GT gum tragacanth

PARAMETER	UNIT	VALUE	REFERENCES
GENERAL			
Common name	-	gum tragacanth	
CAS name	-	gum tragacanth	
Acronym	-	GT	
CAS number	-	9000-65-1	
EC number	-	232-552-5	
RTECS number	-	XW7750000	
HISTORY			
Date	-	3,000 BC	
Details	-	Egyptians used it as a binder in cosmetics and inks	
SYNTHESIS			
Monomer(s) structure	-	its polysaccharide component is composed of arabinose, xylose, glucose, fructose, galactose, thamnose, and galacturonic acid in different proportions depending on source (species and country), its protein component contains 18 aminoacids which also vary depending on species and location	Balaghi, S; Mohannadifar, M A; Zargaraan, A; Gavlighi, H A; Mohammadi, M, Food Hydrocolloids, in press 2011; Anderson, D M W, Bridgeman, M M E, Phytochemistry, 24, 10, 2301-4, 1985.
Source	-	dried exudate from stems and branches of *Astragalus*	
Mass average molecular weight, M_w	dalton, g/mol, amu	180,000-1,600,000	Mohammadifar, M A; Musavi, S M; Kiumarsi, A; Williams, P A, Int. J. Biol. Macromol., 38, 31-39, 2006.
Polydispersity, M_w/M_n	-	2.7	
STRUCTURE			
Molecule dimensions	nm	320-420 (length), 1.45-1.9 (width)	Gralen, N; Karrholm, M, J. Colloid Sci., 5, 1, 21-36, 1950.
PHYSICAL PROPERTIES			
Color	-	dull white to yellow; yellow (crude gum)	
Moisture	%	8.8-12.9	Farzi, M; YArmand, M S; Safari, M; Eman-Djomeh, Z; Mohammadifar, M A, Int. J. Biol. Macromol., 79, 433-9, 2015.
Odor	-	odorless	
Initial decomposition temperature	°C	252.3	Zohuriaan, M J; Shokrolahi, F, Polym. Test., 23, 575-79, 2004.
Surface tension	mN m^{-1}	52-64	Farzi, M; Yarmand, M S; Safari, M; Eman-Djomeh, Z; Mohammadifar, M A, Int. J. Biol. Macromol., 79, 433-9, 2015.
CHEMICAL RESISTANCE			
Acid dilute/concentrated	-	poor	
Alcohols	-	poor	
Alkalis	-	poor	
Aliphatic hydrocarbons	-	good	
Aromatic hydrocarbons	-	good	
Esters	-	good	
Greases & oils	-	good	
Halogenated hydrocarbons	-	good	

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PARAMETER	UNIT	VALUE	REFERENCES
Ketones	-	good	
Good solvent	-	water, alcohol	
Non-solvent	-	acetone	
FLAMMABILITY			
Char at 500°C	%	19.5	Zohuriaan, M J; Shokrolahi, F, Polym. Test., 23, 575-79, 2004.
TOXICITY			
NFPA: Health, Flammability, Reactivity rating	-	1/1/0	
Carcinogenic effect	-	not listed by ACGIH, NIOSH, NTP	
Oral rat, LD_{50}	mg kg^{-1}	16,400; 10,200	
PROCESSING			
Applications	-	thickener in food, pharmaceuticals, and cosmetics	
BLENDS			
Compatible polymers	-	PCL (scaffolds), PVA	Mohammadi, M R; Bahrami, S H, Mater. Sci. Eng. C, 48, 71-9, 2015.
ANALYSIS			
Raman (wavenumber-assignment)	cm^{-1}/-	amide I – 1665, 1655; C=C – 1560, and more	Edwards, H G M; Falk, M J; Sibley, M G; Alvarez-Benedi, J; Rull, F, Spectrochim. Acta, Part A, 54, 903-20, 1998.