2. Identification of textile fibers by BURNING PROBE

Burning test is a simple and quick analysis method, which allows an informative guidance on the nature of the fiber. The method does not apply to blends of different fibers. When precise determination is required, it is recommended to use the microscopic method or the reagent analysis method.

USES AND MATERIALS NECESSARY:

- **the melting pot of the fibers;**
- **Pliers or tweezers to grab the fibers**
- **Laboratory gas lamp, match or cigarette lighter**
- **fiber or textile samples**

PROCEDURE:

take a bundle of fibers and parallelize as best as possible (Figure 1); ➔ one of the ends of the bundle is clamped with a pliers (or a tweezer) and the other end is inserted in flame

produced by a match / gas bulb / cigarette lighter (Figure 2);

➔ if the fabric needs to be analyzed, some threads of warp and weft are removed and subjected to burning separately;

NOTE!

The identification of the nature of the fibers by the combustion method is done by following:

- **fiber behavior during burning;**
- **the odor;**
- **the residue obtained**

REQUIREMENTS:

- Practice the job, respecting the norms of labor protection;
- for each type of fiber, fill in the answer in the "Identification of textile fibers through the burning sample" worksheet (see next page);
- interpret the results obtained by comparing them with the information presented in the document "Fabrication behavior of textile fibers", at the end of the paper.
- Write down the conclusions in the last column of the worksheet.

Work sheet: "Identification of textile fibers through the combustion test"

Name:	Class:	Date:

Nr. sample	Burning behavior	The odor	The residue obtained	Tipe/ Name of the fiber
①				
②				
③				
④				

Keep the worksheet in your personal portfolio!

Documentation sheet: The behavior of textile fibers on combustion

Nr. crt.	Fiber		Burning method	The odor	The residue obtained
NATURAL FIBERS					
1.	Cellulose (natural): **cotton, hemp, jute**, etc.		□ burn quickly, with a flaming flame; has decomposed	□ light as Burning paper	□ Light, light ash
2.	Protects	**wool, hair**	□ burning slowly with a flaming light, only in that part that is in the flame swells;	□ burned horn, more pronounced wool than silk	□ spongy ash, in the form of a black cochlea
		natural silk	□ burn slowly with light flame, do not melt, do not swell		□ brownish ash brown
3.	Natural minerals: **asbestos**		□ do not melt, do not burn, □ rolls to red and after flame removal it returns to its original state	□ missing	□ missing
CHIMICAL FIBERS					
4.	**Viscose / cello fiber (rayon)**		□ burns rapidly, with a greenish and blazing flame;	□ burnt paper	□ little gray ash
5.	**Acetate**		□ burn slowly, interrupted, with a flaming light, melt	□ vinegar (acetic acid)	□ sponge-like residue, with a dark-colored toothpaste
6.	**Polyamide**		□ burn hard, only kept in flame (the flame is extinguished); they melt	□ aromatic (celery or pyridine)	□ melting pearl; a brown, glassy table.
7.	**Polyester**		□ burn hard, only kept in flame (the flame is extinguished); they melt	□ aromatic	□ melting pearl; a brown, glassy table.
8.	**Polyacrylonitrile (melanin)**		□ melt, then fire, release black smoke	□ sweet, chemical	□ hard, brittle, dark (black)