

Contribution to the knowledge of some poorly known lichens in Poland. III. *Trapelia corticola* and the genus *Veizdaea*

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Abstract: New data on four *Veizdaea* species and *Trapelia corticola* (lichenized Ascomycota, Lecanoromycetes) are presented for Poland. *V. acicularis* is reported as new to the country and records of *V. retigera* are newly published. Further collections of the rare *V. stipitata* and relatively common *V. aestivalis* are presented. New localities of *Trapelia corticola* suggest that the species is locally common in the mountains. Notes on the taxonomy, world distribution and habitat preferences for all species are included. Additionally, *Veizdaea aestivalis* is reported for the first time for Romania.

Kokkuvõte: Panus Poola vähetuntud samblike tundmisse. III. *Trapelia corticola* ja perekond *Veizdaea*.

Esitatakse uusi andmeid perekonna *Veizdaea* nelja liigi ja *Trapelia corticola* (lihheniseerunud Ascomycota, Lecanoromycetes) kohta Poolas. *V. acicularis* on uus liik Poolale; *V. retigera* leiandmed avaldatakse esmakordselt. Täiendavad on ka leiandmed haruldase *V. stipitata* ja võrdlemisi tavalise liigi *V. aestivalis* kohta. *Trapelia corticola* uued leiukohad viitavad võimalusele, et see liik on mägedes kohati tavaline. Lisatud on tähelepanekud kõikide liikide taksonoomia, leviku ja kasvukohaelistuste osas. Ühtlasi teatatakse liigi *Veizdaea aestivalis* esmaleiust Rumeenias.

INTRODUCTION

The lichen genus *Veizdaea* Tscherm.-Woess & Poelt comprises 12 species of lichenized fungi worldwide, seven of which occur in Europe (Giralt et al., 1993). It is characterized mainly by the absence of a true hypothecium and hymenial gel-matrix. Paraphyses are branched and in many species characteristically entwined around thick-walled asci (for more details see Coppins, 1987). Except for *V. aestivalis* (Ohlert) Tscherm.-Woess & Poelt, other taxa are rather sporadically reported, but appear to be quite widely distributed. Information on the occurrence of *Veizdaea* species is limited, probably because they are overlooked due to their minute, inconspicuous, mostly epibryophytic and ephemeral thalli which develop mature ascomata seasonally, mainly in the winter and spring (Coppins, 1987). A key for all European taxa of *Veizdaea* is presented by Giralt et al. (1993).

In Poland four *Veizdaea* species have been reported to date (Fałtynowicz, 2003) and most of them are only sporadically found. *V. aestivalis*, the most conspicuous member of the genus, is the most frequently recorded; in Poland it has been recently studied in details by Czarnota & Kiszka (2004).

The three other species are much rarer than *V. aestivalis*. *V. stipitata* Poelt & Döbbeler has been reported three times, in the Carpathians (Czarnota, 2000; Kiszka, 2003) and Upper Silesia (Kiszka & Kościelniak, 2006), whereas *V. rheocarpa* Poelt & Döbbeler was found only twice, on thalli of *Peltigera* species (Fałtynowicz, 2003 and literature cited therein; Kukwa, 2004). The third species, *V. retigera* Poelt & Döbbeler has also been reported from only two localities (Bielczyk, 2003; Fałtynowicz & Kukwa, 2006), but without locality details.

Trapelia corticola Coppins & P. James, another rarely reported lichen in Poland, was recorded for the first time by Zalewska (1998), since when very few reports of its occurrence have been published due to its rather inconspicuous, thin, sorediate and always sterile thallus, or perhaps being mistaken for several other crustose species with rounded, C+ red soralia.

During our field and herbarium studies, several new records of *Trapelia corticola* and *Veizdaea* species were discovered for Poland, and some previously reported specimens have also been re-examined. The aim of this paper, the

third in the series, is to present new distributional information about these taxa in Poland.

MATERIALS AND METHODS

All specimens examined are kept in following herbaria: GPN, LOD, POZ, UGDA and private herbaria of A. Flakus and G. Leśniański; some duplicates have been donated to BILAS and LG. Apothecia were examined with light microscopes and hand-made apothecial sections were mounted in water and KOH. All examined localities are mapped according to the modified ATPOL grid square system (Cieśliński & Fałtynowicz, 1993; Kukwa et al., 2002) and the following abbreviations employed below: PC – Paweł Czarnota; MK – Martin Kukwa; NP – National Park.

THE SPECIES

Vezdaea acicularis Coppins

It is a very distinctive species which is easily distinguished by its unique, 7–11-septate, acicular spores measuring 60–85 × 2–2.5 µm (Coppins, 1987; Giralta et al., 1993). For a detailed description and excellent illustrations see Coppins (1987) and Diederich et al. (2009).

V. acicularis is reported here as new to Poland. It has been found only in one locality in the northern part of the country (Fig. 1), where it occurs on decaying terricolous bryophytes and partly directly on sandy soil within a large pine forest *Cladonio-Pinetum*. The site was visited twice in a period of five years and the lichen still occurs there. Extra-Polish records suggest that its occurrence may be related to metal-enriched areas (Coppins, 1987; Purvis & Halls, 1996) or to some artificial habitats, e.g. ruderal places and banks of roads (e.g. Boom, 1998; Brodo, 2001; Pykälä, 2006). In Poland, however, it was found in a natural dry pine forest. Usually *V. acicularis* grows on mineral soil accompanied by terricolous bryophytes, but it is known also from thalli of *Peltigera* (Kocourková, 2000; Zhurbenko & Laursen, 2003).

The species is rarely found, but it is widespread in northern, oceanic and boreal Europe. However, some localities from central, mainly mountain part of the continent are also known. It has been reported from Austria (Berger & Priemetzhofer, 2000), Belgium and northern France (Diederich et al., 2009), Czech Republic

(Palice, 1999), Germany (Scholz, 2000), Great Britain (Coppins, 1987) and the Netherlands (Boom, 1998; Aptroot et al., 2004), as well as from Canada (Brodo, 2001) and Alaska (Zhurbenko & Laursen, 2003).

Specimens examined. [Bc-35] – Bory Tucholskie Forest, 'Bór chrobotkowy profesora Tobolewskiego' nature reserve, 53°55'36"N, 17°46'40"E, on sandy soil, 27.9.2001 and 15.9.2006, leg. PC 2738 (conf. B. J. Coppins) & 4857 (GPN).

Vezdaea aestivalis (Ohlert) Tscherm.- Woess & Poelt

V. aestivalis is the most conspicuous member of the genus since the apothecia may be up to 1 mm in diam., and thus quite easily found in the field. Anatomically it is characterized by the paraphyses which closely clasp the asci, 1(–3)-septate and verrucose spores, and goniocysts with short conical spines (Coppins, 1987).

In Poland *V. aestivalis* has been studied in details by Czarnota & Kiszka (2004), who reported it mainly from the Polish Carpathians, but also from a few localities in the central and northern parts of the country; therefore only new localities are presented below. We also report *V. aestivalis* as new to Romania.

Specimens examined. [Ge-00] – Beskid Wyspowy Mts, 0.5 km NW of Kasinka Mała village, 49°42'45"N, 20°00'01"E, on bryophytes, 10.9.2008, leg. PC 5912 & B. Gawlak (GPN); [Ge-10] – Gorce Mts, Poręba Wielka village, 49°37'03"N, 20°04'23"E, alt. 490 m, on calciphilous bryophytes, 24.2.2008, leg. PC 5246 (GPN). [Ge-11] – Gorce Mts, Konina village, Za Palacem settlement below Gębowa Mt., 49°35'29"N, 20°08'12"E, alt. ca 740 m, on epiphytic bryophytes, 4.4.2005, leg. PC 5526 (GPN).

Romania. Piatra Craiului NP, Valea Crapaturii below Săua Crapaturii pass, by yellow hiking track, ca 4 km S of Zarnesti village, 45°33'N, 25°15'E, alt. ca 1300 m, on epiphytic bryophytes, 12.7.2006, leg. PC 4910 (GPN).

Vezdaea retigera Poelt & Döbberler

Simple spores are characteristic of only two species of the genus, *V. retigera* and *V. rheocarpa* which can be easily separated by the type of paraphyses, texture of spore walls, and size of spines on the surface of goniocysts. The paraphyses of *V. retigera* are long and entwine individual asci, the spores have smooth walls and the goniocysts possess short, up to 2 µm long, spines. The spores of *V. rheocarpa* have

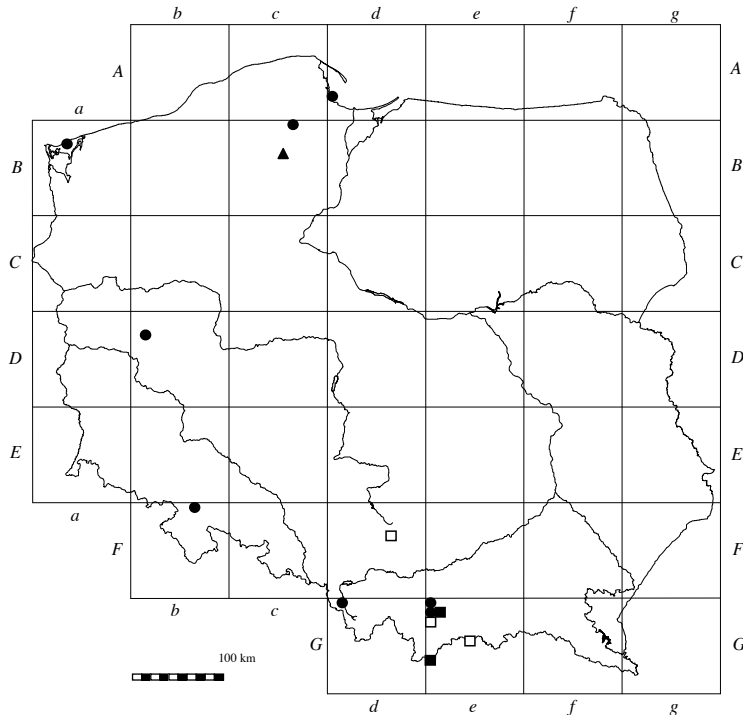


Fig. 1. Distribution of *Vezdaea acicularis* (▲), *V. retigera* (●) and *V. stipitata* (□ – localities reported prior to this publication, ■ – new records) in Poland.

distinctly verrucose-warted walls, the paraphyses are shorter and free (however, in the Polish specimen cited below some paraphyses also entwined asci in the lower half of their length) and spines on goniocysts can reach 15 μm in length (for detail descriptions see also Poelt & Döbbeler, 1975; Coppins, 1987; Giralt et al., 1993).

Sometimes *V. aestivalis*, typically characterized by predominantly 1-septate spores, can produce a large number of immature, simple ascospores resembling those of *V. retigera*. However, spores of *V. aestivalis* are narrower (5–7 μm) than in *V. retigera* (7–11 μm) (Coppins, 1987). Additionally, the thallus of *V. retigera* is composed of distinct granular goniocysts, whereas the mature thallus of *V. aestivalis* is usually almost continuous.

In one Polish specimen of *V. retigera* (Czarnota 5146b), ascospores were shorter (up to 15 μm in length) than in the original description of *V. retigera* [14–20 μm according to Poelt & Döbbeler (1975)] and further data provided by Coppins (1987; up to 24 μm long). Similar devi-

ating spore dimensions were also reported from Denmark (Alstrup et al., 2004). This confirms the suggestion by Coppins (1987) that the species needs a wider circumscription; however, after the more detail studies it may also appear that *V. retigera* is heterogenous.

V. retigera is an ephemeral lichen, as most collections have been made in spring and some of them in winter (see also Coppins, 1987); for this reason the species is probably undercollected. In Poland it was usually found as a single colonizer over bryophytes growing on calcareous substrates, but also on mossy sand dune, post-glacial granite boulders and occasionally on thallus of *Peltigera didactyla*. *V. retigera* is an ecologically tolerant species as it occurs in different types of forests as well as in open areas, but always in wet and shady microhabitats.

In Poland, *V. retigera* has been reported only twice (but without precise locality details) from Pogórze Śląskie foothills (Bielczyk, 2003; Fałtynowicz, 2003) and Gdańskie Pomorania (Fałtynowicz & Kukwa, 2006); full locality details

of these are documented below. The species is rather widely distributed in Poland (Fig. 1), and in Europe, although it appears to be rather rare. Its distribution is provided by Kocourková (2000), since when new reports have been published from e.g. Denmark (Alstrup et al., 2004), France (Diederich et al., 2006) and the Netherlands (Aptroot et al., 2004). It has recently been reported from North America (Lendemer & Yahr, 2004).

Specimens examined. [Ad-70] – Pobreże Kaszubskie coast, Gdynia Kolibki town 54°29'N, 18°34'E, on bryophytes over concrete, 3.2.2002, leg. MK 1339 (UGDA); [Ba-23] – Wolin Island, Woliński NP, by 'nature reserve of Prof. Czubiński', 53°57'49"N, 14°30'10"E, on bryophytes on cliff, 16.5.2004, leg. PC 4311 (GPN); [Bc-06] – Pojezierze Kaszubskie lakeland, Gołubie village, 54°13'04"N, 18°03'06"E, on *Peltigera didactyla*, 17.2.2007, leg. MK 5515 (UGDA-L-15217); [Db-21] – Pojezierze Lubuskie lakeland, ca 3 km E of Babimost, 52°10'15"N, 15°52'42"E, on sandy soil, 7.7.2005, leg. PC 4522 (GPN); [Fb-06] – Góry Sowie Mts, below the top of Gąsiorek Mt., 50°34'99"N, 16°37'01"E, alt. ca 730 m, on saxicolous bryophytes, 22.4.2004, leg. PC 3837 (GPN) & MK 3121 (UGDA-L-10804, dupl. BILAS, LG); [Gd-01] – Pogórze Śląskie foothills, Golezów village, S slope of Jasienicowa Góra Mt., 49°44'N, 18°44'E, on soil and bryophytes, 30.4.1998, leg. G. Leśniński 2610 (hb. Leśniński); [Ge-00] – Beskid Wyspowsy Mts, N edge of Węglówka village, S slope of Lubomir Mt., 49°45'16"N, 20°03'07"E, alt. 600 m, on pebble, 9.4.2007, leg. PC 5146b (GPN); [Ge-10] – Gorce Mts, Poręba Wielka village, 49°37'03"N, 20°04'23"E, alt. 490 m, on bryophytes, 24.2.2008, leg. PC 5245 (GPN).

Specimen of *Veizdaea rheocarpa* examined. Poland, Pobreże Kaszubskie coast, Gdańsk Oliwa town, Dolina Ewy valley, 54°25'N, 18°32'E, on *Peltigera praetextata*, June 2000, MK s.n. (UGDA-L-15216; published by Kukwa 2004).

Veizdaea stipitata Poelt & Döbbeler

V. stipitata, similarly to *V. leprosa* (P. James) Vězda and *V. dawsoniae* Döbbeler, forms stipitate ascocarps. In contrast to *V. leprosa*, this species develops a thin, non-granular thallus (*V. leprosa* thallus is distinctly granular) and has more sparse paraphyses in apothecia (*V. leprosa* paraphyses are abundant and flexuose) (James, 1971; Coppins, 1987). *V. dawsoniae* differs from *V. stipitata* only in the size of asci, and with the exception of the Caucasus, it has not been found close to Europe (Giralt et al., 1993).

V. stipitata is a mostly epibryophytic lichen, but its occurrence on decaying *Peltigera* has also

been recorded (Poelt & Döbbeler, 1975; Lisická, 2005). Few Polish records of *V. stipitata* were made from damp forested valleys. It was also found in grassland in open rural landscape, but in moist, shady microhabitats close to streams. Collections from Great Britain suggest that the species may favour metal-enriched areas (Coppins, 1987). One Polish specimen was also growing on soil rich in zinc and lead (Kiszka & Kościelniak, 2006).

In Poland it has only been reported from three localities in Gorce Mts (Czarnota, 1998, 2000), Pieniny Mts (Kiszka 2003) and Upper Silesia (Kiszka & Kościelniak, 2006). Three further records (Fig. 1) are reported below. The species is much overlooked due to its very inconspicuous thalli.

V. stipitata is a rather rare but widespread species known mostly from Europe, but it has also been reported from Asia, tropical America and Macaronesia (Hafellner, 1995; Lisická, 2005). In close vicinity to Poland it has been reported from mountainous areas of Austria (Poelt & Döbbeler, 1975; Giralt et al., 1993), Czech Republic (Palice, 1999) and Slovakia (Lisická, 2005).

Specimens examined. [Ge-11] – Gorce Mts, Gorce NP, valley of Konina stream, 49°34'35"N, 20°08'01"E, alt. 690 m, on saxicolous bryophytes, 12.7.2000, leg. PC 2329 (GPN); Lubomierz – Huzary village, bank of Rosocha stream, 49°36'42"N, 20°11'12"E, alt. 580 m, on terricolous bryophytes, 9.5.1999, leg. PC 1952 (GPN); [Ge-60] – High Tatra Mts., Tatra NP, Dwoisty Żleb gully, 49°12'03"N, 20°04'44"E, alt. 1680 m, on terricolous bryophytes, 6.8.2004, leg. A. Flakus 2986 (herb. A. Flakus).

Trapelia corticola Coppins & P. James

This usually sterile, sorediate species is characterized by its effuse, ± immersed, green to greenish brown thallus consisting of scattered areoles. Soralia are greenish, usually punctiform and markedly convex, and contain gyrophoric (major), lecanoric (trace) and 5-O-methylhi-ascic (trace) acids (Coppins & James, 1984; Tønsberg, 1992). Some species of *Trapeliopsis* Hertel & Gotth. Schneid., especially *T. flexuosa* (Fr.) Coppins & P. James and *T. pseudogranulosa* Coppins & P. James, are morphologically similar to *Trapelia corticola*. Both those taxa have distinct thallus consisting of conspicuous areoles (in *Trapeliopsis pseudogranulosa* thallus is sometimes thin), never develop regularly

punctiform soralia and lack methylhiascic acid. Additionally, *T. pseudogranulosa* usually contains an unidentified anthraquinone produced in orange-red patches, which reacts K⁺ purple (Coppins & James, 1984; Tønnsberg, 1992). *Biatora chrysantha* (Zahlbr.) Printzen also resembles *T. corticola*, but that species develops irregular soralia and often subsquamiform areoles (Tønnsberg, 1992).

In Poland the species was reported only recently (Zalewska 1998), but a recent revision of several old herbarium collections of other taxa revealed several old specimens of *T. corticola*, which had remained undetermined or misidentified for up to 50 years. Data present here, together with a few published records (Szczepańska, 2004; Dimos-Zych & Czarnota, 2007; see also Bielczyk, 2003 and Fałtynowicz, 2003) show that this species is not rare in Poland (Fig. 2), and locally may even be common. In Poland, it grows mostly on decaying wood or bark of coniferous stumps and logs, but also, though rarely, on the base of live trees (e.g.

beech, fir and sycamore). The species prefers humid natural forest ecosystems. In Western Europe it is considered to be an indicator of ecological continuity of woodlands (Coppins & Coppins 2002); it is also a rather good indicator in Poland, but is sometimes found in older mountain artificial spruce monocultures.

The species is widespread in Europe and has been reported from the British Isles (Seaward, 1994; Coppins, 2002), Czech Republic (Palice, 1999), Germany (Printzen et al., 2002), Romania (Palice, 1999), Slovakia (Lisická 2005), Spain (Boom & Gómez-Bolea, 1991), Switzerland (Dietrich & Scheidegger, 1996) and western Ukraine (Kondratyuk et al., 1998). Outside Europe, it is also reported from North and South America (Printzen et al., 2002) and Laurimacaronesia (Hafellner, 1995). According to some authors, its distribution has a somewhat suboceanic tendency (Palice, 1999 and literature cited therein), but Polish data show that the species prefers humid localities (e.g. shaded valleys or humid woodlands in upper mountain belts).

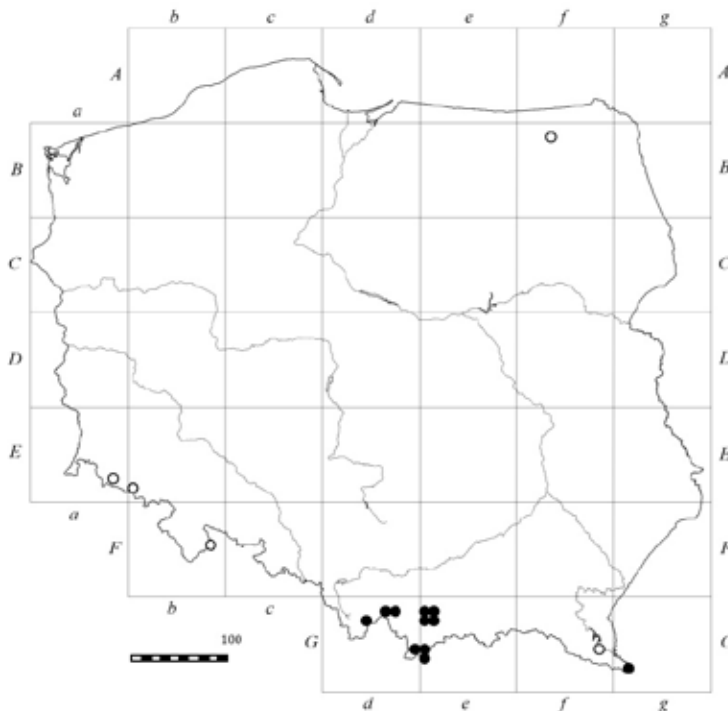


Fig. 2. Distribution of *Trapelia corticola* in Poland, ○ – localities reported prior to this publication, ● – new records.

Selected specimens examined (on decaying wood or bark of coniferous trees if not otherwise stated). [**Gd-16**] – Babiogórski NP, vicinity of Markowe Szczawiny shelter-house, ca 49°35'N, 19°30'E, alt. ca 1040–1200 m, 26.9.1966, leg. Z. Tobolewski (POZ) & 9.6.2004, leg. PC 4088 (GPN); [**Gd-17**] – Babia Góra Massif, N slope of Polica Mt., 49°38'03"N, 19°38'43"E, alt. 900 m, leg. PC 3926 (GPN); [**Gd-24**] – Beskid Żywiecki Mts, Rysianka near Lipowska Mt., 49°32'N, 19°13'E, alt. ca 1150 m, on *Fagus sylvatica*, 10.9.1970, J. Nowak (LOD-L-3206, Nowak, Lich. Polon. Merid. Exs. 17 pro parte); [**Gd-59**] – Tatra Mts, Tatra NP, Dolina Strążyska valley, 49°16'N, 19°56'E, 28.6.2002, leg. PC 2826 (GPN); also 49°14.05'N, 19°52.30'E, alt. 1200 m, leg. PC 2904 (GPN); [**Ge-10**] – Gorce Mts, W slope of Turbaczyk Mt., 49°34'N, 20°06'E, valley of Turbacz stream, alt. 760 m, 26.10.1995, leg. PC 562 (GPN); also 49°34'N, 20°05'E, leg. PC 4044 (GPN); [**Ge-11**] – Gorce Mts, NW slope of Gorce Kamienicki Mt., 49°34'30"N, 20°14'29"E, alt. 1020 m, 8.9.1959, leg. K. Glanc (GPN/4038); [**Ge-20**] – Gorce Mts, N slope of Obidowiec Mt., Poręba stream valley, 49°33'N, 20°03'E, alt. 880 m, 31.7.1995, leg. PC 3431 (GPN); also 49°33'66"N, 20°05'63"E, 18.07.2003, leg. PC 3499 (GPN); [**Ge-21**] – Gorce Mts, Gorc NP, NE slope of Mostownica Mt., 49°33'48"N, 20°08'31"E, alt. 900 m, 2008, leg. PC 5864 (GPN); also 49°32.377'N, 20°10.936'E, 20.10.2008, leg. PC 5925 (GPN), and others including nos: 5614, 5651, 5727, 5734, 5747, 5749, 5792 & 5854 (GPN); [**Ge-50**] – Tatra Mts, Dolina Róztoki Valley near Wodogrzmoty Mickiewiczka waterfall, 49°13'N, 20°04'E, alt. 1120 m, 8.8.2003, leg. PC 3334 (GPN); [**Ge-60**] – Tatra Mts, Tatra NP, NW slope of Żabia Grań Mt., 49°12'N, 20°05'E, alt. 1500–1550 m, on *Picea abies* and *Pinus cembra*, 9.7.2002, leg. PC 2890 & 2896 (GPN); [**Gg-71**] – Bieszczady Mts, Bieszczadzki NP, near former Sianki village, 49°01'N, 22°52'E, on *Picea abies*, 19.6.2002, leg. PC 2866 (GPN).

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