OSA® S20
OSAKRYL®
universal styrene-acrylic dispersion

synthos SPECIALTIES
Synthos S.A. grew out of the companies Firma Chemiczna Dwory S.A. and Kaucuk a.s. SYNTHOS, the current name of the company (introduced in 2007), derives from a fusion of two words of Greek origin, synthesis (join) and orthos (proper, right). The name replicates the Company’s mission which is to manufacture and supply its clients with chemical products for further processing, contributing to the development of each client’s business. The name also reflects the nature of the Company’s operations in chemical synthesis.

Synthos S.A. manages two production companies: Synthos Dwory 7 Sp. z o.o. S.K.A. based in Oświęcim and Synthos Kralupy a.s. based in Kralupy (Czech Republic).

SYNTHOS S.A. focuses its activities on three main product groups: synthetic rubbers, styrene plastics and specialties products such as latexes, vinyl and acrylic dispersions, and adhesives. SYNTHOS S.A. is the only Polish manufacturer of synthetic rubber and polystyrene, as well as being Europe’s largest producer of Emulsion Styrene Butadiene Rubber (E-SBR).

The dynamic development of the company in recent years has made it an enterprise that is competitive, safe and environment-friendly, which provides the market with high-quality, state-of-the-art products.

SYNTHOS S.A. focuses its activities on quality and efficient customer service, as well as on the innovative character of products. Ecological safety is one of our main priorities. This effort has been backed up by the implementation of a certified Integrated Quality, Environment and Work Safety Management System.

In 2011, the company launched production of neodymium-catalysed butadiene rubber (NdBR) in the production plant in Czech Republic (Karlupy). High quality neodymium-catalysed butadiene rubber is used for mixture for production of advanced car and truck tires and various rubber technical products. In 2013, SYNTHOS S.A. launched the construction project of a new production line for advanced SSBR rubber.

In 2014 the Boryszew ERG S.A. Dispersion and Adhesive manufacturing unit was added to Synthos S.A. Due to the takeover of the new plant and the unification of the Synthos Groups portfolio, we are introducing a new brand to the market: Synexil®.

Synexil® and Osakryl® are market brands of water dispersions produced by Synthos S.A. New Synexil® group includes mostly vinyl acetate-based dispersions, while the Osakryl® group includes acrylic and styrene-acrylic products as well as acrylic monomer copolymers with other monomers. As of today, the new Synexil range includes mainly dispersions based on polyvinyl acetate, and the Osakryl group includes acrylic and styrene-acrylic products, as well as copolymers of acrylic monomers with other monomers. At present, the Synthos water-based dispersion portfolio satisfies the needs of the general construction chemical industry: manufacturers of paints, plasters, primers, putties, including decorative (stuccos), various adhesives (e.g. paper, wood, PSA adhesives and more).

None of dispersions contain APEO emulsifiers (alkylphenol ethoxylates), solvents, hazardous plasticizers or other substances harmful to human health or the environment included in the REACH Candidate List of Substances of Very High Concern (SVHC) for Authorization at an individual concentration equal to or higher than the acceptable norms. In doing so, our products are subject to the strict internal quality control in accordance with the certified quality control system ISO into which additional parameters, important from our business partners’ point of view, can be included on the client’s request.

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DISPERSIONS SALES MARKETS

Paints and coatings 30%

Adhesives 15%

Glass fibres and textiles 2%
**OSAKRYL® OSA S20** is a styrene-acrylic dispersion recommended as binder for the production of interior and exterior paints, as well as protective-decorative plasters and primers. Thanks to its properties, the binder may be used in silicone and silicate coatings.

**Basic Parameters**

- **pH**: 7.5-8.5
- **Solids content, %**: 49±1
- **Brookfield viscosity, mPa·s**: 2000-6000
- **MFFT, °C**: 23±2
- **Tg, °C**: ca. 23
- **Mean particle size, nm**: 100-130

**Osakryl® OSA S20 freeze-thaw resistant dispersion**

Conducted tests showed that the Osakryl® OSA S20 is freeze-thaw resistant dispersion. The method implemented consisted in carrying out multiple freeze-thaw cycles. During one cycle the product sample was kept in -40°C for 6 hours, then in +23°C for 18 hours. 10 such cycles were carried. After each cycle a viscosity test was performed.

**Osakryl® OSA S20 in exterior paints**

<table>
<thead>
<tr>
<th>Raw material</th>
<th>% wt.</th>
<th>Manufacturer</th>
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<tbody>
<tr>
<td>Water</td>
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<tr>
<td>Calgon N</td>
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<td>BK Giulini</td>
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<tr>
<td>Attagel 50</td>
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<td>BASF</td>
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<td>Cellosize HEC DP 300</td>
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<td>Borchi Gen AP</td>
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<td>OMG Borchers</td>
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<td>Aghan 2B2</td>
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<td>Munzing</td>
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<td>Styral 10-001</td>
<td>5.00</td>
<td>ZCH Polizei</td>
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<tr>
<td>Intalc 86C</td>
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<td>Byk</td>
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<td>DOW</td>
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<tr>
<td>Rocima 350</td>
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<td>DOW</td>
</tr>
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</table>

**Printed test results**

- **Parameter**
- **Dispersion with APEO emulsifier**
- **Osakryl OSA S20**
- **Requirements**
- **Test method**

- **Viscosity (mPa·s)**: 5250 4820 - PN EN ISO 2555
- **Viscosity after aging (28 days) (mPa·s)**: 9220 7280 - PN EN ISO 2555
- **Gloss determined at measurement angle 85°**: 4.2 4.5 +15 PN EN ISO 2813
- **Whiteness (C/2°)**: 77.94 78.37 ± 75 PN-C-10193:1998 p. 2.5.5
- **Luminousness (C/2°)**: 2.69 2.64 - PN-EN ISO 2811-1
- **Quantitative covering at 99% opacity**: 279.7 265.5 - Internal method
- **Qualitative covering at 99% opacity**: III III ≤ III (white paint) PN-C-10193:1998 p. 2.5.5
- **Quantitative covering at 99.5% opacity**: 374.6 396.9 - Internal method
- **Qualitative covering at 99.5% opacity**: IV IV - PN-C-10193:1998 p. 2.5.5
- **Wet scrubbing resistance**: 2450 2200 ≥ 2000 PN-C-10193:1998 p. 2.5.5
- **Colour difference, green paint, ∆E (C/2°), without exposure**: standard 0.27 +0.25 perfect match, <1.0 difference not visible to the “naked eye” Internal method
- **Colour difference, red paint, ∆E (C/2°), without exposure**: standard 0.09 Internal method

**Osakryl® OSA S20 allows to manufacture exterior paints with similar parameters to paints based on a binder containing APEO emulsifiers.**

The basic paint parameters, i.e. density, pH, gloss, whiteness, yellowishness, are comparable in both cases. When using the Osakryl® OSA S20 dispersion for exterior paints, it may be required to make a correction in the amount of titanium dioxide in the tinting system. A product made on the Synthos binder is characterised by higher stability of viscosity after aging. The wet scrubbing resistance of the paints is similar, formulations based on Osakryl OSA S20 may require a small correction of the hard fillers used.
A comparison of acrylic plasters based on Osakryl® OSA S20 dispersion and its market analogue containing an APEO emulsifier.

The aim of this comparison is to evaluate the properties of an acrylic plaster after replacing the binder with an environmentally friendly (APEO free) dispersion.

The binders presented in the comparison have similar basic physical and chemical parameters.

Osakryl® OSA S20 allows to manufacture acrylic plasters with similar parameters to paints based on a binder containing APEO emulsifiers.

The information given herein is based on trials carried out by SYNTHOS S.A. according to current standards and the present state of our knowledge. They do not guarantee certain properties of the products nor their suitability for a specific purpose. Users are advised to make their own tests to determine the safety and suitability of each such material or combination of materials for their own purpose.

Contact and information

Our cooperation with clients in the area of water dispersions mostly focuses on building long-term and partner relationships. Therefore, we provide all necessary technical assistance together with the preparation of formulations of products, taking into account the individual requirements of a specific client.

Research & Development Laboratory

Osakryl® OSA S20 has been developed in Synthos’ Research & Development Laboratory to meet the increasing demands of building materials manufacturers. The product provides an innovative solution for paints, plasters and primers.

Osakryl® OSA S20 allows to manufacture acrylic plasters with similar parameters to paints based on a binder containing APEO emulsifiers.