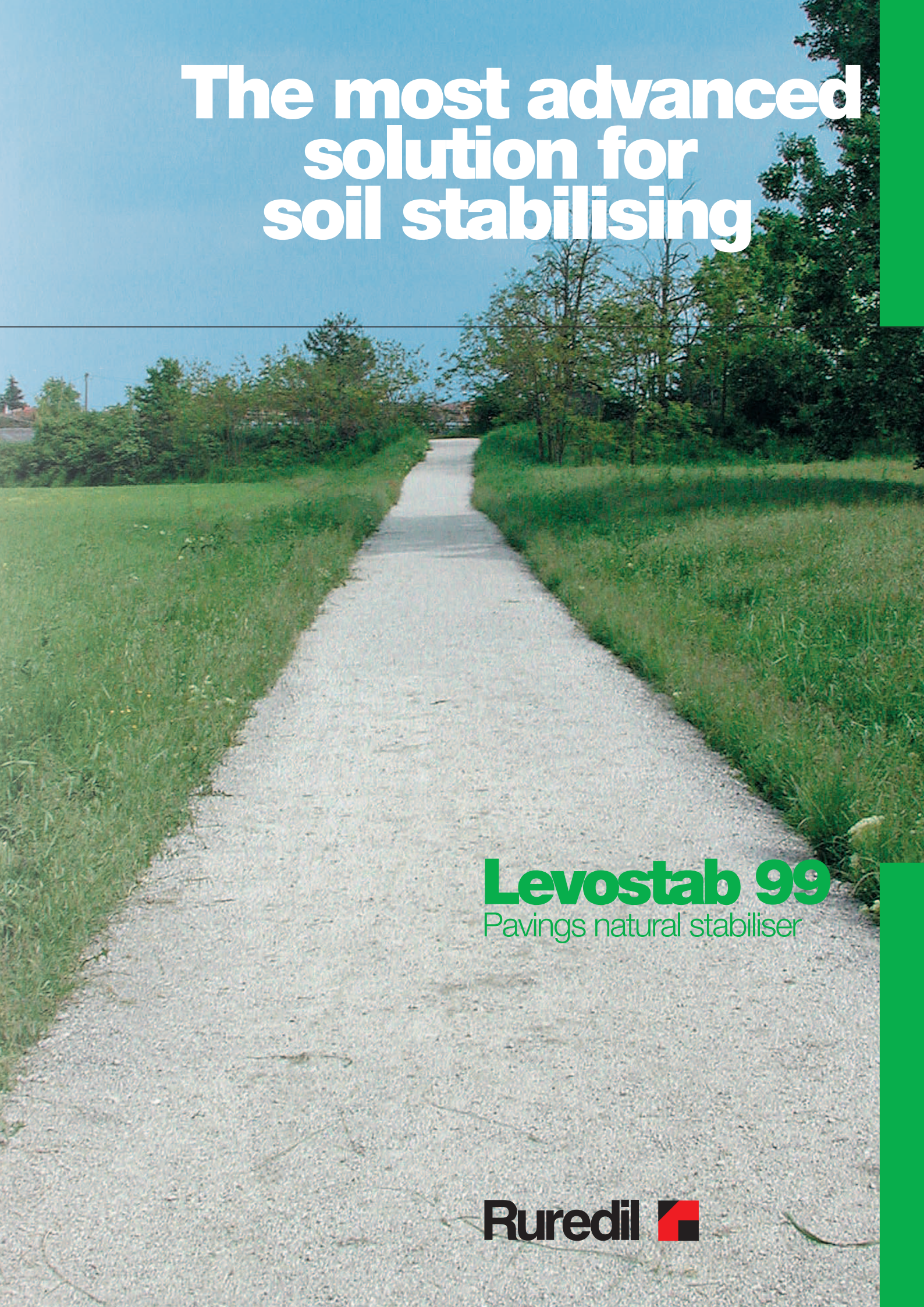
The most advanced solution for soil stabilising



Levostab 99

Pavings natural stabiliser

Ruredil

Levostab 99

Many advantages in one single product

Pavings
natural stabiliser

improves physical and mechanical properties of the soil, from cohesion to the internal angle of friction, from load-bearing capacity to resistance to freeze and thaw cycles;

stabilises properties of the mix with the passing of time, independently from changes in moisture levels and the most different environmental conditions;

reduces swellings caused by changes in water content;

increases workability of limey-clayey soils, graduating hardening reactions;

increases soil service life due to its durability.

on the road to stability

Economical: Levostab 99 allows you to recover and thus to add value to poor quality material such as the clayey soils available on site, which otherwise would not meet the requirements of technical specifications.

Ecological: Levostab 99 considerably reduces the need to transport material from gravel pits and to dumping sites, which is better for the environment.

Environmental compatible: Levostab 99's formula is very similar to the chemical and physical properties of the soil in which it works, and it is far better then other with conventional consolidation methods which employ concrete or asphalt.

Levostab 99 is a soil stabiliser and consolidator worthy of your attention if you are future-oriented and planning jobs on cycle paths, gravel roads, nature paths or roads in restricted areas.

For use in perfectly natural setting

- cycles paths
- gravel roads
- dirt roads
- rural roads
- nature walks
- roads in restricted areas
- these and more uses have made Levostab 99 the success it is today.

Pavings
natural stabiliser







Levostab 99:

Levostab 99 in action

Levostab 99 action starts hydrating the oxides it contains, by absorbing the moisture of the soil, which is the primary cause for deterioration of the mechanical properties of roads and paths.

The resulting reaction generates insoluble hydrated compounds which are distributed through the micro-porosity of the soil thus reducing its porosity, limiting swelling and firming up the soil.

Levostab 99 decreases the soil's plasticity, improving its mechanical properties and considerably increasing soil bearing capacity (CBR), increasing paving durability and resistance to freezing and thawing cycles.

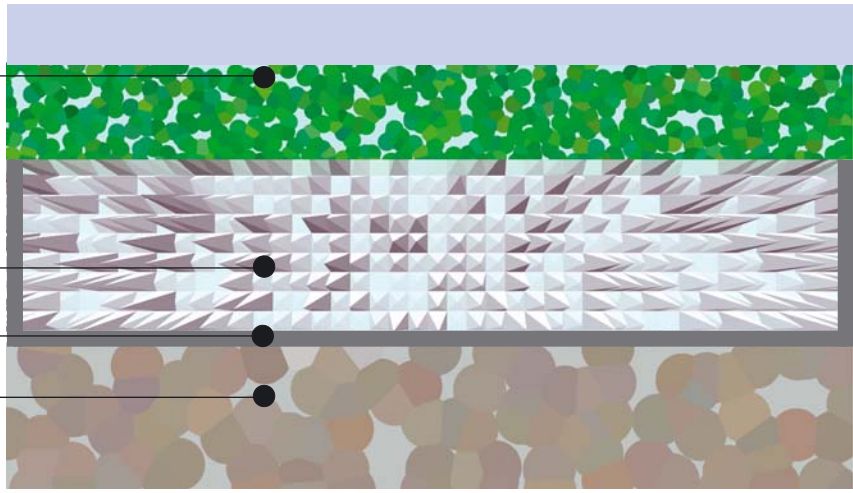
Construction scheme

Levostab 99 ecological paving
(average recommended thickness: 10 cm)

Substrate of granular mix (thickness must be determined on the basis of the final use of the work and the nature of the available substrate).

Non-woven fabric (recommended)

Natural soil rolled on site



The section shown here is relevant to new roads and it is indicative only. The thickness of the foundation layers should be checked especially in projects for building of new roads, not siyuated on existing routes.

the most advanced solution

Experimental study

Experimental study is essential to the success of the project. It objectively reveals the situation at the site to allow determination of the exact amount of Levostab 99 required. Experimental study includes ***two main phases***:

- one for determining the physical and chemical properties of the natural soil under examination,
- and one for determining the physical and mechanical properties of the mix soil/Levostab 99.

Phase 1: tests on natural soil

• classification of natural soil: granulometric analysis	(UNI-CNR 10006)
• Atterberg limits and plasticity index	(UNI 10014)
• optimal tamping conditions (density and moisture)	AASHTO procedure mod. (CNR-BU 69 - 30/11/78)
• CBR index	(CNR-UNI 10009)
• resistance to breakage under L-shaped compression	(ASTM D 2166/91)

Phase 2: tests on the mixture natural soil / Levostab 99

• granulometric analysis of the mix by sieving	(UNI-CNR 10006)
• Atterberg limits and plasticity index at 1 and 7 days	(UNI 10014)
• optimal tamping conditions	AASHTO procedure mod. (CNR-BU 69 - 30/11/78)
• CBR index at 1 and 7 days	(CNR-UNI 10009)
• resistance to breakage under L-shaped compression	(ASTM D 2166/91)

Examples of compressive breaking load of soil stabilised with Levostab 99

Determination of compressive breaking load (CNR BU n. 29/1972)

Soil (group symbol)	Soil (group name)	% Levostab 99	water	sample diameter (cm)	height (cm)	dry volumic mass (g/cm³)	compression strenght N/mm² (average of 4 samples)
A1-b	sandy gravel	4%	12%	15,24	17,78	1,818	**2,94**
A2-4	sandy gravel	4%	9,5%	15,24	17,78	1,838	**2,27**

n.b. tests conducted after 7 days of curing

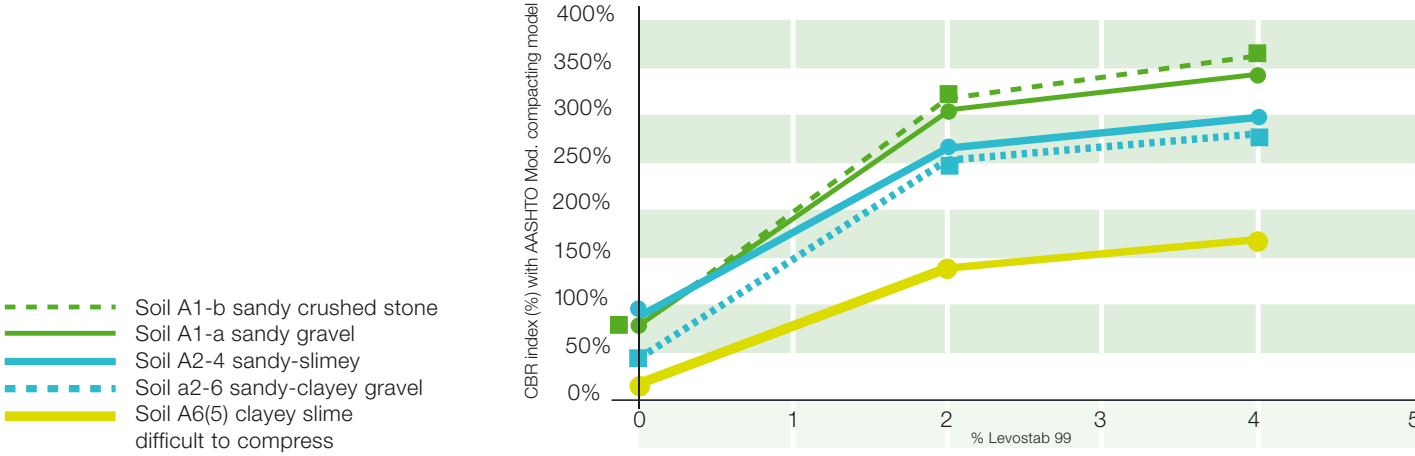
Examples of resistance to freezing/thawing of soil stabilised with Levostab 99

Freezing/thawing tests on compacted material (ASTM D 560)
AASHTD- Mod. method in 6" die after curing for 27 days in climate-controlled chamber

Soil (group symbol)	Soil (group name)	% plasticity index mix soil/ Levostab 99	optimal moisture	dry volumic mass (cm)	Levostab 99	loss of mass after 12 freezing/thawing cycles
A1-b	sandy crushed stone	6	7,5%	2,164	4,0%	**9,4%**
A1-b	sandy crushed stone	np	15,0%	1,920	4,0%	**5,6%**

n.b. tests conducted after 27 days of curing in a climate-controlled chamber

CBR load-bearing capacity index of various soil types as a function of changes in Levostab 99 dosage



for soil stabilising

Levostab 99
Application phases

Typical application on site

After preparing the substrate, proceed with:

1 milling of the soil on the site (if necessary) or application of new soil

2 application of Levostab 99 stabiliser

3 dry milling of soil/Levostab 99

4 addition of the required amount of water (determined by laboratory tests)

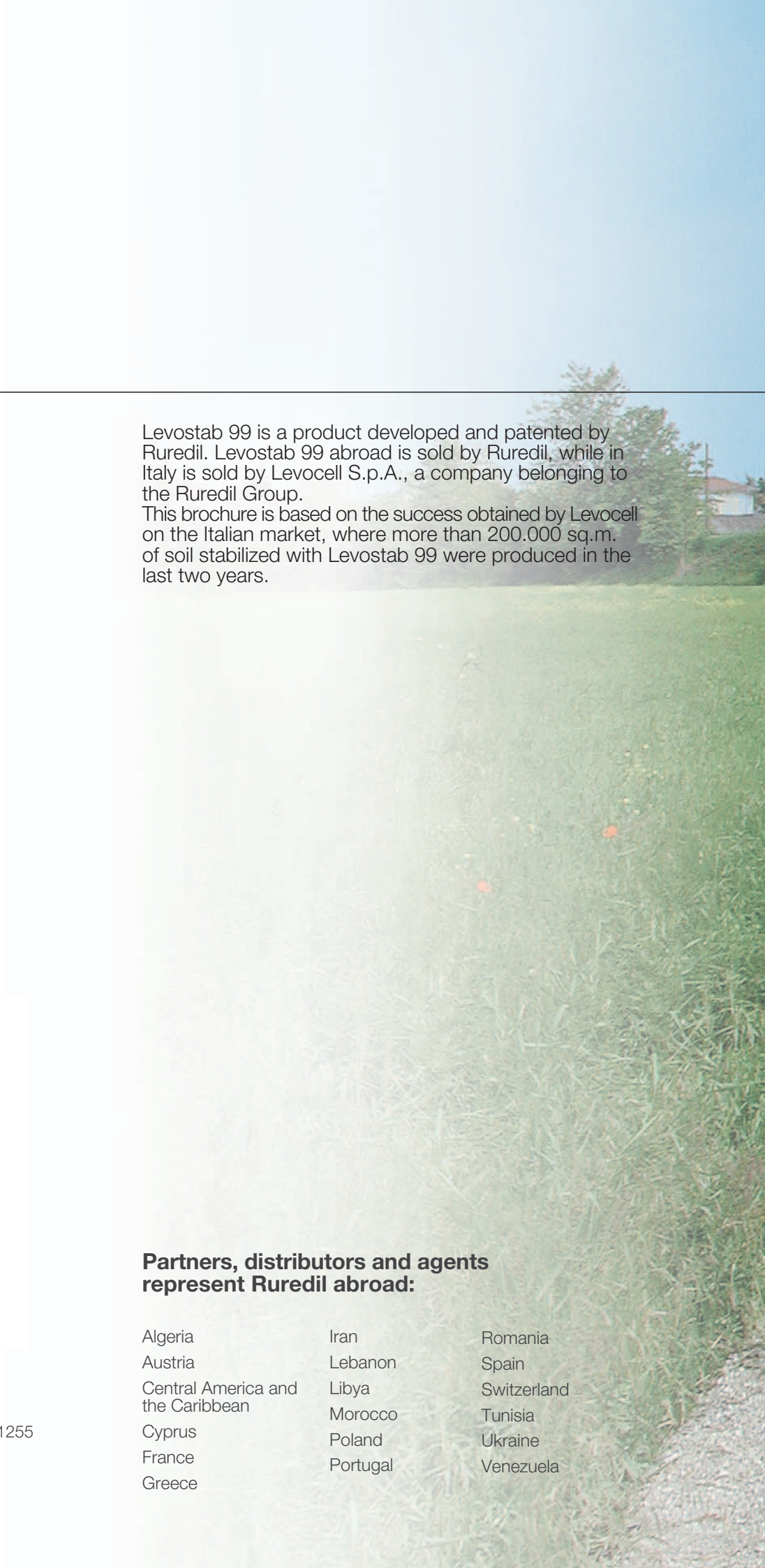
5 milling to distribute water correctly in the layer to be stabilised

6 final shaping and rolling

Useful advice for Levostab 99

Levostab 99 is supplied in 25 kg sacks and must be stored and kept in a dry, covered place, at temperatures between 5 and 40 °C.

Pavings
natural stabiliser



Levostab 99 is a product developed and patented by Ruredil. Levostab 99 abroad is sold by Ruredil, while in Italy is sold by Levocell S.p.A., a company belonging to the Ruredil Group.
This brochure is based on the success obtained by Levocell on the Italian market, where more than 200.000 sq.m. of soil stabilized with Levostab 99 were produced in the last two years.

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