



# ForeSphere<sup>®</sup>

Aluminosilicate microsphere

## Fores Company —

The largest Russian manufacturer of proppants

### 12

FORES company group comprises 12 enterprises

### 2015

In 2015 in Sverdlovsk region we built a factory for hollow glass microsphere production based on our unique technology that meets all-Russian and international standards

### 2000

Founded in 2000

Among our clients there are both major Russian oil companies and western oilfield service companies

# Advantages

## Proper spherical shape

Spherical filler ensures minimal consumption of binding substance that makes its use cost-effective. One more consequence — low viscosity, that is why the material spreads well and is easy to apply. In addition, microsphere has small shrinkage strain in comparison to fillers of other shapes.

## Low density with high durability

This feature cuts expenditure on transportation and allows making blends without sacrificing durability: aluminosilicate microsphere ForeSphere bears pressure starting from 100 atm.

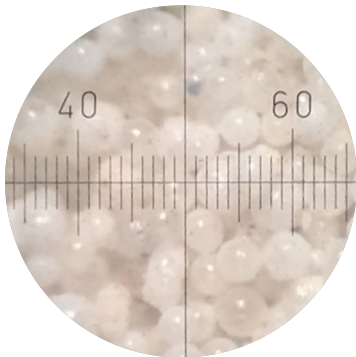
## Withstands high temperatures

Low heat-conductivity together with proper spherical shape enable materials to have effective heat-insulating properties.

## Does not react chemically

Or impact chemical composition and reactive capacities of blends.

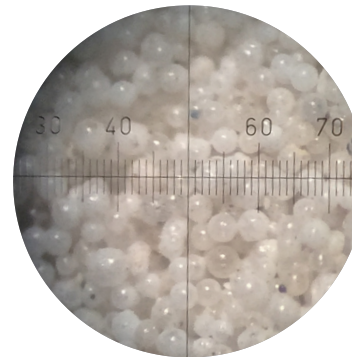
# Application



Increase in durability and resistance to erosion and aggressive environments



Reduces weight of the material



Heat-insulating properties

## Where applicable?



### Oil and gas producing industry

- Backfilling cement
- Drilling mud



### Chemical industry

- Floating equipment
- Polypropylene
- Polyethylene
- Nylon



### Mechanical engineering

- Plastic and plasticates
- Composite, filled and reinforced materials
- Rubber
- Polymers



### Construction industry

- Reduced-weight cement and concrete, plasters, pore fillers
- Heat- and sound-insulating materials
- Paints, primers, anticorrosive coatings
- Refractory coatings
- Thermoplastic markers for roads



### Isolation

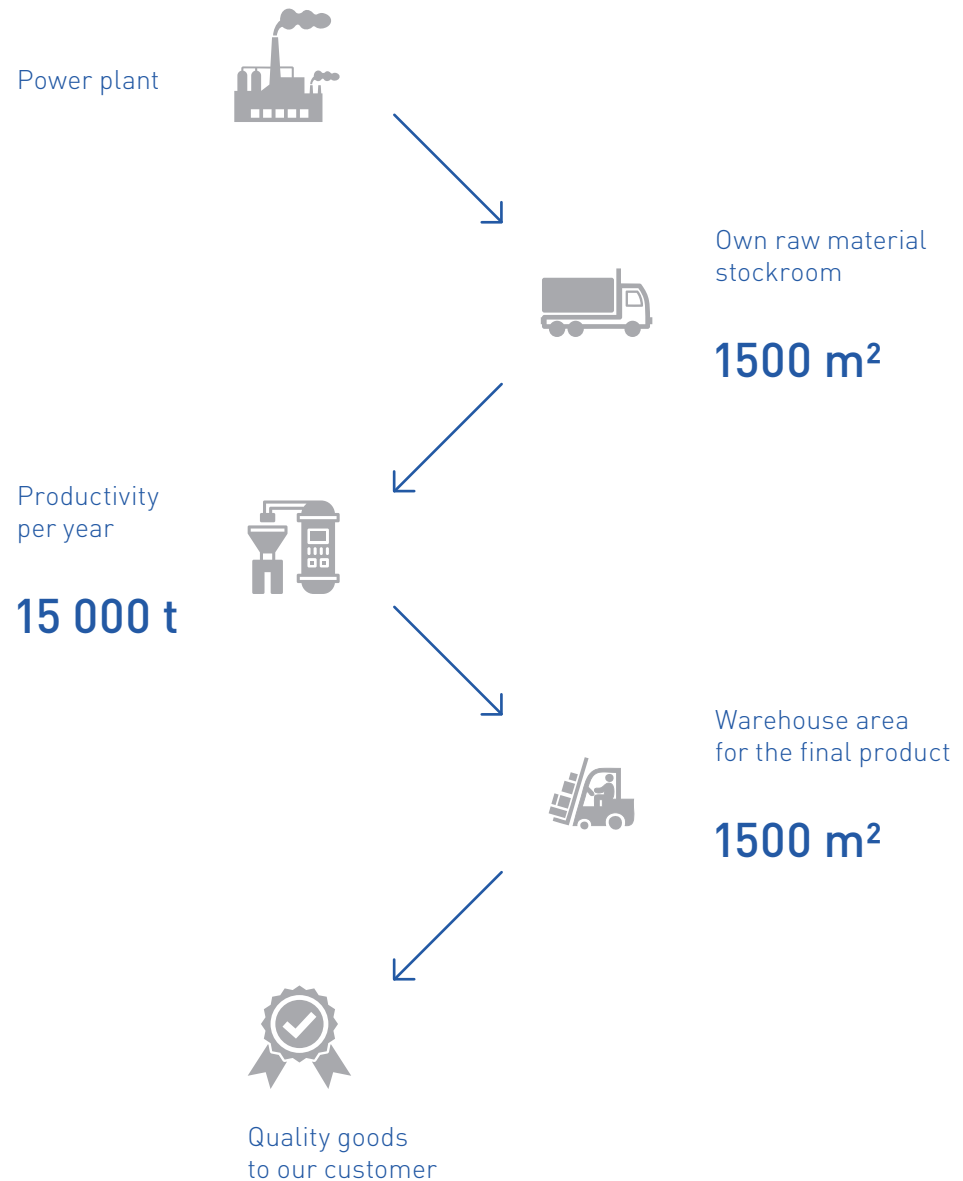
- Highly-porous abrasive grinding materials
- Heat-insulating primers, paints and varnishes
- Refractories

# Microspheres ForeSphere

Aspect	Chemical composition	Fractional breakdown +/- 5%	Residue (mass fraction of particles with density higher than 1 g/sm3)	Moisture content in residue	Residue on sieve 0,5 mm	Packaging	Expiry
Homogeneous bulk of light- grey color	Al2O3 — 37,57% SiO2 — 54% Fe2O3 — 1,77% K2O — 0,55%, Na2O — 0,43% MgO — 0,36% CaO — 1,83%, TiO2 — 1,17%.	< 100 — 47,08 % 100-160 — 49,95 % 160-250 — 1,78 % 250-400 — 0,69% 400-500 — 0,5%	Not more than 5%	Not more than 0,5%	0%	Soft container SDC 500 kg	Unlimited
Homogeneous bulk of grey color	Al2O3 — 20,84% SiO2 — 65,7% Fe2O3 — 1,32% FeO — 2,14% K2O — 3,48% MgO — 1,68% CaO — 1,88% Na2O — 1,06% TiO2 — 0,82%	<100 — 22,7 % 100-160 — 39,1 % 160-250 — 30,6 % 250-400 — 7,2 % 400-500 — 0,4 %	Not more than 5%	Not more than 0,5%	0%	Soft container SDC 500 kg	Unlimited

# Production and ecology

- Aluminosilicate microspheres are produced during high-temperature flaring of fuel at coal power plants. It is an ingredient of fly ashes — bottom ash waste of energy production. Processing ashes to make aluminosilicate microsphere reduces ecological footprint from the coal-fired power industry and decreases general industrial load imposed on the environment.
- Aluminosilicate microspheres ForeSphere is produced by FORES at our own capacities, factories are located in Sukholozhsky district of Sverdlovsk region.
- Diversification of suppliers — is a stable guarantee of continuous operation and variability of raw materials, that is why FORES Company collaborates with major wholesale partners from different cities in Russia and neighboring states.
- Our priority is quality materials: before its even appears at FORES production site raw microsphere is washed 4 times, so as to eliminate organic residue and avoid burning microspheres.



## Fores Company —

since 2000 is specializing in fine aggregate spherical fillers production and it has become an absolute leader on Russian market of proppants.

FORES uses only national raw materials and resources, all billing and internal payments are done in rubbles. Besides that it determines a better price, it allows to make prices of glass microsphere independent from drastic changes in exchange rates.

Inside FORES group there are other product divisions, three logistic centers, our own scientific center in Yekaterinburg and 10 laboratories in cities where we are represented.

## Cooperation

**ForeSphere®**

### Special terms

- Consistency of performance and quality: with the help of continuous research in our laboratories we ensure stable high quality of our product in all batches regardless of terms and quantity of supply
- Individual pricing and order of payments (discounts, deferrals etc.) depending on the terms and volumes at ordering large quantities
- Urgent shipment, including large orders
- Professional staff, transparent and fast document flow, meeting deadlines

### Convenient delivery

- Freight service with any means of transport, furthermore providing a client with any means of transport for the delivery
- Cargo escorting from company's warehouse to an area of immediate use of microsphere
- Opportunity for customer pick-up from our warehouse
- FORES technologists may come to client's production sites to install and put new products into implementation



Technical information and data educed in the present commercial booklet should be considered typical and used for presentation, it cannot be used to make specifications.

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