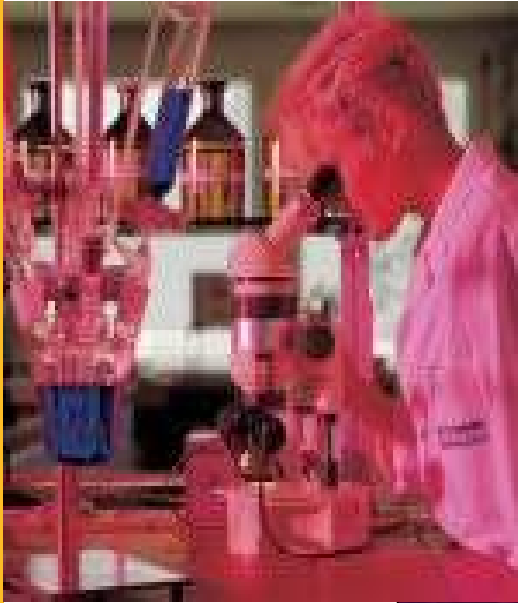


Materials & Technology

Roofing



Sarnafil®

Content & Topics

Thermoplastics

Production technology

Argumentation FPO: Flexible Polyolefin

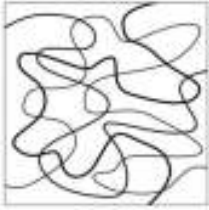
- Basics
- Characteristics
- Argumentation
- Durability / Track Record

Argumentation PVC: Poly-vinyl-chlorine

- Basics
- Characteristics
- Argumentation
- Durability / Track Record

Conclusion





Thermoplastics

Definition: Thermoplastics consist of threadlike, unlinked molecular chains. When heat is applied thermoplastics can be remoulded and fused together.

Advantage / Benefit:

- **Easy and secure detailing (installation techniques)**
 - given by the mould ability following to heating
- **Reliable and durable joining techniques (seams)**
 - by fusion of the material (hot air, solvent welding)
- **Economical, versatile applications and process techniques**
 - due to large range of additives
- **Simple, complete and proven to be recyclable**
 - by easy separating and processing (cleaning, cutting, milling)
- **Excellent long term behaviour & low life-cycle costs**
 - proven performance by quality suppliers for 50 years+

Roofing



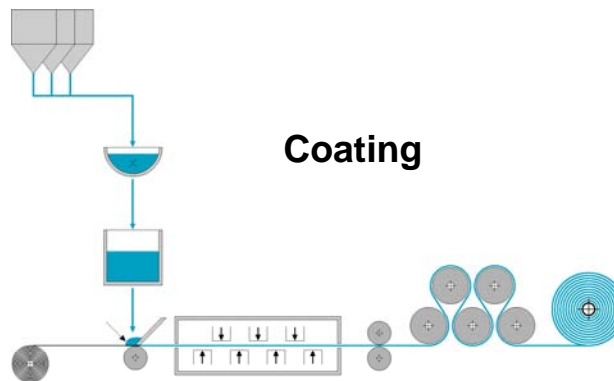
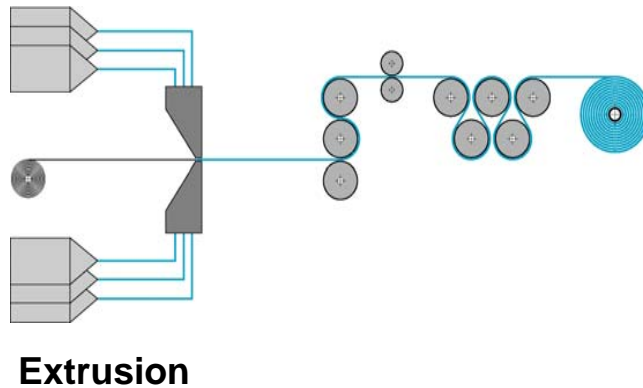
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Processing / Manufacturing Methods

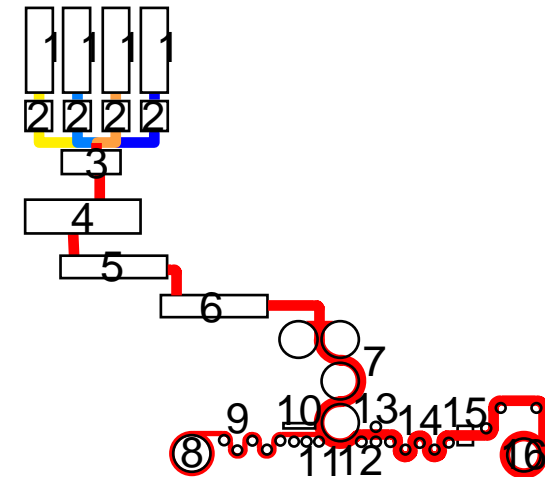
Argumentation:

All manufacturing processes used by SSM to produce our membranes are **state of the art** and are tuned to realise the individual functions of the products.

ISO 14001 certification is part of the quality loop applied.



Calendering

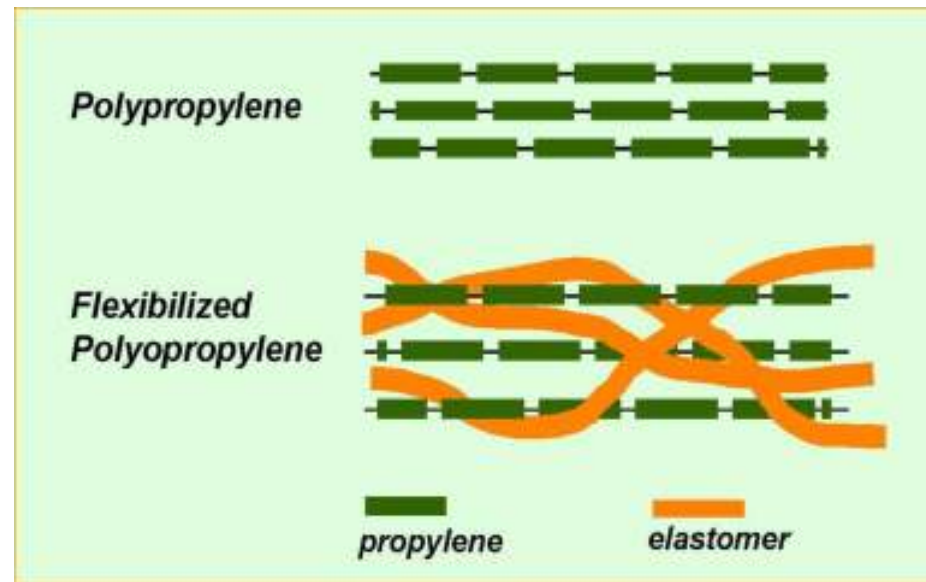


FPO: Flexible Polyolefin

FPO – Sarnafil T:

Internally plasticized achieved during polymerization process

- **No migration of plasticizer possible !**



- **Sarnafil FP:** Used in civil engineering applications since 1977
- **Sarnafil T:** Introduced for flat roofing applications in 1991 – world's first FPO based roofing membrane



Sarnafil T : Characteristics

Advantage

Strength / Features	Benefits
No plasticizer / plasticizer migration	Improved chemical resistance Resistant to micro-organism > improved long term behaviour / aging process
High chemical resistance	Use in environmentally critical / polluted areas > improved durability in protected roof systems
Bitumen compatible EPS/XPS-compatible	No separation layer required - \$ > ideal for re-roofing, on aged bitumen layers
Free of chlorine, heavy metals etc.	Excellent ecological profile / image > easy recyclable, easy disposal - \$
Light surface colours	Low surface temperature → longer service life Reduced heat gain → less energy / cooling required
High UV resistance	Long life expectancy - \$
Clean and economical installation methods	Fast, safe installation > reliable installation and seams



Sarnafil T

To be noted

To be noted	Implications
Stiffness, especially if thicker membranes used	More difficult to execute details (PVC) Use of pre-fabricated parts Use of additional, homogeneous detailing strips
Seam preparation	Additional working step Use of T-Prep-nozzle (Sarnamatic 641/661)
Higher expansion coefficient	Wave formation at high temperatures Requires increased perimeter fastening
Tendency to attract dust, soiling	Soiling impairs appearance, aesthetics of membranes
Flame resistance	Requires special flame retardants and/or additional measurements e.g. glass fleece



Sarnafil T: Argumentation

Positioning	Argumentation
Ecology	Excellent eco-profile during production, installation, utilization, disposal - life cycle ! > Excellent environmental compatibility / sustainability
Compatibility	High compatibility to other materials, chemical substances. Ideal for: > Refurbishing, protected roof systems > Roofs that are exposed to high level of pollution
Longevity	Use of high quality raw materials and a field experience of over 15 years insures superior weathering and ageing characteristics
Installation	15 years field experience have proven that an integrated seam preparation results in safe and reliable seams, installation
Aesthetics / Function	Since aesthetics is affected by increased soiling and a high expansion coefficient, functionality should be stressed as main selling point



Sarnafil T: Longevity

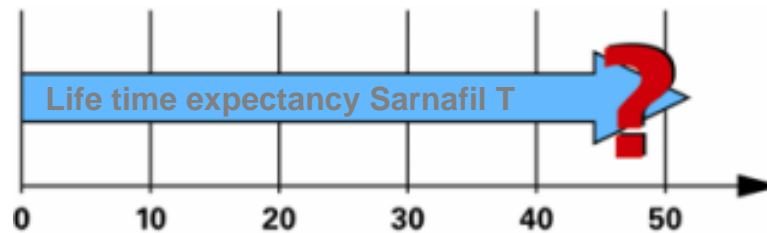
External reports (expert's opinion), including field investigations done by Prof. Dr.-Ing. Rieche during the last 15 years, indicate excellent durability, long service life.



Objective:
Assessment of general state of sample



Exposed Sarnafil T:
Testing of material properties



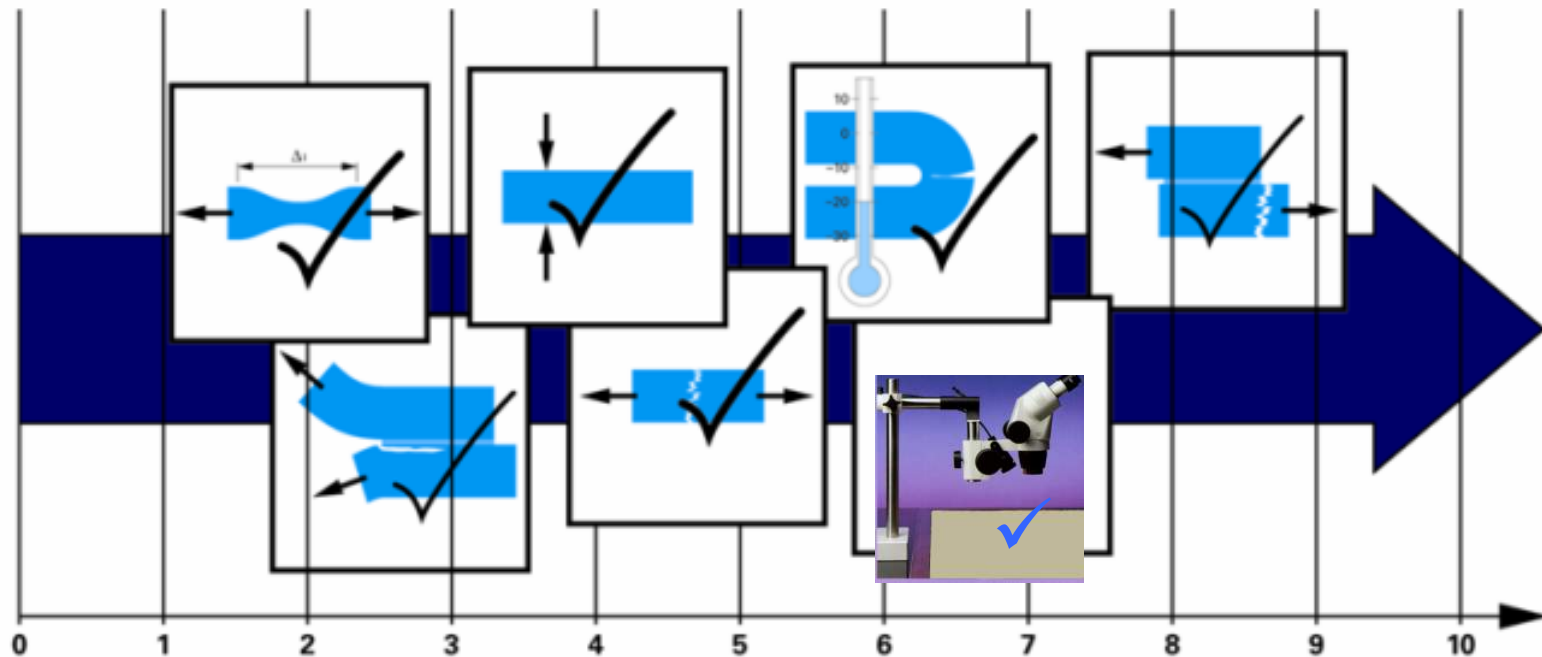
Service life prediction of Sarnafil T:
Longevity and durability



Sarnafil T: Longevity

Field investigation done by Prof. Dr.-Ing. Rieche have shown:

- Test results revealed that the material values of the aged samples are almost the same as new material and are better than normative requirements for new material; after 10, 15 years



Sarnafil T: Longevity

Additional external testimonials, reports

Wolfseher:

„We determined that after more than 100 years the actual elongation at break for both membranes will still be significantly higher than the maximum elongations that occur in the model roof.

With proper use and application, a service life of 50 years for Sarnafil TG 55-20 and Sarnafil TG 66-16 can reliably be achieved.”

Basler & Hofmann

Ingenieure und Planer AG, Mitglied SIA/USIC

“Within the context of the two studies it may therefore be assumed that under normal conditions Sarnafil TG 66/TS 77 can reach a service life in excess of 40 years.“



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