

Natural by Nature

Marmoleum is made from **97%** natural raw materials, **62%** of those are renewable within 10 years and 29% are renewable within 1 year.

Supporting the circular economy principles, 43% of materials used in Marmoleum are also recycled or reused.

Note: Typical values quoted; may vary based on batch and/or design.

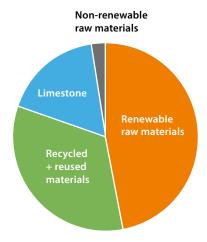
materials?

Renewable materials offer three distinct advantages over fossil-based ones:

- Abundance
- Biobased
- Uptake and capture of CO, during growth







Components

Marmoleum is made up of the following components.

Renewable raw materials – **62%**

Linseed oil, tall oil, gum rosin, wood flour, jute

- Linseed oil is obtained by cold-pressing the seeds of the flax plant. It is sourced mainly from USA, Canada, Europe.
- Gum rosin is a solid form of resin obtained by tapping pine trees. The crude gum is extracted and separated into turpentine and rosin. A tree can be tapped for 30 years. Pine trees in tropical areas produce more rosin. Forbo sources its rosin primarily from Indonesia.
- Jute also known as hessian or burlap is a natural and important eco-friendly vegetable fibre. It is produced from the fibre in the stem of the jute plant and is sourced from India and Bangladesh. Woven jute is used as the backing for Marmoleum.
- Wood flour is milled using soft wood off-cuts from the wood industry. Wood flour is finely pulverised wood. Soft wood comes from renewable (re-planted) trees, such as pines or firs, which re-grow in about 20 years. Only wood off-cuts from certified PEEC sustainable forestry are used.

features:

- rapidly renewable 29%: linseed, jute, rosin
- uptake and capture of CO₂ during growth
- recycled raw material
- highly supportive of circular economy

Recycled and reused materials – raw materials –

44%

Marmoleum collected from Forbo's own factory (off-cuts, rejected rolls) and post-installation off-cuts returned from customers through our Back to the Floor programme.

Back to the Floor is our free, installation off-cut collection service. This circular-economy initiative also saves money and time for our contractors, avoiding landfill or incineration gate fees.

features:

- recycled material
- less CO₂ consumption
- reduced landfill and incineration
- supportive of circular economy

Filler: limestone – 23%

Limestone is one of the world's most abundant resources. After sand, it is the most available natural raw material on the globe. Forbo uses limestone sourced from Germany and mined above ground level, limiting energy consumption and environmental impact.

Non-renewable

3%

The non-bio based materials in Marmoleum are the colour pigments and factory finish. The vast majority of pigments Forbo uses are iron oxide-based, resulting in durable, high quality pigments. Other pigments used are organic. Titanium White – the same white pigment used in paints, paper, foods, cosmetics and toothpaste - accounts for 2/3 of the pigments used.

Note: Typical values quoted throughout; may vary based on batch and/or design.





The production process



STEP 1

Linseed oil and tall oil are mixed with pine rosin the natural oxidation starts which creates the linoleum mass

STEP

2

The material is left for a couple of days to continue oxidising as more oxygen is absorbed

STEP

3

The material is then mixed with wood flour, limestone and colour pigments.

STEP

4

Next, it is turned into granules

STEP

5

The granules are tightly pressed onto jute backing with a calender

STEP

6

The linoleum is left to 'dry' and harden in a 20-meter tall drying room. The natural curing process takes around three weeks

STEP

7

Lastly, a factory finish is applied and the rolls are cut, rolled up and transported to the warehouse.









Example Marmoleum sheet 2.5mm (individual product EPDs available)

| | | Bio based crops | | | Bio based recycled products | | | |
|----------------------------|--------------------------|-----------------|-----------|------|-----------------------------|------------|-----------|--------------------------------|
| Marmoleum ingredients | Check EPD for exact % | Linseed oil | Gum Rosin | Jute | Tall oil | Wood flour | Limestone | Recycled + reused Marmoleum |
| Natural | 97% | • | • | • | • | • | • | • |
| Renewable (10 years) | 62% | • | • | • | • | • | | |
| Rapidly renewable (1 year) | 29% | • | • | • | | | | |
| Recycled + reused | 43% | | | | • | • | | • |



Renewable

Materials which will be replenished within a period of 10 years.



Rapidly renewable

Materials mainly obtained from agricultural production. They regenerate crops every year, or far quicker than fossil resources.



Recycled + reused

Material that has been reprocessed from recovered (reclaimed) material by means of a manufacturing process and made into a final product or component for incorporation into a product.

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