



# NITROCELLULOSE

Nitrocellulose of grades  
01, 02, VA I, VA II

used to manufacture hunting  
and sports gunpowders

Varnish nitrocellulose,  
varnish  
plasticized

used to manufacture varnishes, enamels,  
primer, plaster and adhesive compounds

Enterprise manufactures different types of nitrocellulose as per customer agreed specifications, additional test types are according to agreed methods.

Type/Indicator	Type 1	Type 2	High-nitrogen I	High-nitrogen II	High-nitrogen III	High-nitrogen IV	High-nitrogen V	Medium nitrogen
Nitrogen concentration, ml %	212,0-215,5	191,5-200,5	210,5-213,0	209,0-212,5	209,0-212,5	208,5-210,5	210,0-213,0	204,0-208,0
	13,29-13,51	12,00-12,57	13,20-13,35	13,10-13,32	13,10-13,32	13,07-13,20	13,10-13,35	12,79-13,04
Viscosity, mPa.s	20-70	20-70	20-50	45-70	20-45	6-20	6-20	20-70
Solubility in alcohol-ether solvent, %	3,0-8,0	95-99	10-28	20-35	15,0-35,0	20,0-35,0	10,0-25,0	35,0-50,0
Solubility in ethanol, max.	3,0	8,0	0,3	0,3	0,3	0,3	0,3	5,0
Chemical resistance, ml NO/g, max.	2,5	2,0	2,5	2,5	2,5	2,5	2,5	2,5
Moisture mass fraction, %	25,0-35,0	25,0-35,0	25,0-35,0	25,0-35,0	25,0-35,0	25,0-35,0	25,0-35,0	25,0-45,0
Mass fraction of alcohol-water moisture, %	25,0-33,0	25,0-33,0	25,0-33,0	25,0-33,0	25,0-33,0	25,0-33,0	25,0-33,0	25,0-33,0
Ash content, %, max	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Alcalinity, %, max.	0,10	0,10	0,10	0,10	0,10	0,10	0,10	0,10
Volume of fibers, ml	80-120	80-120	80-120	80-120	80-120	80-120	80-120	80-120
Water content, %, max.	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0

Grade	VV	VNV	PSV	
			Grade A	Grade B
Volume concentration of nitrogen oxide, (ml NO/s), %	190-196 11,91-12,29	190-196 11,91-12,29	190-196 11,91-12,29	190-196 11,91-12,29
Relative viscosity of solution, mPa.s (°E)	8,5-10,6 (1,90-2,20)	1,1-1,8 (1,03-1,10)	0,6-1,0 (0,98-1,02)	0,6-1,0 (0,98-1,02)
Solubility in ethyl alcohol, %, max.	8,0	8,5	8,0	8,0
Solubility in combined solution, %, min.	99,8	99,8	99,8	99,8
Chemical resistance, ml NO/g, max.	2,5	2,5	2,5	2,5
Ash content, %, max	0,15	0,15	0,15	0,15
Solution transparence, %, min.	65	75	70	70
Soilution chromacity of chromatic scale unit, max.	3	3	2	3
Mass fraction of total alcohol-water moisture, %	25-35	25-35	25-35	25-35
Volume fraction of residual alcohol, %, min.	88	88	88	88
<b>Physical and mechanical properties of free film:</b>				
• tensile strength, MPa (kgf/cm <sup>2</sup> ), min	63,7 (650)	49,0 (500)	58,8 (600)	49,0 (500)
• elongation at break, %, min.	15	12	12	10
• number of double bends, min.	80	40	25	20
Application Area	Varnishes, enamels, mastic, printing paint	Varnishes, enamels, mastic, printing paint	Varnishes, enamels, mastic, printing paint	Varnishes, enamels, mastic, printing paint

Cellulose nitrates are unstable substances and decompose slowly during storage. When proper storage and transportation conditions are met, the stability of cellulose nitrates with water and alcohol-water moisture is ensured. But in a dry form nitrocellulose is electrized and is capable of accumulating the potentials of static electricity charges, which discharge may result in ignition with the formation of nitrogen oxides. Also, a number of such harmful factors and effects as heating, open flame, sparks, dragging, impacts, contact with aggressive substances can cause instability and ignition of nitrocellulose. In a confined space the nitrocellulose can burn in a fraction of a second.

The above information classifies nitrocellulose as hazardous substance requiring special conditions for transportation and storage. Nitrocellulose is stored packed in places protected from direct sunlight and heating devices, at a temperature of 12 °C - 25 °C and a relative humidity of at least 65%.

Packing type E22 - boxes made of corrugated cardboard (4G) with a cardboard insert (5H4) keeping characteristics, moisture, which contributes to increased safety during storage and transportation. The need to ensure the temperature regime necessitates the use of refrigerated vehicles or insulated trucks. Safety and special mode of transportation is regulated by international and national legislation.

- UN Recommendations on Transport of Dangerous Goods - Type Rules
- International Maritime Dangerous Goods (IMDG)
- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)
- Hazard class 4

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