa) - Conditioned</td>
<td>1000</td>
<td>900</td>
<td>1200</td>
<td>1600</td>
</tr>
</tbody>
</table>
A CLEAR VISION FOR THE FUTURE

CONSUMER DEMAND

PERFORMANCE

BIOBASED

LIGHTER

MORE TRANSPARENT THAN GLASS

FLEXIBLE
WHEN THINGS GET HOT...

RILSAN® HT
BY ARKEMA

EXTREME DEMAND

EXTREME PERFORMANCE

BIOBASED
LIGHTER
HIGH TEMPERATURE PERFORMANCE AND...
...FLEXIBLE
WHAT PROBLEMS CAN WE SOLVE FOR YOU?

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