

## **XL-PEARL™ 23 HDPE 40**

### **XL-PEARL© 23 HDPE 40**

#### **Description**

XL-PEarl 23 silane is specially developed for the manufacture of XL-PEarl masterbatches based on porous polymer carriers. The technology is described in EP 0 426 073 and US 5,112,919 patents. XL-PEarl 23 silane is designed for crosslinking high-density polyethylene (HDPE) "PEX" pipe using XL-PEarl silane or the Spherisil<sup>(1)</sup> one step process.

This product must be used in combination with a catalyst and antioxidant masterbatch such as (PEarlstab\* C-13'000, PEarlstab S-12'000 or PEarlstab I-14'000). It is only available for licensees of XL-PEarl silane technology.

(1) Silon International GmbH

#### **Key Features and Benefits**

- XL-PEarl 23 silane is based on a unique peroxide and silane combination that provides high grafting efficiency.
- A high onset temperature of the XL-PEarl 23 silane ensures good process stability and minimizes pregrafted and crosslinked particles during extrusion.
- XL-PEarl 23 silane is particularly suitable for low-odor applications.
- XL-PEarl silane can also be used with a wide range of polyethylene grades, including LDPE, LLDPE, MDPE, HDPE and the new single site catalyst resins, for optimum cost-effectiveness.
- Pipes manufactured using XL-PEarl silane technology show excellent mechanical properties and outstanding chemical resistance.
- Use of the quality-controlled XL-PEarl silane system results in pipes with high quality surface finish.

### Typical Physical Properties

Appearance	Clear liquid
Color	Colorless
Viscosity, mPa s (cP), @ 23°C	2.5
Specific Gravity, g/cm <sup>3</sup> , @ 23°C	0.970

### Potential Applications

- Crosslinking of high-density polyethylene pipes for:
- Domestic hot and cold water distribution
- Under-floor heating
- Central and district heating
- Transport of gases, compressed air and fluids
- Industrial pipes

XL-PEarl 23 silane status under European and national food contact regulations on plastic materials. The silane component in XL-PEarl 23 silane is listed with ref PM nr 26328 in the EU Directive 90/128/EEC on plastics for use as food contact, with a maximum QM of 'residual' silane of 5 mg/kg (QM = maximum permitted quantity of the 'residual' substance in the food product).

A European reference for the peroxide ingredients is the German BgVV, Section XLVI. It allows the use of these peroxides for food contact applications in crosslinked PE, with the restriction that the total amount of decomposition products in the final resin does not exceed 0.2%.

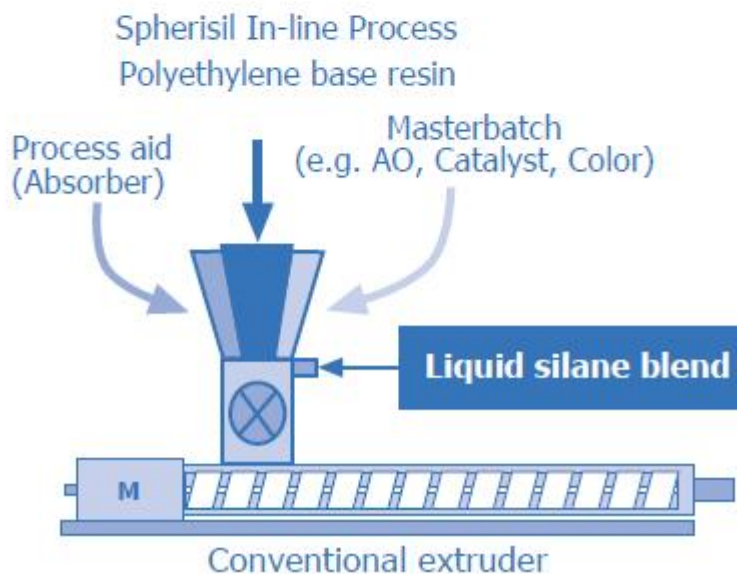
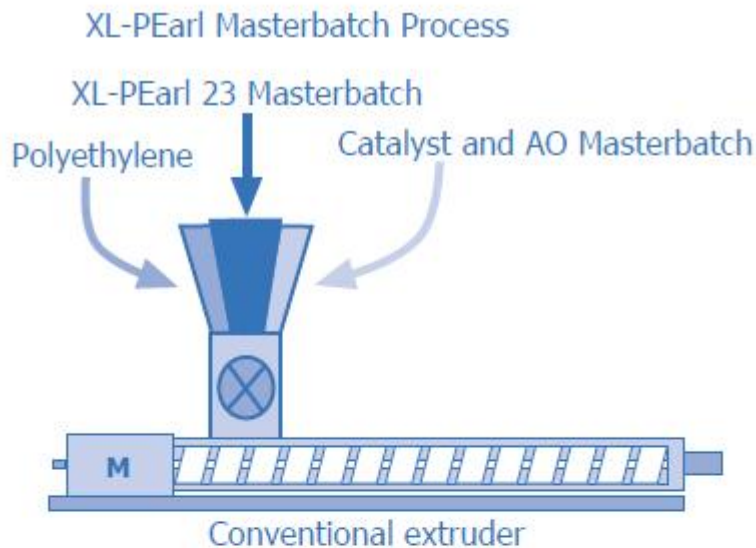
### Patent Status

Standard copy to come

### Product Safety, Handling and Storage

Standard copy to come

### Processing Recommendations



#### A) Extrusion Process

Addition of a catalyst AO masterbatch is required (PEARlstab\* C-13'000, PEARlstab S-12'000 or PEARlstab I-14'000). Moisture content of the polyethylene base resin must be less than 200 ppm. Pre-drying the poly ethylene base resin as well as catalyst and AO masterbatches at 70°C (158°F) by means of an air desiccator is highly recommended.

Optimum addition levels for a given application must be determined experimentally and

depend on the properties (MFI and density) of the polyethylene resin used in production.

Recommended Resins Are:

Type of HDPE resin:

MeltIndex (190°C/2.16 kg)	0.2 to 8g/10min.
Density	0.940 to 0.960 g/cm <sup>3</sup>

Optimum addition level of XL-PEarl 23 silane has to be determined experimentally. A starting point dose level is as follows:

XL-PEarl 23 silane	1.6 - 1.8%
CAT/AO Masterbatch (PEarlstab S-12'000)	3 - 5%
Melt temperature during the grafting	215 - 225°C

Our technical personnel will advise you regarding the proper operating conditions for the compounding equipment.

Commercially Available HDPE Resins:

HDPE	From	MFI	Density
Lupolen 5031L	Basell	5-7	0.952
Eltex/Fortiflex A4040	Solvay	4	0.944
Politeno IH57	Politeno	2.5	0.953
Nova 76 A	Nova	3.3	n/a
HDPE M 40060S	Sabic	4.0	0.960

B) Crosslinking

Rate of cure is dependent upon time, temperature and thickness of the article and available moisture. Sufficient crosslinking can be achieved by any of the following methods:

- Immersion in water at 80-90°C (176-195°F), or
- Exposure to low pressure steam at 105°C (221°F), or
- Exposure to steam at atmospheric pressure (i.e., a sauna at 100°C (212°F)), or
- Ambient curing (only applicable to certain polymers)

### Limitations

Standard copy to come

### Contact Information

Email

[commercial.services@momentive.com](mailto:commercial.services@momentive.com)

### Telephone

<b>Americas</b>	<b>Latin America</b>	<b>EMEAI- Europe, Middle East, Africa &amp; India</b>	<b>ASIA PACIFIC</b>
+1 800 295 2392 Toll free* +704 805 6946 Direct Number	<b>Brazil</b> +55 11 4534 9650 Direct Number	<b>Europe</b> +390510924300 Direct number	<b>China</b> 800 820 0202 Toll free +86 21 3860 4892 Direct number
*All American countries	<b>Mexico</b> +52 55 2169 7670 Direct Number	<b>India, Middle East &amp; Africa</b> + 91 44 71212207 Direct number*	<b>Japan</b> +81 3 5544 3111 Direct number
		<b>*All Middle Eastern countries, Africa, India,</b>	<b>Korea</b> +82 2 6201 4600

For literature and technical assistance, visit our website at: [www.momentive.com](http://www.momentive.com)

### DISCLAIMER:

**THE MATERIALS, PRODUCTS AND SERVICES OF MOMENTIVE PERFORMANCE MATERIALS INC. AND ITS SUBSIDIARIES AND AFFILIATES (COLLECTIVELY “SUPPLIER”), ARE SOLD SUBJECT TO SUPPLIER’S STANDARD CONDITIONS OF SALE, WHICH ARE INCLUDED IN THE APPLICABLE DISTRIBUTOR OR OTHER SALES AGREEMENT, PRINTED ON THE BACK OF ORDER ACKNOWLEDGMENTS AND INVOICES, AND AVAILABLE UPON REQUEST. ALTHOUGH ANY INFORMATION, RECOMMENDATIONS, OR ADVICE CONTAINED**

**HEREIN IS GIVEN IN GOOD FAITH, SUPPLIER MAKES NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, (i) THAT THE RESULTS DESCRIBED HEREIN WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN INCORPORATING ITS PRODUCTS, MATERIALS, SERVICES, RECOMMENDATIONS OR ADVICE. EXCEPT AS PROVIDED IN SUPPLIER'S STANDARD CONDITIONS OF SALE, SUPPLIER AND ITS REPRESENTATIVES SHALL IN NO EVENT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS OR SERVICES DESCRIBED HEREIN.** Each user bears full responsibility for making its own determination as to the suitability of Supplier's materials, services, recommendations, or advice for its own particular use. Each user must identify and perform all tests and analyses necessary to assure that its finished parts incorporating Supplier's products, materials, or services will be safe and suitable for use under end-use conditions. Nothing in this or any other document, nor any oral recommendation or advice, shall be deemed to alter, vary, supersede, or waive any provision of Supplier's standard Conditions of Sale or this Disclaimer, unless any such modification is specifically agreed to in a writing signed by Supplier. No statement contained herein concerning a possible or suggested use of any material, product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Supplier covering such use or design, or as a recommendation for the use of such material, product, service or design in the infringement of any patent or other intellectual property right.

\*XL-PEarl™ ist ein Markenname der Momentive Performance Materials Inc.

The use of the "™" symbol designates registered or unregistered trademarks of Momentive Performance Materials Inc. or its affiliated companies. Momentive and the Momentive logo are trademarks of Momentive Performance Materials Inc.