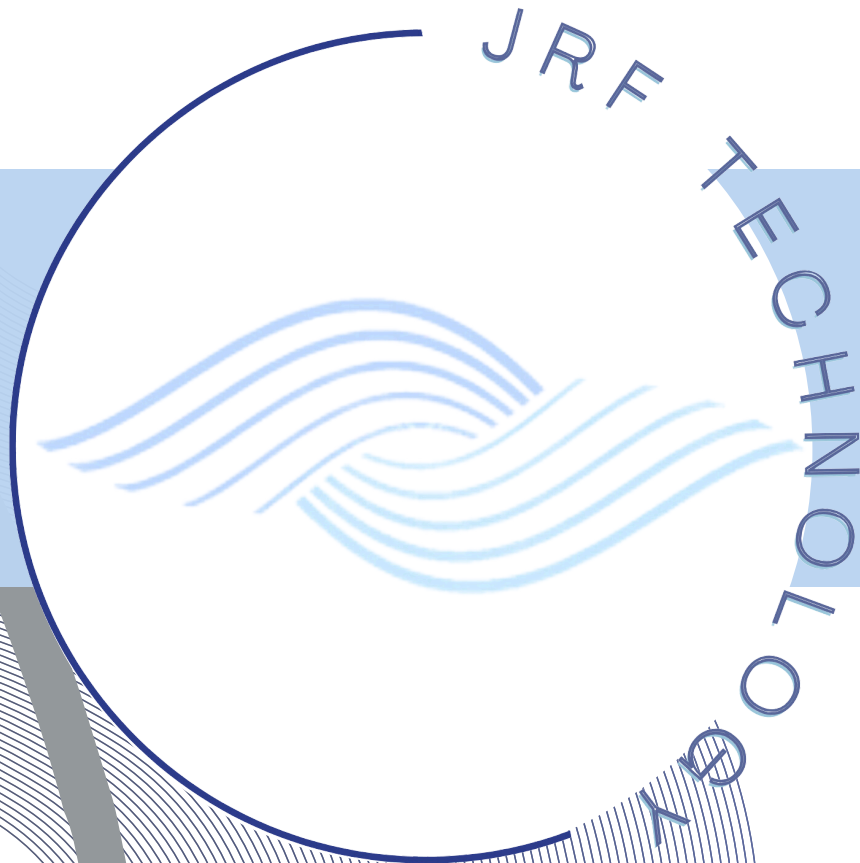


JRF TECHNOLOGY

FILM TECHNOLOGY OVERVIEW



JRF TECHNOLOGY

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JRF TECHNOLOGY

INTRODUCTION

JRF Technology is a worldwide leader in the development of water-soluble and edible films. We have a 60 year history of innovating, solving complex formulation and manufacturing challenges, and bringing new products to market as a full service provider to our clients. It is our mission to take your project seamlessly from product concept to commercial distribution.

In 2024, Ecopol S.p.A. acquired a minority investment position in JRF Technology to enhance the industrialization of our most innovative technologies. Ecopol is a leading global producer of water-soluble and biodegradable films and delivery systems

TECHNOLOGY SUITE

Oral Films

Thin Strips
Thin Gel Strips
Thick Gels

Specialty Delivery Systems

Beverage Films
Edible Pods/Pouches

FORMAT	ACTIVES	TOTAL WEIGHT
Film Strips	100 mg	250 mg
Thin Gel Strips	200 mg	400 mg
Thick Gels	600 mg	1.5 g
Beverage Films	1 g	2 g
Edible Pods	1-20 g	1-20 g

ORAL DISSOLVING FILMS

OVERVIEW

Thin Oral Film Strips

Our advanced thin oral film strips are designed for rapid dissolution on the tongue, delivering a superior mouthfeel and outstanding flavor. Unlike traditional strips that offered only 10 mg of active ingredients, JRF Technology's films deliver up to 100-150 mg per use. These strips can include a wide range of vitamins, nutraceuticals, dietary supplements, oral care materials, and OTC treatments.

Packaging:

- Individual film strips in peelable pouches
- Quantities of 5-25 strips in convenient plastic cassettes



Vitamins

Dietary Supplements

CBD

Functional Actives

Thin Gel Strips

Continuous release

JRF's thin gel strips are designed to deliver up to 200 mg of active, functional ingredients. These gel strips dissolve slowly on the tongue, taking 1 to 3 minutes to wash away while continuously releasing flavor and active ingredients for enhanced oral absorption.

Key Features:

- Customizable sizes, shapes, and thickness levels
- Similar applications to thin films with larger quantities of active ingredients and gradual release

Applications:

- Improved oral health
- Cough and cold relief
- Sore throat symptom relief



Packaging:

- Individual pieces in peelable pouches



Aloe

Caffeine

Nicotine

Vitamins & Supplements

Thick Gels

Slow, extended release applications

Our thick gel strips are designed to deliver 500-600 mg of active ingredients, weighing up to 1.5 grams. These can be customized in thickness and shape to fit perfectly on the tongue, cheek, or between the cheek and gum line. With adjustable dissolution times from 10-15 minutes to several hours, they offer an option for sustained release.

Key Features:

- High active ingredient capacity (500-600 mg)
- Customizable thickness and shape for targeted placement
- Adjustable dissolution times for sustained release

Packaging:

- Individual pieces in peelable or tear-open pouches

Applications:

- Ideal for sustained release treatments and targeted delivery



XeroStrip - Dry Mouth

Xylitol

Menthol

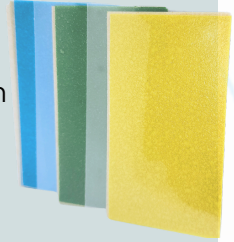
Cough & Cold

BEVERAGE FILMS

OVERVIEW

TECHNICAL INFORMATION

JRF Technology's larger, heavier films are perfect for food and beverage applications. These film pieces, measuring 50mm by 90mm and weighing up to 2 grams, can deliver up to 1 gram of functional ingredients to be dissolved in water for hot or cold beverages.



APPLICATIONS

Hot Beverages

Tea, Coffee, and More

- Film delivers 300 mg of tea, matcha, caffeine, and an additional 300 mg of functional ingredients (for sleep, alertness, energy, etc.), and flavors
- Simply place the film in a cup of hot water, hydrate for 60 seconds, and stir for a delightful tea or instant coffee



Cold Water Beverages

Hydration, Energy, and More

A film of approximate size can deliver 500 mg of electrolytes, vitamins, and other wellness ingredients creating functional beverages for hydration, energy, immunity, and sleep.

- Examples: sodium, potassium, magnesium salts, and additional vitamins
- Drop the film into a water bottle, shake for 30 seconds, and create an energy or hydration drink

Packaging:

- Multiple film strips in a resealable, compostable pouch for protection and sustainability



Enjoy the convenience and functionality of our beverage films, perfect for health and wellness on the go.

EDIBLE POUCHES

Technology is in development to use edible, soluble films to form "pods" or sachets which can contain food, beverage, nutraceutical and dietary supplement powders.

The size and shape of these dissolvable packages can be designed for the specific application and for the quantity of powders to be contained. Laboratory and pilot plant equipment is available for the development of consumer products that address:

- Film properties: thermoform; heat seal; stability testing with powder blends
- Shape of pod/pouch required for each application
- Powder flow characteristics
- Pod performance in the end use - dissolution rate; powder dispersion
- Pod stability in storage and transport
- Sustainable, protective packaging

