



Brief description of the company profile

Company name: Výskumný ústav chemických vlákien, a.s. (abbrev. **VÚCHV, a.s.**)
Research Institute for Man-Made Fibres

Year of foundation: 1951

Legal status: Joint-stock company, privately held

Number of employees: 91

Annual turnover: 3.000.000 EUR

Proportion of export: 50%

Management systems: ISO 9001:2008 – System of quality control for the research, development and production activities
ISO 14001:2004 – System of environmental management for the research, development and production activities

Classification of activities: a) Production
b) Research and development
c) Certification and services



Production activities

Production of special chemical products with a higher added value:

- colour and additive masterbatches for most challenging applications in PET, PBT, PA and PP based fibres, PS and PMMA plastics and PE films
- PP industrial yarn for technical applications
- PP staple fibre for technical and special textile applications

Design and production of special machinery for the area of man-made fibres:

- devices for injection mass-dyeing of polymers
- granulate dryers, melting extruders, filter-test
- machines, distribution manifolds, quenching chambers, spin blocks
- heating systems in the fibre production (heating boilers)
- stainless program

Export of products:

Czech Republic, Germany, Hungary, Latvia, Lithuania, Poland, Russia, Slovenia, Switzerland, Turkey, Ukraine



Research and development

Research activities in areas:

- application of PP, PET, PA polymers for fibre and plastics production
- new types and new technological processes of PP, PET, PA and Vs fibres
- pigments and masterbatches for spun dyeing of man-made fibres
- modifiers, modifier masterbatches and modifying of man-made fibres
- finishing systems and surface treatment of man-made fibres
- technical help and consultations during preparation and realization of the modernization and introduction of the new man-made fibre plants

Development activities in areas:

- projects of the modernization and introduction of new man-made fibre plants
- development of technological machines for modernization of man-made fibres
- development and production of prototypes and pilot lines for man-made fibres
- development and production of special devices for man-made fibres technologies and other areas of application

Export of the research and development results:

- Germany: Akzo-Nobel Membrana GmbH, Barmag AG, Degussa AG, Henkel-Cognis GmbH
- England: Columbian Chemical Company
- Belgium: Cabot Corp.
- Switzerland: Ciba SC AG
- Hungary: Zoltek RT
- Czech Republic: Alae Lupuli, Pegas a.s., Precolor a.s., Silon a.s., Unipetrol a.s.

Inland clientele:

- Chemosvit a.s., Istrochem a.s., Matador a.s., Nexis Fibers a.s., Slovensky hodvab a.s.

Sate accredited certification and testing

Services in the area of testing and activities of authorized body:

- testing of physical, physical-chemical and user properties of the materials and products for the purpose of research, innovations and modernization of production technologies
- testing of hygienic, ecological properties, standpoints and opinions to solutions of technological problems and reclamation cases in the area of fibre and textile industry





POLYCORD – Polypropylene industrial yarn (PPtv)

Characteristic:

PPtv is a smooth, non-twisted yarn produced by continual processing and it is wound on cylindrical tubes. This fibre is available with required number of twists. POLYCORD is produced in natural version or mass dyed on around 100 colour shades.

Moreover, the yarn may be produced light stabilized or with special treatments, e.g. self-extinguishing modification.

All ingredients of yarns meet the relevant standards for health safety.

Crimping of the yarn is available.

Properties:

- gross linear density: 700 – 3300 dtex
- filament titre: 5 – 17 dtex
- relative tenacity: 5 – 6.5 cN/dtex
- elongation: 20% – 25%
- shrinkage: 5% – 14% (depends on assortment)

Application:

Application of PPtv is mainly in technical areas:

- wrap fabrics for separation of rubber mixtures
- filter cloths with possibility of application in foodstuff industry (filtering of sugar juices, etc.)
- nets for production of heat-holding panels in building industry
- straps and belts for using in textile, shoemaking industry, haberdashery industry, etc.
- geo-textiles applicable in building of roadsters, high roads, embankments, etc.
- various strings, ropes and fabrics mainly for using in water medium

Delivery:

Packages with smooth fibre with mass of 2-8 kg are delivered wrapped in cartons, stacked on palettes EUR. Whole palette is bundled eventually sealed in a stretch film.

Basic delivery is 350 kg of net material and delivery time is 7 tons per month (other terms are available after mutual agreement).



KALCIFIL – S

Characteristic:

KALCIFIL is a special polypropylene staple fibre (further referred to as PPs) – a synthetic fibre from the isotactic polypropylene prepared by stereospecific polymerization. With regard to a staple length the trade name is created as follows: KALCIFIL S-5, KALCIFIL S-12, KALCIFIL S-20 and KALCIFIL S-38.

KALCIFIL – S is produced with the linear density 2.8 up to 8.0 dtex what corresponds to the fibre diameter of 18 to $33 \cdot 10^{-6}$ m and in a nominal staple length of 5, 12, 20 and 38 mm.

The fibre has a circular cross-section. It is non-crimped, non-fixed, un-dried and treated by a finishing agent that provides for a good opening of PPs in water. Depending on a filling agent in the mass, it is produced as gray, mass-matted or mass-dyed to a requested colour shade. The titanium dioxide (TiO_2) concentration in the matted KALCIFIL – S is max. 0.1%, the mass-dyed KALCIFIL – S contains a colour pigment with the concentration according to agreed colour shade.

Properties:

KALCIFIL – S is a fibre that resist to all inorganic acids and bases as well as organic solvents and it is environmentally safe, when used under normal conditions. The fibre surface is treated specially to achieve good anchorage in an inorganic material. The fibre is characterized by a high stability in the medium of the creating silicate matrix in the course of hydration process and stability in the medium with high relative humidity.

Application:

As a new composite material in combination with cement, concrete and water that is applicable in contemporary building industry in following areas:

- *concrete flagging, embossed concrete flagging, elements of garden architecture prefabrications* - for production of thin-wall filling elements, spatial design elements, screening shelters, balcony and loggia linings, etc.
- *monolithic constructions* – for production of missed form for surface treatment of aesthetic and functional safety of buildings, linings, face treatment of multi-layer jacket linings, etc.
- *engineering construction* – for creation of elements and constructions, stressed mainly by bending and tensile load that are subjected to adverse atmospheric effects, various air effects, etc.
- *maintenance and reconstruction* – for restoration of damaged elements and constructions

The application of fibre for reinforcement of cement matrix enables to affect the critical mechanical properties of original material in dependence on used technology by increasing of following parameters:

- compression strength by 6 – 15%
- tensile strength at bending by 6 – 13%



- impact strength by 200 – 250%
- dispersed fibre eliminates a generation of surface tears in the course of solidification and hardening of the composite

Dosing: 0.6 – 0.9 kg of KALCIFIL – S per 1m³ of the concrete or masonry compound

Package: Package, identification, transport and storage are in compliance with the standard STN 80 1490. PE bags, soluble bags, cardboards are on the EUR palettes. The mass of individual package is about 20 – 25kg.

Storage: The storage stability of PPs KALCIFIL – S is up to 6 months in closed warehouses, protected against atmospheric effects and mechanical damage.



Figure. Magnified view on KALCIFIL-S fibre



COLORSVIT

Characteristic:

COLORSVIT - are colour masterbatches suitable for colouring of chemical fibres and plastics. They are produced on the base of various polymer carriers. The offered assortment includes masterbatches of organic and/or inorganic pigments and dyestuffs on the base of:

- polypropylene
- polyethylene
- polyethyleneterephthalate
- polyamide 6
- polystyrene
- polymethylmethacrylate, polycarbonate

Properties:

A pigment content in the masterbatch COLORSVIT ranges from 1 to 40% depending on carrier and the scope of application. It can differ (according to an agreement) depending on a possibility of feeding, usually 10 to 30%, up to 40% for some shades, in case of inorganic pigments it can be higher. Following parameters are controlled during the production of the colour masterbatch COLORSVIT:

Pellet Size	0,3 - 0,7 g (mass of 30 pellets)
Filterability	< 150 MPa/kg
Flow Properties	Melt Flow Rate, Relative Viscosity, Limit Viscosity Number
Volatiles	< 0,2 %
Variation of Colour Shade	4 degrees of grey scale

All masterbatch components comply with the respective standards of health safety!

Application:

Colour masterbatches COLORSVIT are used for mass-dyeing for production of synthetic fibres, films, engineering and commercial plastics.

Application of the colour masterbatch COLORSVIT for colouring of synthetic polymers and fibres offers many benefits that allow user to achieve:

- cost savings for colouring, whereas the masterbatches COLORSVIT reach a good dispersibility of pigments and dye yield based on our long-term experience
- usage of such form of the colouring agent that does not cause any environmental load neither to workers nor to the environment regarding dustiness



- controlled quality of supplied colour masterbatches COLORSVIT in compliance with agreed parameters

The producer will satisfy the following customer demands:

- set up the pigment concentration in the masterbatch COLORSVIT according to customer request
- adaptation of each shade according to a master and a production of the masterbatch according to the demand, i.e. tailor-made shade
- shades marked as "PP" can be transformed or adjusted for other carriers in dependence on a scope of application.

Supply:

The masterbatches COLORSVIT are supplied as pellets, packed in bags and sacks, cardboards, BIG-BAGs depending on the quantity requested. We supply masterbatches in quantity from one kilogram. Price of the masterbatch COLORSVIT varies according to supplied quantity. The basic price is determined for supplies of one metric tonne and more.

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