

CS 499

Material dataset markup

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1 Introduction

This first assignment consists on the markup of a material dataset with several properties. The dataset comes from [1] and is composed of eighteen material categories, each one with twelve different sample images in PNG format with resolutions lower than 400 x 400 pixels.

2 Methodology

The procedure to mark each of the material images consists on defining its shape and touch for the *fine*, *medium* and *coarse* scale, being its possible values the following ones:

- **Shape:** *flat*¹, *round*, *extended organized* and *extended disorganized*.
- **Touch:** *furry*, *feathery*, *coarse*, *rough*¹, *bumpy*, *scratchy*, *smooth* and *velvety*¹.

3 Markup

3.1 Birch

Coarse scale is considered the picture itself, while medium scale is a part where the horizontal pattern is not present, and fine scale a little spot in the medium scale.



Birch 01:

- **Fine:** *flat*, *coarse*.
- **Medium:** *extended disorganized*, *scratchy*.
- **Coarse:** *extended organized*, *scratchy*.



Birch 02:

- **Fine:** *flat*, *coarse*.
- **Medium:** *flat*, *coarse*.
- **Coarse:** *extended disorganized*, *scratchy*.

¹New value.

**Birch 03:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, scratchy.*
- **Coarse:** *extended organized, scratchy.*

**Birch 04:**

Watermark and big crack.

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, scratchy.*
- **Coarse:** *round, coarse.*

**Birch 05:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended organized, scratchy.*

Considering for the medium scale the part without horizontal lines.

**Birch 06:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, scratchy.*
- **Coarse:** *extended organized, scratchy.*

**Birch 07:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*

**Birch 08:**

Watermark.

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, scratchy.*
- **Coarse:** *extended organized, scratchy.*

**Birch 09:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, scratchy.*
- **Coarse:** *extended disorganized, scratchy.*

**Birch 10:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, scratchy.*
- **Coarse:** *extended organized, scratchy.*

**Birch 11:**

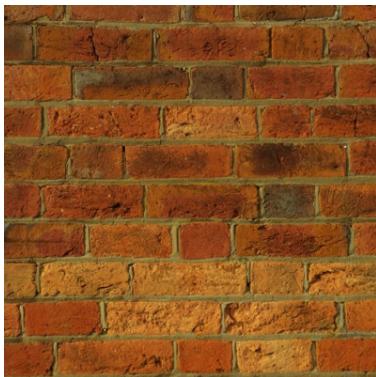
Big crack.

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, scratchy.*
- **Coarse:** *round, scratchy.*

**Birch 12:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, scratchy.*
- **Coarse:** *extended organized, scratchy.*

3.2 Brick



Brick 01:

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*



Brick 02:

- **Fine:** *flat, scratchy.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*

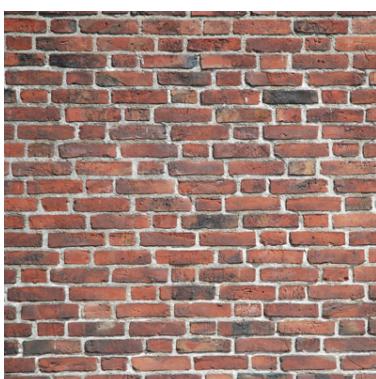
Considering as fine scale the mortar.



Brick 03:

- **Fine:** *flat, scratchy.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended organized, scratchy.*

Considering as fine scale the mortar.



Brick 04:

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*

**Brick 05:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*

Might also be considered bumpy at coarse and medium scale?

**Brick 06:**

Graffiti.

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, smooth.*

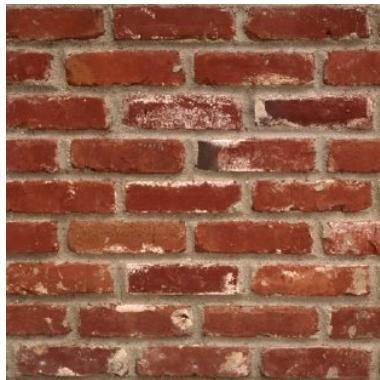
Considering as fine scale the mortar.

**Brick 07:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*

**Brick 08:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended organized, bumpy.*

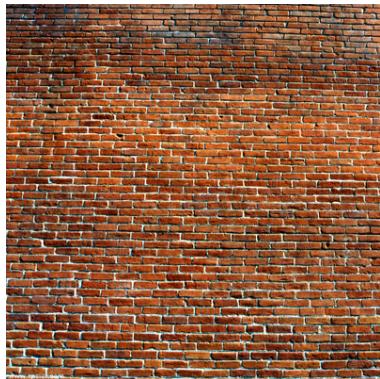
**Brick 09:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*

**Brick 10:**

- **Fine:** *flat, scratchy.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*

Considering as fine scale the mortar.

**Brick 11:**

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*

**Brick 12:**

- **Fine:** *flat, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, bumpy.*

3.3 Concrete



Concrete 01:

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *flat, coarse.*



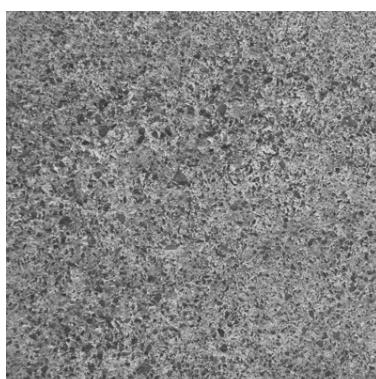
Concrete 02:

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended disorganized, coarse.*



Concrete 03:

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended disorganized, bumpy.*



Concrete 04:

- **Fine:** *flat, scratchy.*
- **Medium:** *flat, scratchy.*
- **Coarse:** *flat, scratchy.*

**Concrete 05:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended organized, coarse.*

**Concrete 06:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended organized, coarse.*

Considering that the almost straight break is organized.

**Concrete 07:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *round, scratchy.*

Considering the spots of different colours to determine a round shape.

**Concrete 08:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *flat, coarse.*

Considering that the patterns in the middle of the image don't affect the shape.

**Concrete 09:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *flat, coarse.*

**Concrete 10:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended disorganized, coarse.*

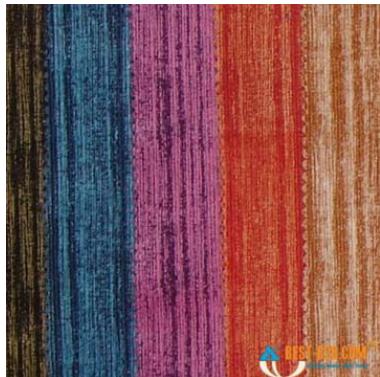
**Concrete 11:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, scratchy.*
- **Coarse:** *flat, scratchy.*

**Concrete 12:**

- **Fine:** *flat, scratchy.*
- **Medium:** *flat, scratchy.*
- **Coarse:** *flat, scratchy.*

3.4 Corduroy



Corduroy 01:

Logo in the right bottom corner.

- **Fine:** *extended organized, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, bumpy.*



Corduroy 02:

- **Fine:** *flat, velvety.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

Considering that the perpendicular direction of the lines makes them disorganized.



Corduroy 03:

- **Fine:** *flat, smooth.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

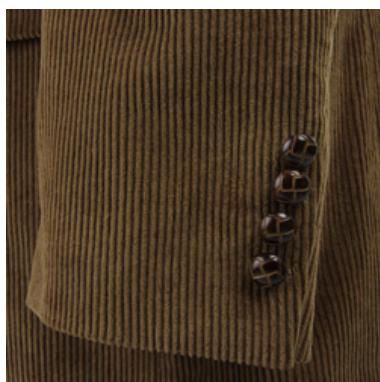


Corduroy 04:

- **Fine:** *flat, smooth.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

**Corduroy 05:**

- **Fine:** *flat, velvety.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

**Corduroy 06:**

- **Fine:** *flat, velvety.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *round, bumpy.*

Considering the buttons as part of the coarse scale.

**Corduroy 07:**

- **Fine:** *flat, velvety.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended organized, bumpy.*

**Corduroy 08:**

Logo in the bottom left corner.

- **Fine:** *flat, velvety.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended organized, bumpy.*



Corduroy 09:

- **Fine:** *flat, velvety.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended organized, bumpy.*



Corduroy 10:

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *round, bumpy.*

Considering the figures of the bottom left corner for the coarse scale.



Corduroy 11:

- **Fine:** *flat, velvety.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended organized, bumpy.*



Corduroy 12:

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *round, bumpy.*

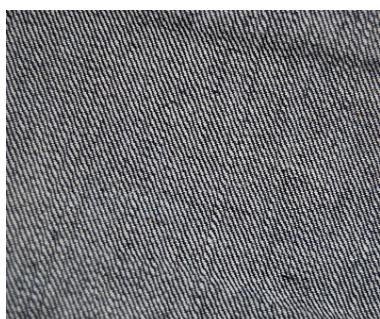
Considering the flower for the coarse scale.

3.5 Denim



Denim 01:

- **Fine:** *extended organized, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, smooth.*



Denim 02:

- **Fine:** *extended organized, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, smooth.*



Denim 03:

- **Fine:** *extended organized, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, bumpy.*



Denim 04:

- **Fine:** *extended organized, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Denim 05:**

- **Fine:** *extended organized, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, smooth.*

**Denim 06:**

- **Fine:** *round, smooth.*
- **Medium:** *round, smooth.*
- **Coarse:** *round, smooth.*

**Denim 07:**

- **Fine:** *extended organized, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

**Denim 08:**

Watermark.

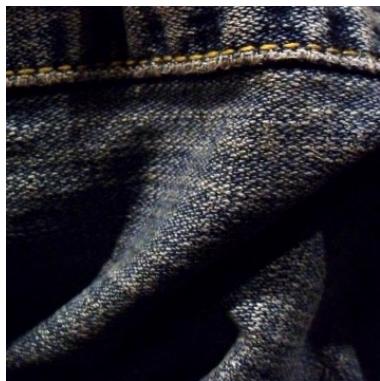
- **Fine:** *extended organized, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, smooth.*

**Denim 09:**

- **Fine:** *round, smooth.*
- **Medium:** *round, smooth.*
- **Coarse:** *round, smooth.*

**Denim 10:**

- **Fine:** *extended organized, smooth.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Denim 11:**

- **Fine:** *round, smooth.*
- **Medium:** *round, smooth.*
- **Coarse:** *round, bumpy.*

**Denim 12:**

- **Fine:** *round, smooth.*
- **Medium:** *round, smooth.*
- **Coarse:** *round, bumpy.*

3.6 Elm



Elm 01:

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

Considering the bark to be disorganized.



Elm 02:

- **Fine:** *flat, coarse.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*



Elm 03:

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*



Elm 04:

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

**Elm 05:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

**Elm 06:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended organized, bumpy.*

Considering the bark as organized.

**Elm 07:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

**Elm 08:**

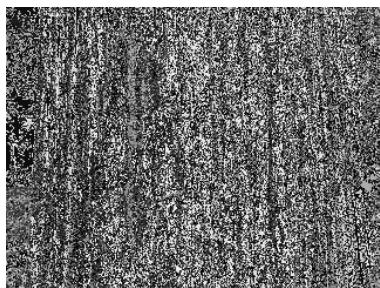
- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

**Elm 09:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

**Elm 10:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended disorganized, bumpy.*

**Elm 11:**

Extremely low quality image.

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

**Elm 12:**

- **Fine:** *flat, coarse.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

3.7 Feathers



Feathers 01:

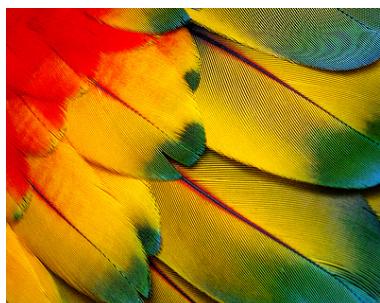
Watermark.

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *round, feathery.*



Feathers 02:

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *round, feathery.*



Feathers 03:

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *round, feathery.*



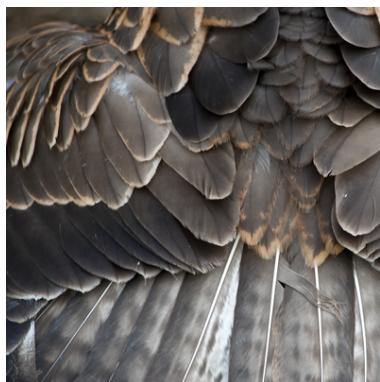
Feathers 04:

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended disorganized, feathery.*

**Feathers 05:**

Watermark.

- **Fine:** *extended organized, bumpy.*
- **Medium:** *round, feathery.*
- **Coarse:** *round, feathery.*

**Feathers 06:**

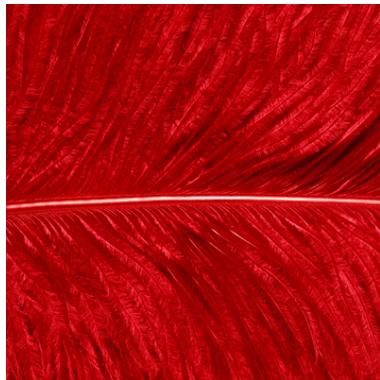
- **Fine:** *flat, smooth.*
- **Medium:** *round, feathery.*
- **Coarse:** *round, feathery.*

**Feathers 07:**

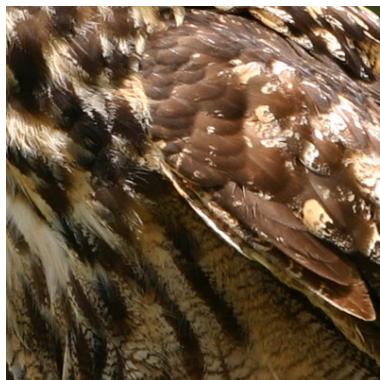
- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended disorganized, feathery.*
- **Coarse:** *extended disorganized, feathery.*

**Feathers 08:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended disorganized, feathery.*

**Feathers 09:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, bumpy.*
- **Coarse:** *extended disorganized, feathery.*

**Feathers 10:**

- **Fine:** *flat, smooth.*
- **Medium:** *round, feathery.*
- **Coarse:** *round, feathery.*

Considering the wing for the medium scale.

**Feathers 11:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, feathery.*
- **Coarse:** *extended organized, feathery.*

**Feathers 12:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *round, feathery.*
- **Coarse:** *round, feathery.*

3.8 Fur

Considering that the pattern that follows the fur is, at least, at low scale, organized.



Fur 01:

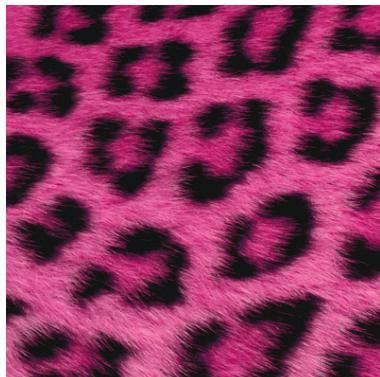
Watermark.

- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *extended disorganized, furry.*



Fur 02:

- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *extended disorganized, furry.*



Fur 03:

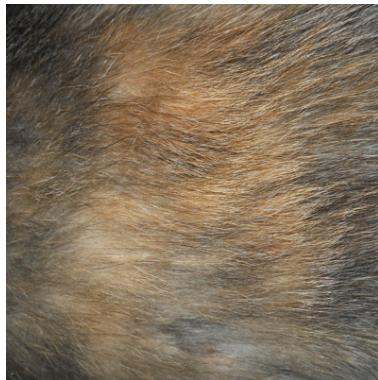
- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *round, furry.*

Considering the spots as elements of round shape.



Fur 04:

- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *extended organized, furry.*

**Fur 05:**

- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *extended disorganized, furry.*

**Fur 06:**

- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *extended disorganized, furry.*

**Fur 07:**

- **Fine:** *extended organized, furry.*
- **Medium:** *extended disorganized, furry.*
- **Coarse:** *extended disorganized, furry.*

**Fur 08:**

- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *extended disorganized, furry.*

**Fur 09:**

- **Fine:** *extended organized, furry.*
- **Medium:** *extended disorganized, furry.*
- **Coarse:** *extended disorganized, furry.*

**Fur 10:**

- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *extended disorganized, furry.*

**Fur 11:**

Same as Fur 03 with different color.

- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *round, furry.*

**Fur 12:**

- **Fine:** *extended organized, furry.*
- **Medium:** *extended organized, furry.*
- **Coarse:** *extended disorganized, furry.*

3.9 Hair

Considering that the touch of hair is smooth at a high scale.



Hair 01:

Watermark.

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, smooth.*



Hair 02:

Watermark.

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended disorganized, smooth.*
- **Coarse:** *extended disorganized, smooth.*



Hair 03:

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

**Hair 04:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

**Hair 05:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, smooth.*

**Hair 06:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, smooth.*

**Hair 07:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

**Hair 08:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended disorganized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

**Hair 09:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

**Hair 10:**

Watermark.

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

**Hair 11:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended organized, smooth.*

**Hair 12:**

- **Fine:** *extended organized, bumpy.*
- **Medium:** *extended organized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

3.10 KnitAran

Considering that non-linear patterns are disorganized.



KnitAran 01:

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*



KnitAran 02:

- **Fine:** *extended disorganized, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*



KnitAran 03:

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

Considering that the round parts of the pattern are extended disorganized.



KnitAran 04:

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *round, bumpy.*

Considering the buttons at the coarse level.

**KnitAran 05:**

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *round, bumpy.*

**KnitAran 06:**

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *round, bumpy.*

**KnitAran 07:**

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*

**KnitAran 08:**

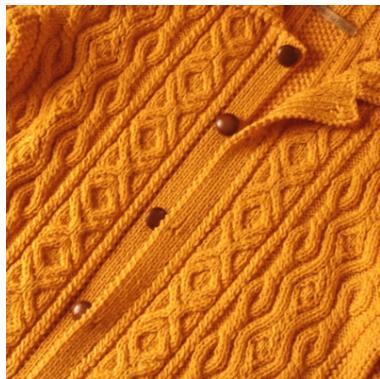
- **Fine:** *extended disorganized, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*

**KnitAran 09:**

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

**KnitAran 10:**

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*

**KnitAran 11:**

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *round, bumpy.*

Considering the buttons at the coarse level.

**KnitAran 12:**

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended disorganized, bumpy.*
- **Coarse:** *extended disorganized, bumpy.*

3.11 KnitGuernsey

Considering that non-linear patterns are disorganized.



KnitGuernsey 01:

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*



KnitGuernsey 02:

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

Ignoring the table behind.



KnitGuernsey 03:

- **Fine:** *round, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *extended disorganized, bumpy.*



KnitGuernsey 04:

- **Fine:** *round, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *extended organized, bumpy.*



KnitGuernsey 05:

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*



KnitGuernsey 06:

- **Fine:** *extended disorganized, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*



KnitGuernsey 07:

- **Fine:** *round, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*



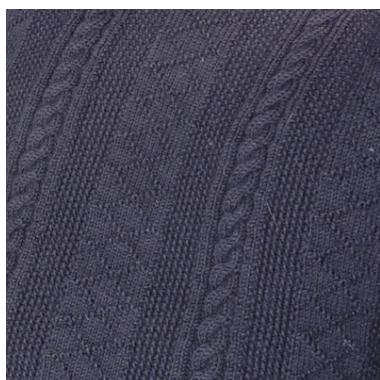
KnitGuernsey 08:

- **Fine:** *extended organized, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*



KnitGuernsey 09:

- **Fine:** *round, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *extended disorganized, bumpy.*



KnitGuernsey 10:

- **Fine:** *round, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *extended disorganized, bumpy.*



KnitGuernsey 11:

- **Fine:** *round, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *extended disorganized, bumpy.*

**KnitGuernsey 12:**

- **Fine:** *round, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*

3.12 Leather



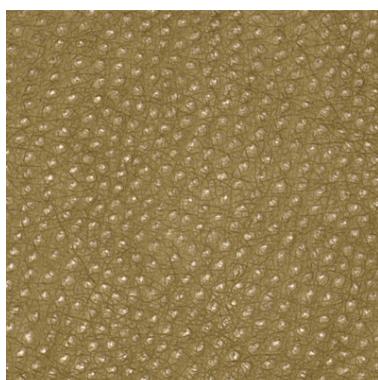
Leather 01:

- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*



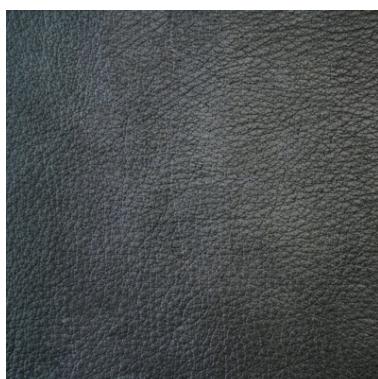
Leather 02:

- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*



Leather 03:

- **Fine:** *round, coarse.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*



Leather 04:

- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

Leather 05:

- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

Same as leather 04.

**Leather 06:**

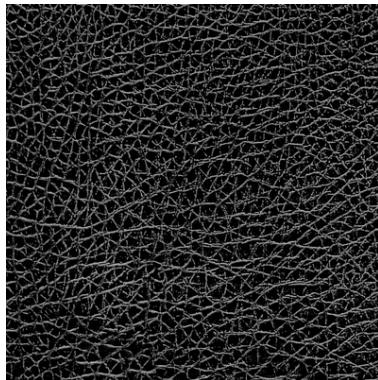
- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Leather 07:**

- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Leather 08:**

- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Leather 09:**

- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Leather 10:**

- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Leather 11:**

- **Fine:** *round, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *extended organized, bumpy.*

**Leather 12:**

- **Fine:** *round, coarse.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

3.13 Marble



Marble 01:

- **Fine:** *flat, smooth.*
- **Medium:** *extended disorganized, smooth.*
- **Coarse:** *extended disorganized, smooth.*



Marble 02:

- **Fine:** *flat, smooth.*
- **Medium:** *extended disorganized, smooth.*
- **Coarse:** *extended disorganized, smooth.*



Marble 03:

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended disorganized, coarse.*



Marble 04:

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

**Marble 05:**

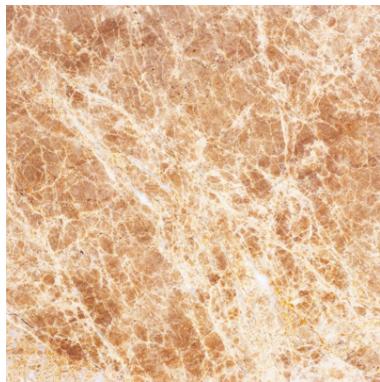
- **Fine:** *flat, smooth.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

**Marble 06:**

- **Fine:** *extended disorganized, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

**Marble 07:**

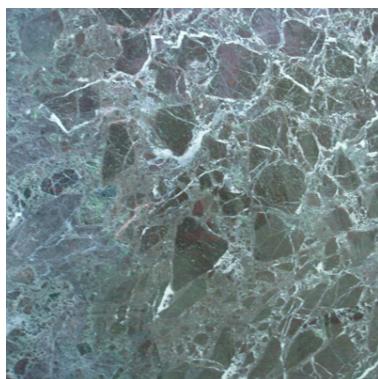
- **Fine:** *extended disorganized, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

**Marble 08:**

- **Fine:** *extended disorganized, smooth.*
- **Medium:** *extended disorganized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

**Marble 09:**

- **Fine:** *round, smooth.*
- **Medium:** *round, smooth.*
- **Coarse:** *round, smooth.*

**Marble 10:**

- **Fine:** *flat, smooth.*
- **Medium:** *extended disorganized, smooth.*
- **Coarse:** *round, smooth.*

**Marble 11:**

- **Fine:** *round, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *round, coarse.*

**Marble 12:**

- **Fine:** *flat, smooth.*
- **Medium:** *extended disorganized, smooth.*
- **Coarse:** *extended disorganized, smooth.*

3.14 Scale



Scale 01:

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*



Scale 02:

- **Fine:** *flat, coarse.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*



Scale 03:

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*



Scale 04:

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Scale 05:**

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Scale 06:**

Watermark.

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Scale 07:**

Watermark.

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Scale 08:**

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Scale 09:**

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Scale 10:**

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Scale 11:**

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

**Scale 12:**

- **Fine:** *flat, smooth.*
- **Medium:** *round, bumpy.*
- **Coarse:** *round, bumpy.*

3.15 Silk



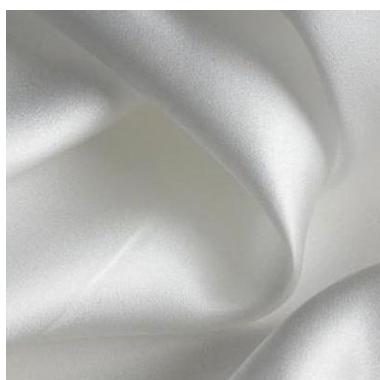
Silk 01:

- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*



Silk 02:

- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*



Silk 03:

- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*



Silk 04:

- **Fine:** *extended organized, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Silk 05:**

- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Silk 06:**

- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Silk 07:**

- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Silk 08:**

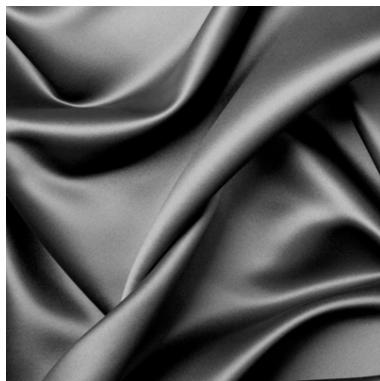
- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Silk 09:**

- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Silk 10:**

- **Fine:** *extended organized, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Silk 11:**

- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

**Silk 12:**

- **Fine:** *flat, smooth.*
- **Medium:** *flat, smooth.*
- **Coarse:** *extended disorganized, bumpy.*

3.16 Slate



Slate 01:

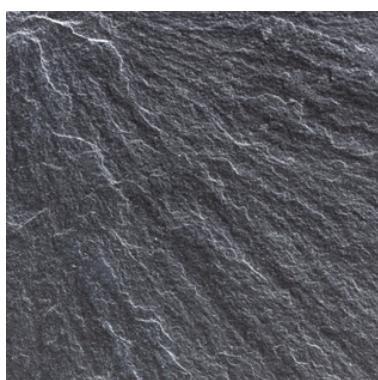
- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*



Slate 02:

?

- **Fine:** *flat, coarse.*
- **Medium:** *extended organized, coarse.*
- **Coarse:** *extended organized, coarse.*



Slate 03:

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*



Slate 04:

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended disorganized, coarse.*

**Slate 05:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

**Slate 06:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

**Slate 07:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, bumpy.*

**Slate 08:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *flat, coarse.*

**Slate 09:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

**Slate 10:**

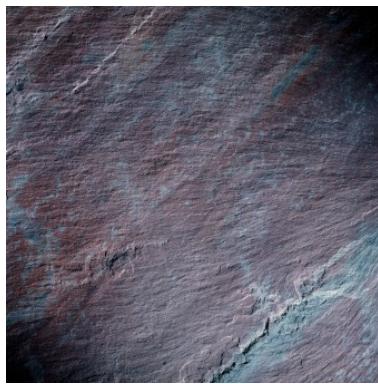
- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

**Slate 11:**

Watermark.

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

Same as slate 09.

**Slate 12:**

- **Fine:** *flat, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *extended disorganized, coarse.*

3.17 Stucco



Stucco 01:

- **Fine:** *flat, smooth.*
- **Medium:** *round, coarse.*
- **Coarse:** *round, coarse.*



Stucco 02:

Watermark.

- **Fine:** *round, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *round, coarse.*



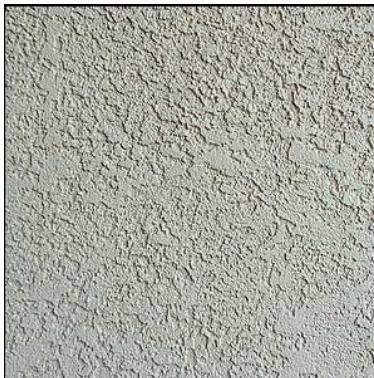
Stucco 03:

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *flat, coarse.*



Stucco 04:

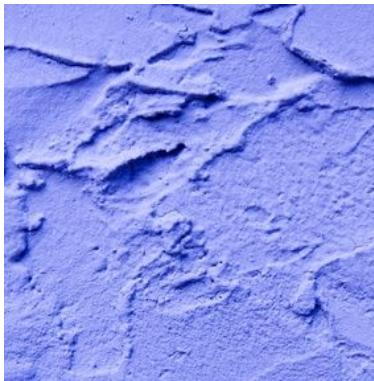
- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *flat, coarse.*

**Stucco 05:**

- **Fine:** *flat, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *round, coarse.*

**Stucco 06:**

- **Fine:** *flat, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *round, coarse.*

**Stucco 07:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *extended disorganized, bumpy.*

**Stucco 08:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *flat, coarse.*

**Stucco 09:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *flat, coarse.*

**Stucco 10:**

- **Fine:** *flat, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *round, coarse.*

Same as stucco 05.

**Stucco 11:**

- **Fine:** *flat, coarse.*
- **Medium:** *round, coarse.*
- **Coarse:** *round, coarse.*

**Stucco 12:**

- **Fine:** *flat, coarse.*
- **Medium:** *flat, coarse.*
- **Coarse:** *flat, coarse.*

3.18 Velour



Velour 01:

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *flat, velvety.*



Velour 02:

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *extended disorganized, bumpy.*



Velour 03:

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *extended disorganized, bumpy.*



Velour 04:

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *extended disorganized, bumpy.*

**Velour 05:**

- **Fine:** *extended disorganized, coarse.*
- **Medium:** *extended disorganized, coarse.*
- **Coarse:** *flat, velvety.*

**Velour 06:**

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *extended organized, bumpy.*

**Velour 07:**

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *extended disorganized, bumpy.*

**Velour 08:**

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *extended disorganized, bumpy.*

**Velour 09:**

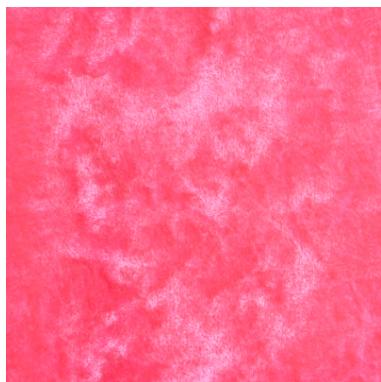
- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *extended disorganized, bumpy.*

**Velour 10:**

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *extended disorganized, bumpy.*

**Velour 11:**

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *extended organized, bumpy.*

**Velour 12:**

- **Fine:** *flat, velvety.*
- **Medium:** *flat, velvety.*
- **Coarse:** *flat, velvety.*

References

- [1] Z. Liao, J. Rock, Y. Wang, and D. Forsyth. Non-parametric filtering for geometric detail extraction and material representation. June 2013.