Cellulose Fiber:
Multi-Functional. Scientifically Proven.

Fiber Enrichment

- Improves stool quality (fecal bulk)
- Calorie free ingredient
- Non digestible, insoluble fiber
- Promotes satiation for weight control

Structure and Strength

- Prevents breakage in finished products
- Improves kibble stability and uniformity
- Increases chew time

Processing Stability

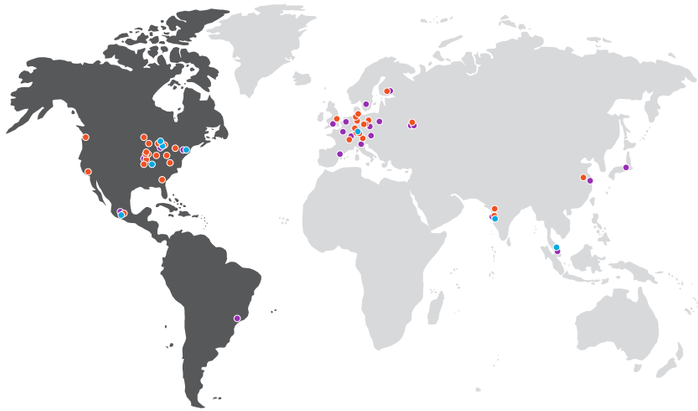
- Prevents syneresis and gel separation
- Stable in pH and high heat environments
- Interacts well with other ingredients

Overall Pet Health

- Improves digestive system
- Reduces hairball incidences[1]
- Enhances dental hygiene and plaque removal[2]
- Increased nutrient digestibility[3]
- Promotes positive palatability
- Helps prevent diseases

[1]Beynen, A.C., Middelkoop, J., & Saris, D.H.J. (2011). Clinical Signs of Hairballs in Cats Fed a Diet Enriched with Cellulose. *American Journal of Animal and Veterinary Sciences*, 6.
[2]Beynen, A.C., Altena, F.V., & Visser, E.A. (2010). Beneficial Effect of a Cellulose-Containing Chew Treat on Canine Periodontal Disease in a Double-Bind, Placebo-Controlled Trial. *American Journal of Animal and Veterinary Sciences*, 5(3), 192-195.
[3]Manohar, C.B., Abhilekha, P.M., & Sharadamma, K.C. (2012). Evaluation of Dietary Fiber Source in Extruded Diet on Nutrient Digestibility in Dogs. *Thai Association for Laboratory Animal Science*, 280.

Your #1 global insoluble fiber solution provider



- Production Sites
- Sales Companies
- R&D Application Technology Centers

Ask our experts how we can help optimize dietary fiber needs in your pet food formulations with common ARBOCEL® and Solka-Floc® grades.

J. RETTENMAIER USA LP

Fibers designed by Nature®
A Member of the JRS Group

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CELLULOSE FOR PET FOOD

POWDER • PELLETS • GRANULES

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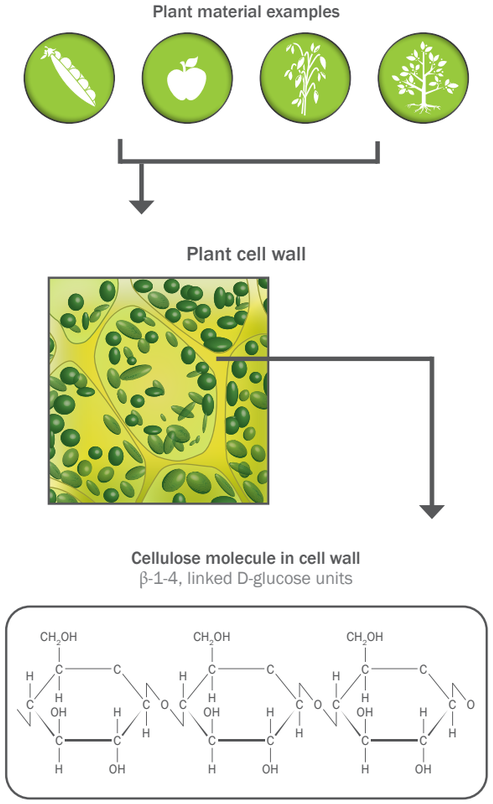
Cellulose basics

- Cellulose is one of the most abundant, organic polymers on earth and is the scientific name for insoluble fiber
- Due to its β-1-4 D-glucose linkages, it is extremely durable
- Cellulose is found in all plant materials within the cell wall to provide structure.
- Plants contain roughly 33% cellulose



What we eat

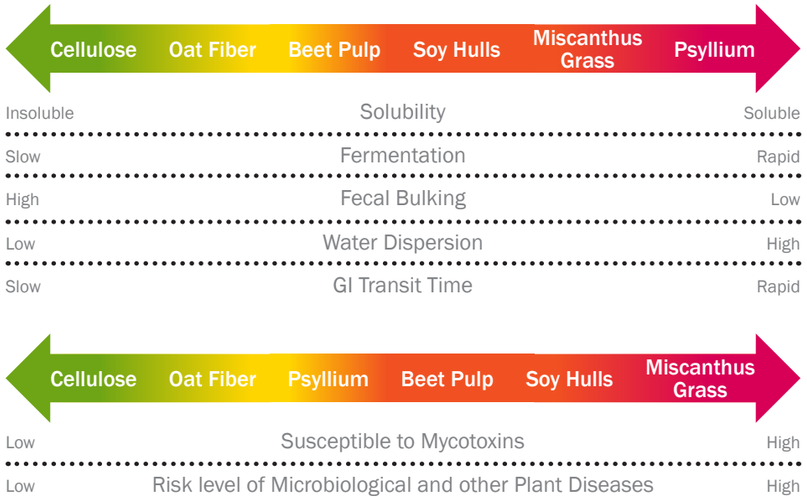
Isolating or extracting cellulose from various plant sources, requires unique technology and is not easily replicated. J. Rettenmaier's global group of companies has a long standing history (140+ years) in providing unique cellulose fiber ingredients to a multitude of industries. For over 20 years, JRS USA has been producing high quality cellulose ingredients for the pet food industry.

While a variety of plant sources are used as our starting raw material, the most common source is virgin wood-based pulp isolated from trees. Trees offer the most abundant, renewable source of cellulose fiber without compromising other viable human food sources. In fact, trees provide many commonly consumed food products:

The food products listed in the diagram above are only examples and are not intended to represent a complete listing of all food products made from trees

Cellulose facts

Powdered cellulose meets the Food Chemicals Codex (FCC) Monograph and has been a safe food additive since 1958. It also meets the FDA approval under 21 CFR 176.170 and was recently approved under new Dietary Fiber guidelines est. 2016. In 1976 the Association of American Feed Control Officials (AAFCO) 87.14 defined powdered cellulose as purified cellulose obtained from pulp from fibrous plant materials. This definition makes the pulping process critical to isolating only pure cellulose molecules. The diagrams below show how cellulose compares to other fibers:



JRS Cellulose Advantages

- Meets AAFCO definition
- 73 - 75% Crude fiber
- Sustainable resource
- Not susceptible to mycotoxins
- Inert to low microbiological levels
- Scientifically proven (cited on next page)
- Non-digestible, Calorie free
- Neutral flavor for proven palatability
- Produced in SQF Certified facilities
- Non GMO, Gluten Free, Allergen Free

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