

GEOLOGICAL MAP OF THE ROGALAND ANORTHOSITE PROVINCE

Scale 1 : 75 000

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LEGEND

EGERSUND DYKE SWARM

Dolerite

JOTUNITIC TO CHARNOKITIC INTRUSIONS

- 2 Jotunitic to mangeritic dyke with local noritic or quartz-mangeritic facies, or jotunitic intrusion (Eia-Rekefjord Intrusion)
- 3 Charnockite
- 4 Quartz mangerite with minor mangerite and charnockite
- 5 Mangerite

THE BJERKREIM-SOKNDAL LAYERED INTRUSION - LAYERED SERIES*

Anorthositic and leucotroctolitic rocks

- 6 Leucotroctolite and troctolite (pimC). Zone IIb, IIb & IVb. Leuconorite and anorthosite (pC and piC), norite (phiC), minor ilmenite pyroxenite (hiC) and ilmenite-rich cumulates (ihC). Melanorite and olivine melanorite (hpim +/- oC) between Teksevatnet and Bilstadvatnet. Zone IIIa and IVa

- 7 Leuconorite and anorthosite (pC and piC) Zone IAa and IBa

- 8 Ilmenite-magnetite leuconorite and anorthosite (pimC) Zone IIa and marginal rocks

Leuconoritic, noritic and minor anorthositic rocks

- 9 Ilmenite norite/leuconorite (phiC) Zone c

- 10 Magnetite-ilmenite norite/leuconorite (phmiC) Zone IIId & IVd

Gabbro-noritic rocks

- 11 Ilmenite gabbro-norite (phciC) Lower part of Zone IBe

- 12 Magnetite-ilmenite gabbro-norite with cumulus apatite (phcimaC). Zone IIle and IVe and upper part of Zone IBe

- 13 Magnetite-ilmenite gabbro-norite with inverted pigeonite (ph'cimaC). Zone IVf

Jotunitic rocks

- 14 Jotunitic cumulates with Fe-rich olivine (p'hcoimaC). Transition Zone

- 15 Jotunitic (Marginal Series)

OTHER NORITIC INTRUSIONS

- 16 Norite and pyroxenite, mostly layered, with minor ilmenite, or noritic dyke
- 17 Leuconorite, mostly unlayered
- 18 Layered/unlayered norite, rich in ilmenite/ilmenite ore
- 19 Norite pegmatite

ANORTHOSITE BODIES

- 20 Anorthosite intruded by leuconorite, agmatitic
- 21 Anorthosite, mostly massive, with minor leuconorite
- 22 Leuconorite, massive
- 23 Jotunitic (marginal facies of the Hidra body)
- 24 Anorthosite with abundant, unoriented, orthopyroxene megacrysts
- 25 Anorthosite and leuconorite, foliated
- 26 Anorthosite with pseudo enclaves of leuconorite, foliated
- 27 Interlayered anorthosite and leuconorite with abundant modal layering

GRANULITE-FACIES METAMORPHIC ROCKS (GNEISSES)

- 28 Coarse-porphyritic metagranite, foliated (Feda suite)
- 29 Porphyritic metagranite, weakly to well-foliated
- 30 Metagranite, rich in white pegmatites, coarse- to medium-grained
- 31 Granitic gneiss, grey, weakly foliated
- 32 Pelitic gneiss with garnet and sillimanite
- 33 Quartzite
- 34 Amphibolite, orthopyroxene-bearing
- 35 Migmatitic gneiss, light grey
- 36 Banded gneiss. Different phases of grey granitic gneiss with sporadic amphibolitic (noritic) and metasedimentary (pelite, quartzite) bands, well-developed planar structure (high strain) and variable content of light grey granitic bands

STRUCTURES

- Fault
- 72 Strike and dip of foliation/modal layering
- 48 Strike and dip of mineral lamination

* The Bjerkreim-Sokndal Layered Intrusion has been divided into cyclical units (O, IA, IB, II, III, IV), each consisting of a number of cumulate zones (a-f) defined by index mineralogies (Wilson et al., 1996). The rock terminology follows standard cumulate nomenclature:

p: plagioclase h: Ca-poor pyroxene c: Ca-rich pyroxene
o: olivine h': inverted pigeonite i: ilmenite
m: magnetite a: apatite C: cumulate

0 5 10
Kilometres

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* U-Pb isotopic ages (* Ion microprobe spot dating)

No	Rock	Age	Metode	Reference
1	Anorthosite	928±9 Ma	U-Pb zircon	Schärer et al. (1998)
2	Anorthosite	923±3 Ma	U-Pb zircon	Schärer et al. (1998)
3	Ilmenite norite	923±3 Ma	U-Pb baddeleyite	Schärer et al. (1998)
4	Quartz mangerite	931±5 Ma	U-Pb zircon	Schärer et al. (1998)
5	Anorthosite	923±3 Ma	U-Pb zircon	Schärer et al. (1998)
6	Granitic gneiss	1004±1 to 932±1 Ma	U-Pb monazite	Bingen & van Breemen (1998a)
7	Feda augengneiss	1051±1 Ma	U-Pb zircon	Bingen & van Breemen (1998a)
8	Feda augengneiss	971±2 Ma	U-Pb monazite	Bingen & van Breemen (1998a)
9	Feda augengneiss	1007±2 and 979±1 Ma	U-Pb monazite	Bingen & van Breemen (1998a)
10	Feda augengneiss	1007±2 Ma	U-Pb monazite	Bingen & van Breemen (1998a)
11	Granitic gneiss	1024±1 to 970±1 Ma	U-Pb zircon	Bingen & van Breemen (1998a)
12	Granitic gneiss	1019±1 to 991±1 Ma	U-Pb zircon	Bingen & van Breemen (1998a)
13	Granitic gneiss	1058±10 Ma (inverted zone)	U-Pb zircon	Möller et al. (2002)
14	Granitic gneiss	1056±10 to 1033±20 Ma (magmatic)	U-Pb zircon	Möller et al. (2002)
15	Granitic gneiss	1013±9 to 991±23 Ma (metamorphic)	U-Pb zircon	Möller et al. (2002)
16	Granitic gneiss	1020±7 Ma (inverted zone)	U-Pb zircon	Möller et al. (2002)
17	Granitic gneiss	1033±5 Ma (magmatic)	U-Pb zircon	Möller et al. (2002)
18	Granitic gneiss	995±5 to 911±8 Ma (metamorphic)	U-Pb zircon	Möller et al. (2002)
19	Egersund dyke	616±3 Ma	U-Pb baddeleyite	Bingen et al. (1998)

REFERENCE LIST: Schärer et al. 1998; Earth Planet. Sci. Lett., 139, 335-350; Bingen & van Breemen (1998a); J. Geol. Soc. London, 155, 143-154; Bingen & van Breemen (1998b); Contrib. Mineral. Petrol., 132, 335-353; Möller et al. (2002); J. metamorphic Geol., 20, 727-740; Bingen et al. (1998); J. Geology 106, 565-574.

