TECHNICAL DATA SHEET

CARBOMER FD 21

INCI Name: C10-30 ALKYL ACRYLATE
CAS No: 176429-87-1

Description:

CARBOMER FD 21 is a hydrophobically modified high molecular weight cross linked polyacrylate polymer. It is very efficient Rheology modifier, which provides high viscosity and forms sparkling clear water or hydro-alcoholic gels. The polymer have with new technology which allow it to quickly and self wetting without any mixing required.(Please note that typical mixing is needed to make final product)

It is very efficient thickener among all the grades, having an extremely short flow property. It is suitable for use in high viscous liquids or gels for cosmetics and pharmaceutical industries.

Typical Applications:

- Hair styling gel
- Hydro-alcoholic gel
- Moisturizing gel
- Bath gel
- Tooth paste
- Shampoos
- Shaving gel, after shaving lotion
- Moisturizing cream and sun screen lotions
- Pharmaceutical gels & ointment.
- Cleaning cream
- Skin fresher

Typical Physical Properties:

Parameter	Typical Properties
Appearance	White, fluffy powder
Odor	Slight characteristic odor
Wet time	Max 6 min
Brookfield Viscosity (25°C, 0.5% aqueous gel neutralized)	40,000 –60,000 mPa.s
Loss on drying	NMT 2%
Residual Solvent (ethyl acetate, cyclohexane)	NMT 0.5%

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Advantages:

Thickening efficiency	High viscosity at low concentration
Uniform performance	Carbomer gives uniform viscosity performance, while natural gums vary in their performance.
Temperature stability	There is no significant effect of temperature on viscosity performance
Rapid wetting	Carbomer FD21 polymer has self wetting properties. Dispersion of 0.5% carbomer FD21 polymer can self-wet within minutes without any mixing
Safety	Years of successful use of carbomer
Microbial resistance	Resists bacterial attack and do not supports mould growth.
Versatility	Although primarily used in aqueous system with neutralization, it can also be used in solvent systems, with or without neutralization.
Elegance	Smooth and luxurious feeling

Processing Guidelines

The development of self wetting technology has greatly improved the dispersibility of CARBOMER polymer especially in water. These polymers behave differently in their dispersion as well as hydration rates and need to be processed and handled in a slightly different manner.

Using No Agitation (Self wetting)- Preferred

This is the preferred method of dispersion and will result in less entrapped air. In most situation, CARBOMER FD21 polymer can simply be “sprinkled” onto the surface of the water without any special equipment or handling.

The powder will wet and drop below the surface in minutes. When there is no visible white powder on the water surface, mixing can begin.

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Using Moderate to High Agitation

Dispersions can also be prepared by slowly sifting the polymer into the vortex of a rapidly stirred solution, although this technique may entrap more air.
Techniques or devices which sprinkle the powder as discrete particles are the most effective. The ideal method should efficiently sprinkle the polymer at a controlled rate as well as break-up the soft agglomerates of dry powder formed by static electricity or humid conditions. This allows each particle to completely wet out in the water vortex.
In general, high shear rates disperse the polymer very rapidly; however, extremely high shear mixers or homogenizers should be carefully employed because they can break down the polymer molecule - resulting in permanent viscosity Loss. Moderate agitation equipment is the preferred choice. Conventional impellers such as propellers or turbines are recommended.

Other

The total wetting time is dependent upon the amount of CARBOMER FD21 polymer added, vessel geometry, and most importantly, water temperature. When the CARBOMER FD21 polymer dispersion is first neutralized, the surface texture may have a grainy “applesauce” appearance. Over the next 30- 60 minutes, the neutralized gel clusters continue to relax and expand. Light mixing will yield a smooth gel.

Neutralizers:

CARBOMER polymers are dry, highly coiled acidic molecules. After dispersion in water, it begins to hydrate and partially uncoil. Maximum thickening can be achieved by converting the acidic CARBOMER polymer to neutral pH.

Neutral pH is easily achieved by neutralizing the CARBOMER range with recommended neutralizers to adjust the pH of CARBOMER range solution are:

- Sodium hydroxide (NaOH),
- Potassium hydroxide (KOH),
- Triethanolamine (TEA),
- Ammonia (28%) & other alkalies.

Toxicity:

CARBOMER FD 21 range is high molecular weight polymer. It does not absorbed by body tissues and is totally safe for human oral consumption.

Test for toxicological tolerance shows that it does not have any pronounced, physiological action and is non-toxic.

Storage and handling:

Store in a tightly closed container and away from direct contact with water and excessive humidity condition.

Shelf life:

Five year from the date of manufacturing in intact condition.

Packing:

15 and 20 kg net in corrugated box with polyethylene liner.

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