

EASTMAN™ CA

Cellulose Acetate, Sustained-Release



Eastman™ CA is commonly used in osmotic (controlled-release) drug delivery and taste-masking. It can be used as film coating, as matrix former in direct compression of tablets or as polymer matrix in solid dispersions. **Eastman™ CA** is made under cGMP and meets the requirements of the National Formulary (NF) and European Pharmacopoeia (EP). It is the subject of U.S. Drug Master File 9323.

Two pharmaceutical grades are available:

	Form	Viscosity (P)	Acetyl- (%)	DoS ¹⁾	Hydroxyl- (%)	T _M (°C)	T _G (°C)	MW _n ²⁾
CA-320S	Pellets	2.1	32.0	1.8	8.7	230-250	213	36,000
CA-398-10	Powder	38.0	39.8	2.4	3.5	230-250	191	18,500

1) Degree of Substitution, 2) Number-average absolute molecular weight in THF (for CA-398-10) and NMP (for CA-320S)

Sustained Release Through Permeable Membranes

The osmotic pump drug delivery technology typifies sustained release that capitalizes on the nature of **Eastman™ CA** films—insoluble yet semipermeable—to allow water to pass through a tablet coating. An osmotic agent that swells absorbs the water, forcing the active out through a hole drilled in the film. The same effect can also be achieved by employing water-soluble materials, e.g. hydrophilic plasticizers like PEG 400 or TEC, in the film to increase the drug's ability to diffuse through it. The degree of acetylation of cellulose acetate has a significant effect on the water permeability of its film. The higher acetyl content in the cellulose acetate will give lower permeability. Therefore, the drug release rate can be adjusted by mixing the two types of **Eastman™ CA**, where **CA-320S** leads to a faster and **CA-398-10** to a slower release rate. Additionally, the glass transition temperature (T_g) decreases and the stretchability increases as the degree of substitution of cellulose acetate esters increase.

Sustained Release by Direct Compression

Sustained release from direct-compression matrices of **CA-398-10NF** has been demonstrated for both relatively water-insoluble and very water-soluble actives. The methodology employed consisted of mixing plasticizer, if any, with **CA-398-10NF** followed by incorporation of the active with additional mixing. On one hand, the release rate can be adjusted by the ratio of active to polymer, on the other hand by the addition of plasticizers or **CA-320S**. This way, basically any drug release profile can be realised.

Solid Dispersions

A relatively new application for **Eastman™ CA** is the use in solid dispersions to obtain a sustained release profile for poorly soluble drugs. **Eastman™ CA** increases the solubility of the active and decreases the drug release rate at the same time. The desired release profile can be adjusted by the addition of hydrophilic excipients or other polymers.

CAS-No.:	9004-35-71
Packing:	49.8 kg (CA-398-10NF)/ 45.3 kg (CA-320S) fiber drum with inner PE-lining
Shelf life:	4 years
Storage:	At ambient temperature, protected from moisture.



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