

STAEDTLER MARS GmbH & Co. KG
Nuremberg

Erasers - sharpeners



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1**Erasers**

Not every eraser has the same erasing performance to offer. There are different erasers available especially designed to meet the requirements of different writing instruments (blacklead pencils, coloured pencils, fountain pens and technical pens).

The performance of an eraser is dependent on whether the mark to be erased is only on the surface or whether it has already penetrated deeper into, e.g., the paper.

In the case of pencil marks, for example, erasers remove the graphite by means of adhesion (accumulation) leaving the paper undamaged. During the erasing process the dirtied eraser surface gets abraded.

However, ink marks penetrate paper; this means that an eraser is required which actually removes the top layer of the paper.

By varying the formula, different types of erasers can be manufactured.

1.1**Requirements**

Excellent erasing results

Minimal crumbling

No smudging

No discolouration caused by hand perspiration

Clean and easy handling, e.g. eraser sleeves

No aging even after long storage times

1.2**History**

The history of the eraser began back in 1770 with a discovery made by the English chemist Priestly. He found out that rubber was a good material for cleaning paper with and that it could also be used for removing pencil marks without damaging the surface of the paper.

The American Charles Goodyear managed to improve the characteristics of rubber by mixing it with powdery substances. Furthermore, he discovered that by adding sulphur and by exposing the mixture to higher temperatures, a product could be created that had much better product properties and was more resistant to heat than was the case with raw rubber. In 1843 he registered a patent for this so-called "vulcanisation" process.

This was the foundation upon which, at the end of the 19th century, German and American companies began to base the development of natural rubber erasers such as we know them today.

Further developments included replacing the natural rubber content by other elastomeres (polymers with rubber-elastic characteristics) which offer better features such as longer storage life and superior erasing accuracy.

1.3

What is rubber?



Illustration 1: Latex milk extraction

Natural rubber's raw material, so-called latex milk, is extracted from a certain tree, known by Indians as the "caa-o-chu weeping tree".

The polyisoprene extracted from the tree sap is known as natural rubber.

Nowadays, grooves are still cut into the trunks of these rubber-giving trees and the drops of sap are collected in receptacles.

The process of vulcanisation, i.e. binding molecules together to form a very large molecule (macromolecule), makes an elastamere out of the sticky, plastic-like raw material and this is what is commonly known as rubber.

In the meantime, synthetic polymers have been discovered which are similar in composition to natural rubber.

1.4

Natural rubber erasers

not in the STAEDTLER range

When it comes to the manufacture of natural rubber erasers, the natural rubber raw material itself serves only as a binding agent and merely makes up around 10 to 20% of the erasers' composition.

The reason is that although natural rubber is good for removing pencil marks from paper, it unfortunately also has the disadvantage that it causes smudging.

Additional substances have to be added in order to give the erasers eraser-like qualities. One such important ingredient is factice, an animal or vegetable-based unsaturated oil such as rapeseed oil, mixed with e.g. sulphur. As a matter of fact, factice is the real erasing ingredient in erasers.

Fillers such as pumice or glass powder give erasers their abrasive quality (removal of paper surface).

Note



The STAEDTLER range does not contain a natural rubber eraser

Reason:

Natural rubber erasers age more rapidly and do not perform as well as e.g. Mars plastic.

Natural rubber erasers contain latex which may cause allergic reactions.

1.5

Synthetic rubber eraser tips

STAEDTLER eraser tips are made out of thermoplastic elastomeres (TPE), i.e. synthetic rubber. A key advantage of TPE is that it can be processed using heat only, no other treatment is necessary. It is ready for use immediately after cooling.

However, in the case of natural rubber identical synthetic rubber – and natural rubber too for that matter – the material has to be vulcanised in order to bind the polymers together to create the required elastic characteristics.

The vulcanisation process requires the employment of chemicals and additional energy – this is not the case when TPE is used.



Illustration 2: Eraser tips for pencils

TPE erasers are particularly suitable for use as eraser cores thanks to their high level of elasticity.

They are also used for eraser tips for pencils and mechanical pencils as well as in Mars rasor, an eraser pencil which can be used for erasing typewriter, ballpoint pen, writing and drawing inks.

Eraser tip composition



- Thermoplastic elastomere
- Fillers such as chalk, pumice or glass powder
- Colour pigments (heavy metal pigments are not used)
- Softening agents, e.g. paraffin oil

Note



- STAEDTLER eraser tips are latex-free

1.6

Polymer eraser blocks

Erasers made out of polymer, such as polyvinyl chloride, first appeared in the mid fifties. They began to be produced at STAEDTLER in 1960.

In 1967, STAEDTLER became the first company to manufacture these erasers using the so-called extrusion process. The main advantage of this method is that it is a continuous, energy-saving manufacturing process.

Our eraser blocks offer excellent erasing results and – even when stored for longer periods of time – they do not deteriorate in quality. Their elasticity and, as a result, their superb erasing qualities remain unchanged.

Components



- Polyvinyl chloride
- Fillers, e.g. chalk, kaolin
- Colour pigments (heavy metal pigments are not used)
- Special softening agents

The eraser holder 528 50 has the same composition.

The blue part of the Mars plastic combi is a drawing ink eraser. It contains solvent droplets which are released and develop drawing ink dissolving characteristics when the eraser is used.

The rasoplast combi contains glass powder in its blue part for the removal of ink marks.

1.6.1

The new Mars plastic

Mars plastic and Mars plastic combi are STAEDTLER's new premium erasers.

Their improved formula guarantees superb erasing performance at all times on a whole variety of surfaces leaving clean, practically residue-free results and causing significantly less crumbling.



Illustration 3:
Eraser performance of the new Mars plastic

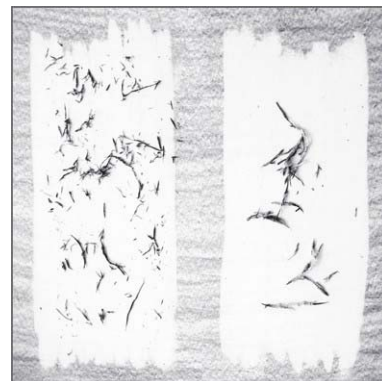


Illustration 4:
Crumbling: old - new

1.6.1.1

The right choice

Premium quality



Illustration 5: Mars plastic 526 50



Illustration 6: Mars plastic combi 526 508

Comfort quality



Illustration 7: Rasoplast 526 B20/30/40



Illustration 8: Rasoplast combi 526 BT30

Eraser recommendation table

		Mars plastic	Mars plastic combi	rasoplast	rasoplast combi
			526 50 528 50	526 508	526 B20 526 B30 526 B40
Pencil		☺	☺	☺	☺
Coloured pencil		☺	☺	☺	☺
Drawing ink			☺		
Writing ink					☺
Ballpoint pen					☺
Typewriter					☺

☺ = suitable

In addition to this, the eraser pencil Mars rasor is suitable for erasing typewriter, ballpoint pen, writing and drawing inks.

1.6.1.2**Application tips****Correcting mistakes on overhead film**

Minor corrections to overhead pen marks on overhead film can be made using Mars plastic or rasoplast erasers.

Tips**Household use**

Cleaning wallpaper.

The Mars plastic eraser is particularly handy for removing light marks from wallpaper, e.g. around light switches.

The eraser is also ideal for cleaning the plastic parts of light switches.

Streaks on PVC floors caused by dark shoe soles.

With Mars plastic, it's easy and takes hardly any time at all to remove streaks from floors.

Nail files are easy to clean using Mars plastic erasers.

If you have any other eraser application tips, we'd be delighted to hear from you.

1.7**Quality control**

A series of controls is carried out in order to ensure that only goods of the highest possible quality leave our factory:

e.g. Raw material control of the fillers, i.e. inspection of grain size or moisture content.

Hardness test of the finished eraser and manual eraser check.

Once a development process has been completed, a comprehensive climatic test and UV irradiation provide information about the aging resistance of our erasers.

2

Sharpeners

In 1821 there were already a variety of appliances used for sharpening pencils. Points were sharpened using one or more files.

Towards the end of the 18th century, similar kinds of sharpeners to the ones we know today began to appear on the market.

2.1

Metal sharpeners and tub sharpeners

Material



We offer metal sharpeners made out of a magnesium-aluminium alloy and polystyrene plastic sharpeners with metal blades.

Sharpeners are available in single-hole or double-hole versions, with or without tub for the shavings.

Tub sharpeners offer the advantage that the shavings are collected during the sharpening process. The tub can then be emptied as required.

In order to ensure an optimal sharpening of blacklead and coloured pencils it is essential to use a high quality sharpener. Only sharpeners that have been specifically designed in line with the characteristics of the respective types of pencil are able to offer protection against damage, such as lead breakage.

Note on use



Writing and drawing are two different applications and, as such, have different requirements. For writing, the tip should be pointed. For colouring, a blunt point is more suitable. ([See p. 10](#))

2.1.1

The right choice

2.1.1.1

Sharpener for writing pencils



Illustration 9:
Sharpener for standard-sized pencils

This sharpener is suitable for use with all standard-sized pencils.

The pointed cone (see ill. 11, red pencil) gives a sharp writing point for drawing fine lines and is particularly suitable for blacklead pencils.

2.1.1.2

Sharpener for standard and jumbo-sized pencils



Illustration 10:
Conventional double-hole sharpener

Double-hole sharpener for standard and jumbo-sized pencils and for triangular pencils up to \varnothing 11 mm.

Two different points:

Small hole: writing point
Large hole: colouring point

See illustration 11.

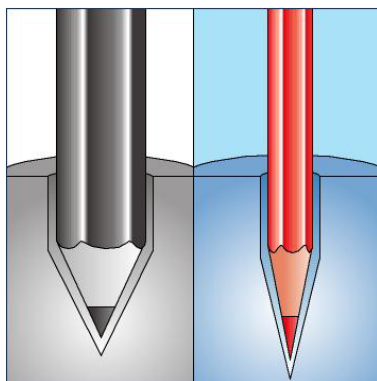


Illustration 11: Different pencil sizes and points

Two different points for writing and colouring

Tapered writing point (red)

The extremely fine point is for accurate, well-defined lines. Suitable for all standard-sized blacklead and coloured pencils.

Short colouring point (grey)

The thicker point is particularly sturdy even when subjected to pressure and this makes it ideal for colouring in large areas.

For jumbo-sized coloured and blacklead pencils.

2.1.1.3

Special sharpener for coloured pencils



Illustration 12: Special sharpener for coloured pencils and cosmetic pencils

The double-hole tub sharpener 512 233 is suitable for standard and jumbo-sized pencils and for triangular pencils up to \varnothing 11 mm.

Both holes give a blunt point.

See illustration 13.

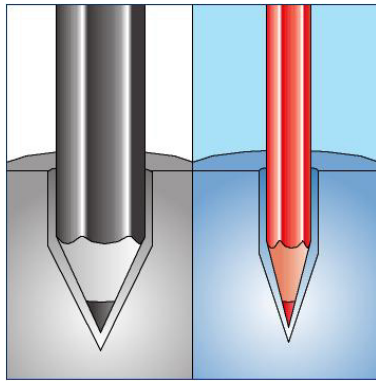


Illustration 13: Blunt cone for coloured pencils, cosmetic pencils and eraser pencils

Ideal for coloured pencils, cosmetic pencils and eraser pencils

The blunt cone provides a sturdy colouring point.

The blunt cone is ideal for cosmetic pencils, wax pencils, such as Glasochrom and Omnichrom, and eraser pencils.

Note



If the blades are worn out, the sharpening quality will deteriorate.

In order to ensure an optimal sharpening performance, blunt blades or the sharpener itself should be exchanged in good time.

2.2

Rotary sharpener



Illustration 14: Rotary sharpener 501 20

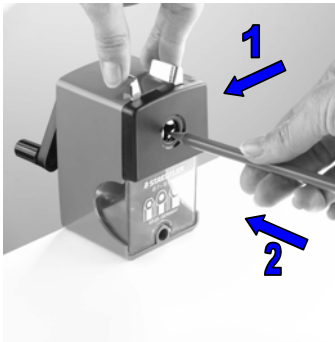


Illustration 15: Use - steps 1+2

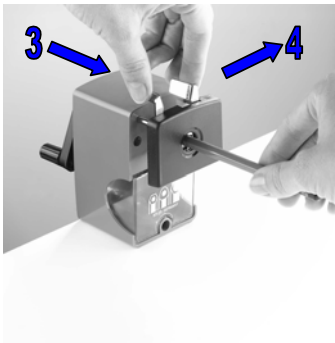


Illustration 16: Use - steps 3+4

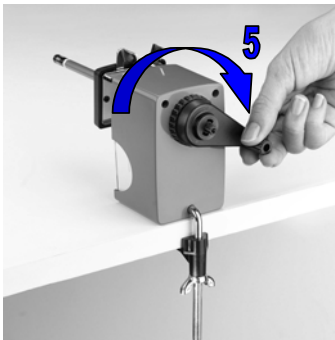


Illustration 17: Use - step 5

Nowadays, rotary sharpeners operate according to the milling principle. This involves a multiple milling cutter being rotated around the pencil at a fixed angle.

The length of the point can be set as required. Once the set length has been reached, the machine runs free so that the pencil does not get shortened unnecessarily.

We recommend that you do not sharpen wax pencils with the rotary sharpener as the sharpening angle is not suitable for that kind of lead. The cutter would be not be able to cope effectively with the soft lead and would have to be cleaned.

Step 1:

Open the pencil clamp mechanism by pressing together.

Step 2:

Insert the pencil into the opening.

Step 3:

Push the clamping panel forwards.

Step 4:

Clamp the pencil.

Step 5:

Sharpen until the level of resistance significantly lessens. Release the clamp and remove the sharpened pencil.

2.3 Lead pointer for leadholders

Leadholders require different points due to the variety of applications they are used for: a blunt point for normal writing and a very sharp point for drawing.

Illustration 18: Writing and drawing points for leadholders



The triangular symbols next to the small holes indicate the different kinds of points.

The fine, sharp point on the left is suitable for drawing, the normal point on the right (shown as being slightly blunt) is for writing.

The holes are used for setting the amount of lead protrusion.

Place the leadholder point with the preset level of lead protrusion in the pointer's main hole and turn ([see ill. 19](#)) until the resistance eases off. The lead is now sharpened.

Any graphite dust on the lead can be removed by gently twisting the sharpened lead around in the cleaning device (light-coloured hole in the bottom centre of the illustration).



Illustration 19: Lead pointer 502 - note on use

Note on use



Hold the leadholder just above the hole and turn together with the lid in a clockwise direction.