

(De-polymerized guar gum)



## Viscosity and Flow behaviour

### Raw Material

**VIDOCREM** (Guar Gum E 412) is extracted from the endosperm of the 'Cyamopsis tetragonoloba L.' bush cultivated in India and Pakistan.

The active chain-like hydrocolloid molecules belong to the Galactomannan group.

Origin: India, Pakistan.

### Production

Separation of the endosperm, hot-water extraction (for neutral flavour VIDO GUM GH), milling, sifting, thermal viscosity reduction, standardisation.

### Characteristics

**VIDOCREM** - a particular product group of guar gum with reduced viscosity.

**VIDOCREM A** to **VIDOCREM G** - products with different viscosity level.

Compared to VIDO GUM GH (native guar gum), the viscosity is considerably lower. When interpreting the viscosity values, the exponential relationship between viscosity and dosage must be taken into consideration. A viscosity range comparable to VIDO GUM GH is achievable with an approximate four-fold dosage of **VIDOCREM**.

The viscosity reduction of the **VIDOCREM** range with the resulting un-coupling of dosage and viscosity leads to unique characteristics and effects:

- Excellent cold solubility: there is practically no difference between hot and cold viscosity.
- Considerably higher dosages can be used without resulting in too much viscosity and undesirable texture and mouthfeel.

The flow behaviour and the mouthfeel produced by **VIDOCREM** are considerably less pseudo-plastic than with VIDO GUM GH. With increasing shear forces, shorter molecular chains align themselves parallel to the shear direction in the same way as longer molecular chains. The system thereby attempts to avoid the external constraint to achieve the lowest possible energy condition. This can be observed through a reversible viscosity reduction. The viscosity of shorter molecular chains does not, however, reduce as strongly as that of longer chains as the shorter the chains become, the more these will take on the form of a ball. Globular molecules (such as starch) accordingly demonstrate no pseudo-plastic flow behaviour.

Such shearing also happens during chewing and swallowing; therefore, **VIDOCREM** produces a creamier and more pleasant mouthfeel than VIDO GUM GH. An excessive viscosity reduction with VIDO GUM GH is usually experienced as a slimy texture, while a weak viscosity reduction corresponds more to the mouthfeel of starch.

Molecular weights (approx.):

**VIDO GUM GH**: 4,000,000 u

**VIDOCREM D**: 2,600,000 u

**VIDOCREM A**: 1,600,000 u

The shorter the chain length, the weaker the pseudo-plastic behaviour. **VIDOCREM A** to **VIDOCREM G** presents a complete range of flow behaviours and mouthfeel. **VIDOCREM** is ideally suited to create creaminess and can be seen as a cost-effective alternative to VIDO GUM L (locust bean gum) in many applications and recipes.

Typical mouthfeel: **VIDO GUM L**: creamy ↔ **VIDOCREM**: creamy, full-bodied ↔ **VIDO GUM GH** (native guar gum): slimy.

## Benefits

- Higher dosages are possible without creating too much viscosity:
  - Considerably improved syneresis reduction.
  - Improved mouthfeel → ideally suited for fat-reduced products.
  - Better stabilisation of essential oils (e.g. in lemonade).
- Less pseudo-plastic behaviour due to the shortened chain length:
  - Creamy, non-slimy mouthfeel
- Other differences in comparison to **VIDOGUM GH** (native guar gum):
  - Outstanding suitability for cold applications, no subsequent swelling.
  - Significantly improved flavour release, less masking.
  - Considerably improved taste neutrality, practically tasteless.
  - Can be used in sucrose solutions up to 55Bx (**VIDOGUM GH** only up to 40Bx).
- Synergistic viscosity increase with native and modified starches and xanthan gum.
- Freeze and thaw stable → suitable for frozen products.

## Areas of use

Product Group	Dosage [%]	Benefits in final product using a selected example
Dairy and dessert products	0.2 – 0.6	<b>VIDOCREM A, B, C, D:</b> Dairy products, dairy desserts, fruit quark, instant desserts together with gelatine or modified starch: <ul style="list-style-type: none"> <li>• Creamy mouthfeel, full-bodied taste, improvement of spreading and spooning behaviour.</li> <li>• Tasteless</li> <li>• Good aroma release</li> <li>• Syneresis prevention</li> <li>• As a rule, addition before fermentation requires a fat content &gt; 14%, and the use of additional stabilisers (e.g. pectin, agar-agar).</li> </ul>
Fruit products and soft drinks	0.6 – 1.2 0.2 – 0.6	<b>VIDOCREM A:</b> Fruit preparations for yoghurt drinks (for an effect in the yoghurt drink). <ul style="list-style-type: none"> <li>• Build-up of mouthfeel, creaminess, syneresis prevention</li> <li>• Soluble in sucrose solutions up to 55Bx.</li> </ul> <b>VIDOCREM A, B, C, D:</b> Flavour emulsions (effect in the beverage). <ul style="list-style-type: none"> <li>• Stabilisation of essential oils</li> <li>• Building of mouthfeel, particularly for concentrates without sugar or with a low fruit content.</li> <li>• Solubility in sucrose solutions up to 55Bx</li> </ul>
Culinary products	0.1 – 0.4	<b>VIDOCREM A, B, C, D:</b> Mayonnaise and Dip sauces with low fat content. <ul style="list-style-type: none"> <li>• Improvement of creaminess, full-bodied taste</li> <li>• Smooth silky structure</li> <li>• Syneresis reduction</li> </ul> <b>VIDOCREM G, F:</b> Soups and sauces, also Instant. <ul style="list-style-type: none"> <li>• Improvement of creaminess, full-bodied taste</li> <li>• Outstanding Instant capability, no lumping, good solubility.</li> </ul>
Meat products	0.1 – 0.3	Syneresis prevention: <b>VIDOCREM A</b> very suitable for syneresis control due to the possibility of using at higher dosages → of particular interest for low-cost vacuum-packed sliced sausage products.
Organic products		<b>VIDOCREM</b> may be used for the production of organic products within the "legal framework".
Others	0.3 – 0.8	For gluten-free products like bread and pasta.