Table S1 – Articles included based on mechanical parameters assessed.

Study	Study Groups	Sample Size and Thickness	Parameters Assessed	Results
Ramos et al., 2016	• Vita Mark II (FEL) • Vita Enamic (PIC) • IPS e.max CAD (LD) • Vita Suprinity (ZLS)	n = 15 • 12 mm diameter • 1.2 mm thick	• Elastic modulus • Poisson's ratio • Fracture toughness • Biaxial flexural strength (BFS)	• FEL and PIC, as well as LD and ZLS, showed similar fracture toughness • The zirconia present in the ZLS did not improve the fracture toughness • Weibull modulus of FEL, PIC, LD and ZLS was the same • The FEL showed the lowest susceptibility to slow crack growth, as ZLS and LD had the highest
Elsaka et al., 2016	• Vita Suprinity (VS) • IPS e.max CAD (IC)	n = 5 18 mm × 4 mm × 3 mm	• Fracture toughness Flexural strength • Elastic modulus Hardness • Brittleness index • Microstructure	• VS showed higher fracture toughness, flexural strength, elastic modulus, and hardness than IC • VS showed higher brittleness than IC • VS had a homogeneous fine crystalline structure • VS showed higher strength compared to IC

Study	Study Groups	Sample Size and Thickness	Parameters Assessed	Results
Vasiliu et al., 2022	• Vita PM9 (FP) • Celtra Press (ZLSP) • Vita Mark II (FM) • Vita Suprinity (ZLSM)	n=8 Crown: 1.5 mm axial and occlusal reduction	• Fracture resistance and microhardness (VHN), before and after hydrothermal aging	• ZLD had higher microhardness, and fracture toughness compared to FP and FM • Thermal aging effect the microhardness • ZLSP and ZSLM showed no significant difference • After thermal aging, ZLSM had the greatest microhardness, and FP lowest
Guilardi et al., 2020	• Vitablocs Mark II (FC) • VITA Enamic (PICN) • VITA Suprinity (ZLS) • IPS e.max CAD (LD) • VITA YZ (YZ)	n = 6 15 x 10 x 2 mm	• Impact strength	• FC showed the lowest impact strength, follow by PICN, LD, ZLS • YZ had the highest impact strength
Attar et al., 2023	• IPS e.max CAD • VITA Suprinity • IPS Empress CAD • Zenostar • CopraSmile	n = 10 16 x 4 x 2 mm	• Flexural strength • Weibull modulus	• Zenostar showed the highest flexural strength, while Empress CAD had the lowest • Suprinity had the highest Weibull modulus, while Empress CAD showed the lowest

Study	Study Groups	Sample Size and Thickness	Parameters Assessed	Results
Abu-Izze et al., 2018	• Vita Suprinity (ZLS) • Vita Enamic (PIC)	n= 15 0.5 and 1.0 mm	• Fatigue • Failure mode • Stress distribution	• 0.5 mm ZLS showed lower fatigue strength compared with 1.0 mm PIC • PIC fractures were minor damage, less fragments compared with ZLS fractures • ZLS showed higher concentrations of stresses in the adhesive interface
Mendonca et al., 2018	• IPS e.max CAD (LD) • VITA Suprinity (ZLS) • VITA Enamic (PICN) • Cerasmart (HPP)	n = 10 Crown : • 1.5 mm axial reduction • 1.0 mm marginal chamfer • 2.0 mm occlusal reduction	• Flexural strength • Flexural modulus • Fracture strength • Microhardness • Microstructure	• LD and ZLS had the highest fracture strength • LD showed the highest flexural strength, then ZLS, HPP, PICN • ZLS had the highest flexural modulus, then LD, PICN, HPP • LD material showed small needle-shaped crystals • ZLS had slightly larger crystals with more elongated, rounded, and rod-like appearance
Campanelli de Morais et al., 2020	• VITA Suprinity (ZLS) • IPS e.max CAD (LD)	n=5 • 12 mm diameter	• Biaxial flexural strength (BFS)	• LD showed the highest BFS, regardless of the number of firings

Study	Study Groups	Sample Size and Thickness	Parameters Assessed	Results
		• 1.2 mm thick		
Aurelio et al., 2016	• VITABLOCS Mark II (FEL) • IPS Empress CAD (LEU) • IPS e.max CAD (DIS) • VITA Suprinity (SLZ)	n=5 1.5 ± 0.5 mm	• The effect of extended glaze (EG) firing on crack healing and microstructure	• EG showed a more pronounced reduction in defect size, compared to conventional firing • EG generated compressive stress into the material, increasing the fracture toughness • After EG, ZLS crystalline peaks appeared more intense
Schweitzer et al., 2020	• Celtra Duo (ZLS) • IPS e.max CAD (LDS)	n= 30 17 x 4 x 1 mm	• Flexural strength of the specimens subjected to polishing, standard firinging and three extended firings: the first (EF1) and second glaze firing (EF2) with controlled overheating of +15 C during the holding time	• Flexural strength showed non-normal distributions for EF1 and EF1+2 • Flexural strength for LDS and ZLS showed a significant difference • EF2 increased ZLS flexural strength

Study	Study Groups	Sample Size and Thickness	Parameters Assessed	Results
Demirel et al., 2022	• CEREC Tessera (ALDS) • IPS e.max CAD (LDS) • VITA Suprinity (ZLS)	n = 10 • 12 mm diameter • 1.2 mm thick	• Biaxial flexural strength (BFS), before and after 5000 cycles of coffee thermocycling	• ZLS showed the highest BFS • LDS had similar BFS values to those of ALDS
Passos et al., 2018	• Vita Mark II • IPS Empress CAD • IPS e.max CAD • Vita Suprinity PC	n = 10 Molar crown: • 1.5 mm axial and occlusal • 1.0 mm shoulder	• Fracture strength of: • MEOM crowns - Finished without manual enhancement of occlusal morphology • With MEOM crowns	• After MEOM crowns showed a decrease strength to fracture load - 28.4% (Vita Mark II), 41.1% (IPS Empress CAD), 45% (IPS e.max CAD), and 17.7% (Suprinity PC) • Vita Suprinity showed mainly fracture through the crowns
Bergamo et al., 2019	• Vita Suprinity (ZLS)	n = 21 0.5, 1.0 and 1. 5mm	• Reliability and failure mode	• 0.5 mm ZLS had reduction in the reliability of 69% at 200N, 41% at 300 N, 19% at 400 N • 1.0 and 1.5 mm ZLS had reduction in the reliability of 90% at 200N • at 300 and 400N, 1.0 mm (95% and 86%) and 1.5mm crowns (99% and 94%) • The main failure mode was the comprised bulk fracture

Study	Study Groups	Sample Size and Thickness	Parameters Assessed	Results
Monteiro et al, 2018	• Vita Suprinity (VS) • Celtra Duo (CD)	n = 25 1.0, 1.5, 2.0 and 2.5 mm	• Fatigue failure load	• VS and CD showed an increase in mean fatigue failure load with an increase in ceramic thickness • 2.5 mm VS and CD showed the highest fatigue failure load
Picolo et al., 2022	• Celtra Duo (ZLS) • Vita Blocks Mark II (FE) • Vita Enamic (PICN) • Katana Avencia Block (RK) • Grandio Blocs (RG)	n = 10 14 × 14 × 1 mm	• Flexural strength and microhardness of specimens exposed to erosion and/or abrasion	• FE showed the lowest flexure strength after erosion (E) and erosion and abrasion (E + A) simulations • The acid-erosive exposure decreased microhardness of ZLS, FE, and PICN • ZLS, FE, and PICN showed higher bio-film adhesion than RG and RK
Colombo et al., 2019	• Cerasmart • Lava Ultimate • Gradio Blocs • VITA Suprinity PC	n = 15 2.0 mm	• Microhardness of specimens, before and after exposure to a carbonated acidic drink, Coca-Cola	• Both, in the control group and after 28 days of exposure to Cola , ZLS showed the highest microhardness • In the control group, hybrid ceramic showed the lowest microhardness • After 21 days of exposure, nano hybrid composite

Study	Study Groups	Sample Size and Thickness	Parameters Assessed	Results
				had the highest microhardness loss

Table S2 - Articles included based on esthetic parameters assessed

Study	Study Groups	Sample Size and Thickness	Study Assessment	Results
Subasi et al., 2018	• VITA Suprinity PC (ZLS) • IPS e.max CAD (LDS) • InCoris TZI C (MonZr)	n=4 0.5, 0.7, 1 mm	• Color difference (ΔE_{00}) and relative translucency parameter (RTP) were assessed by using a spectroradiometer, before and after, 5,000 coffee thermocycling cycles	• Coffee thermocycling did nor effect the translucency • Thickness effected the ZLS color change • MonZr had the smallest cooler change, not perceptible at any thickness
Passos et al.,	• Celtra Duo (ZLS) both, HT - High - Translucency LT - Low - Translucency	n = 15 1.0, 1.5 and 2.0 mm	• Color coordinates of each specimen were measured with a spectrophotometer • The ΔE was calculated to determine the color difference between B1 and C2, silver and gold substrate	• C2 and silver can be make with 2.0 mm thickness • Gold showed clinically acceptable values for 1.5 mm thickness
Sarikaya et al., 2018	• IPS e.max CAD (LDC) • VITA Suprinity (ZLS)	n = 10 14 mm diameter 1.2 mm thick	• Color difference was assessed by using the spectrophotometer, before and after, immersing the specimens in tea, coffee and cola	• ΔE of ZLS were higher than LDC • Coffee was the most colorant beverage

Study	Study Groups	Sample Size and Thickness	Study Assessment	Results
Aydin et al., 2019	• Cerasmart (hybrid ceramic) • Shofu Block (hybrid ceramic) • Grandio Blocs (composite) • Brilliant Crios (composite) • Celtra Duo (ZLS)	n=40 1.5 X 7 X 12 mm	• Color difference was measured by using spectrophotometer • The used beverages were wine, coffee, cola, energy drink, distilled water • Samples were stored in an incubator for 30 days, at 37oC	• Red wine and coffee caused the greatest color change on all tested materials (ΔE_{00}: 2.25), especially effecting the composite-containing materials • Cola and energy drink effected the least the color (ΔE_{00}:1.30)
Arif et al., 2018	• Celtra Duo (CD) • IPS e.max CAD (EM) • Lava Ultimate (LU) • VITA Enamic (VE) • VITA Suprinity (VS) • VITA YZ (Zir)	n=5 Laminate: 0.7 mm Crown: 1.3, 1.5 mm	• Color difference and translucency (RTP) were assessed by using spectroradiometer, before and after 6,000 coffee thermocycling cycles	• LU presented the greatest color change • EM was the most color stable • Crowns showed lower translucency
Kanat-Erturk et al., 2019	• IPS e.max CAD HT • Vita Suprinity HT	n=10 1.5 × 7 × 12 mm	• Color values were measured with spectrophotometer • Color difference of glaze, mechanical polishing, and external staining and glaze specimens was assessed before and after coffee and black tea storage	• Lithium disilicate showed higher color stability, except for the external staining and glaze specimens storage in coffee • Glazed specimens showed the highest color stability • Polishing paste decreased the color variations

Study	Study Groups	Sample Size and Thickness	Study Assessment	Results
Moaleem et al., 2022	• Ceramill Zolid PS • Vitablocs Vita Triluxe Forte • VITA Suprinity	n=10 2, 12 and 14 mm	• Color change was assessed by using the spectrophotometer • The specimens were immersed and stained in smokeless tobacco	• Zirconia showed the lowest color change, after one week • Vita Suprinity and Ceramill Zolid showed the highest color change after tobacco exposure at one and two weeks
Alp et al., 2018	• VITA Suprinity PC (ZLS) • IPS e.max CAD (LDS)	n=18 • rectangular plates • 1.5 mm thick	• Color differences and relative translucency were assessed by using a noncontact spectroradiometer • The glazed and polished samples were subjected to 5,000 thermocycles in a coffee solution	• Coffe thermocycling effected the color of ZLS and LDS • LDS is more translucent than ZLS, before and after aging • Coffee thermocycling decreased the translucency of both materials
Demirel et al., 2022	• CEREC Tessera (ALDS) • IPS e.max CAD (LDS) • VITA Suprinity (ZLS)	n = 10 • 12 mm diameter • 1.2 mm thick	• Color differences (ΔE00) and relative translucency parameter (RTP) were assessed by using the digital spectrophotometer, before and after 5,000 cycles of coffee thermocycling	• All materials had similar color changes • LDS had the highest and ZLS had the lowest RTP values, both before and after thermocycling • Only LDS showed the same translucency before and after thermocycling

Study	Study Groups	Sample Size and Thickness	Study Assessment	Results
Vasiliu et al., 2020	• Vita PM9 (FP) • IPS e.max Press (LDS) • Celtra Press (ZLS) • Vita Mark II (F) • IPS Emax CAD (LD) • Vita Suprinity (ZLS)	n=8 • rectangular plates • 1.5 mm thick	• Translucency (TP) and opalescence (OP) of polished and glazed samples were assessed by using a spectrophotometer, before and after 10,000 thermocycles in distilled water	• ZLS and FP were the most effected by the ageing process • Milled and pressed ZLS and LDS showed significant change in opalescence and translucency after ageing • Milled ZLS showed less translucency loss compared to pressed ZLS • Thermocycling process effected the pressed glazed samples, but also the milled polished samples
Donmez et al., 2022	• Amber Mill (NLD) • IPS e.max CAD (LDS) • Vita Suprinity (ZLS) • BRILLIANT Crios	n = 5 0.7 and 1.5 mm	• Color differences (ΔE00) and relative translucency parameter (RTP) were assessed by using a spectrophotometer, before and after 5,000 thermocycles in coffee	• 0.7 mm ZLS had the lowest ΔE00 • 1.5 mm LDS had higher ΔE than ZLS • NLD had similar ΔE00 values to LDS and ZLS • After thermocycling, RTP of 0.7 mm ZLS were lower than NLD and LDS • LDS and NLD showed similar RTP, regardless of the thickness and aging process

Study	Study Groups	Sample Size and Thickness	Study Assessment	Results
Cakmak et al., 2021	• VITA Suprinity (ZLS)	n=5 0.8 and 1.5 mm	• Color difference (ΔE00) and relative translucency parameter (RTP) were assessed by using a noncontact spectroradiometer, before and after, 5,000 coffee thermocycling cycles (CTC)	• Translucency was effected by thickness, resin cement shade and coffee thermocycling • Translucency decreased after CTC • Color difference was effected by material thickness
Choi et al., 2020	• Tetric CAD (TC) • Vitablocs Mark II (VM) • IPS Empress CAD (EP) • IPS e.max CAD (EM) • Celtra Duo (CD) • Vita Enamic (VE) • Cerasmart (CS) • Lava Ultimate (LU)	n = 15 14×12×1 mm 14×12×2 mm	• Color difference (ΔE00), translucency parameter (TP), total transmittance (Tt) and contrast ratio (CR) were assessed by using a spectrophotometer, before and after UV aging	• CD showed the lowest translucency and highest opacity • TC showed the highest translucency • CD showed the highest CR value and TC the lowest • Ageing, material type and thickness influenced the optical properties of all tested materials

Study	Study Groups	Sample Size and Thickness	Study Assessment	Results
Campanelli de Morais et al., 2020	• VITA Suprinity (ZLS) • IPS e.max CAD (LD)	n=5 • 12 mm diameter • 1.2 mm thick	• Color and translucency variations were determined by using spectrophotometry • The specimens were subjected to two firings (2F), five firings (5F) and seven firings (7F)	• For ZLS, 2F and 5 F effected the L* and b* values; L* was higher at 5F and 7F • ZLS had higher L* than LD • LD had higher a* than ZLS, for all the firing types • ΔE of LD was significantly lower than ZLS • TP had different values for LD and ZLS, at 2F and 5F, but simmer values at 7F • ZLS showed higher TP at 7F
Nejatidanesh et al., 2019	• IPS e.max CAD (LDS) • VITA Suprinity PC (ZLS) both, HT - High - Translucency LT - Low - Translucency	n=10 0.6, 1 mm	• Translucency and contrast ratio were assessed by using a spectrophotometer • The samples were subjected to crystallization, correction, and glaze firing cycles	• At 0.6 mm thickness, the translucency of both, HT-ZLS and LT-LDS, was effected by repeated firings • Transluency increased as the thickness of the samples decreased

Study	Study Groups	Sample Size and Thickness	Study Assessment	Results
Schweitzer et al., 2020	• Celtra Duo (ZLS) • IPS e.max CAD (LDS)	n= 30 17 x 4 x 1 mm	• Color was measured with a digital spectrophotometer, before and after firing • specimens were subjected to polishing, standard firinging and three extended firings: the first (EF1) and second glaze firing (EF2) with controlled overheating of +15 C during the holding time	• The color change after firing of ZLS exceeded the perceptible threshold of ΔE >_1.5 in 23% of EF1 and 10% of EF2 specimens • Between the polished experiments groups, L*a*b* values showed no difference
Aurelio et al., 2016	• VITABLOCS Mark II (FEL) • IPS Empress CAD (LEU) • IPS e.max CAD (DIS) • VITA Suprinity (SLZ)	n=5 1.5 ± 0.5 mm	• Color difference and contrast ratio (CR) were assessed by using a spectrophotometer; • Samples were subjected to conventional (G) firings and extended (EG) glaze firings: dwell time of 15 min, slow cooling rate	G and EG firings changed significantly: • FEL: L* (EG) and a* (G) • LEU: L*, a* (EG) and a* (G) • DIS: L*, a*, b*, CR • ZLS: L*, a*, CR
Ozen et al., 2020	• IPS e.max CAD (EC) • VITA Suprinity (VS) • LAVA Ultimate (LU)	n=24 14 x 12 x 0.5 mm	• Color change was assessed by using a spectrophotometer • Samples were subjected to 5,000 cycles of artificial ageing before the treatment, after polishing, after cement application, and after artificial ageing	• LU exhibited higher color change than VS and EC, after artificial ageing. • Polishing and glazing determined color change for LU and VS • Color change of glazed VS and EC was below the clinically acceptable level (ΔE < 3.5)

Table S3 - Articles included based on adhesion parameters assessed

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
Cinar et al., 2019	• IPS e.max CAD • Vita Suprinity • Lava Ultimate • Vita Enamic	• Control • Etching (9.5% HF, 20s glass /60s resin) • Etching + silanization (HF + S) • Sandblasting (SB 50μm aluminum oxide, 2 bar, 10 s, 10 mm) • Sandblasting + silanization (SB + S) • Self-adhesive resin cement	n=10 2.5 mm slices	• Shear bond strength (SBS)	• Vita Enamic showed the highest SBS • Lava Ultimate had the highest SBS when using SB + S • IPS e.max CAD, Vita Suprinity, and Vita Enamic showed the highest SBS, by using HF + S
Altan et al., 2019	• Vita YZ HT • inCoris TZI • IPS e.max ZirCAD • Vita Suprinity (ZLS)	• Control • Etching (9.5% HF, 20s ZLS /60s) • Sandblasting (50 mm Al_2O_3 , 2 bar, 15s, 10 mm) • Sandblasting + laser irradiation (Er:YAG 2,94 mm, 4W, 10 Hz, 400 mJ, 100 ms) • Laser irradiation • CoJet (15s, 2.8 bar, 10mm)	n = 10 2.5 mm	• Shear bond strength (SBS)	• Vita Suprinity - HF provided the highest SBS, being more effective than CoJet and sandblasting • Vita YZ HT and inCoris TZI showed higher SBS when sandblasting and CoJet, compared to IPS e.max ZirCAD • Laser irradiation did not show clinically acceptable SBS

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
Maawadh et al., 2021	• Celtra Duo (CD) • Vita Suprinity (ZLS) • IPS e.max CAD	• Control: no etching • Etching with 9% hydrofluoric acid (HF) for 10 s, 20 s, 30 s or 60 s • The specimens were exposed to thermocycling for 5,000 cycles	n = 10 6 x 1.5 × 6 mm	• Shear bond strength (SBS)	• IPS e.max CAD etched for 20s showed higher SBS compared control, 10s, 30s and 60s groups • CD with firing showed the highest SBS for 30s etching time • CD fired had the lowest SBS in the control group • ZLS showed the highest SBS when etched for 20-30s
Ataol et al., 2018	• IPS e.max CAD (Group A) • IPS e.max ZirCAD (Group B) • Vita Suprinity (Group C)	1 ST: HF + silane + bond 2 ST: alumina blasting + silane + Bond 3 ST: laser +silane + Bond 4 ST: HF + Primer 5 ST: alumina blasting + Primer 6 ST: laser + Primer 7 ST: silane + Bond (control) 8 ST: Primer (control) Half of the specimens were exposed to 5,000 thermocycling cycles	n = 14 12 × 12 × 3 mm	• Shear bond strength (SBS)	• Group A - HF etching showed higher SBS than the other groups; laser etching showed lower SBS than HF etching • Group B - alumina blastingd had the highest SBS • Group C - the highest SBS was achieved by HF etching

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
Azevedo et al., 2021	• Vitablocs TriLuxe (FEL) • Vita Suprinity PC (ZLS)	• Etching with 5% hydrofluoric acid (HF) for 20 s, 40 s or 60 s • Etching with 10% hydrofluoric acid (HF) for 20 s, 40 s or 60 s • The control group was sandblasted with 50 μm aluminum oxide, 20 s, 10 mm, 60 p	n = 20 10 x 5 x 1 mm^3	• Shear bond strength (SBS)	• ZLS - 10% HF (40 s) is the preferred surface treatment • FEL - 5% or 10% HF (20 s) is the best surface treatment
Aladag et al., 2023	• Upcera ST (Y-TZP) • Vita Suprinity (ZLS) • Nice block (LD-LAS)	• Control • Er:YAG (2940nm, 2W, 200mJ, 10Hz/s, 75μs) • Nd:YAG (1064nm, 2W, 100mJ, 20Hz/s, 150μs) • Etching with hydrofluoric acid (5% HFA, 20s) • Er:YAG + HFA • Nd:YAG + HFA • Sandblasting (50 mm Al_2O_3 , 2 bar, 15s, 10 mm)	n = 7 2.5 mm	• Shear bond strength (SBS)	• Y-TZP - Er:YAG and Nd:YAG showed the highest SBS, as HFA had the lowest SBS • ZLS - HFA, HFA + Er:YAG, and HFA + Nd:YAG showed significantly higher SBS compared to the control group • ZLS - HFA + Er:YAG had the highest SBS; as the Er:YAG showed the lowest SBS. • LD-LAS - HFA, HFA + Er:YAG, and HFA + Nd:YAG SBS

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
					were higher than control group
Weyhrauch et al., 2016	• Vita Mark II (FSC) • IPS Empress CAD (LrGC) • IPS e.max CAD (LiDS) • Vita Suprinity (PSZirLS) • Vita Enamic (PolyFSP) • Lava Ultimate (ResNC) • Celtra Duo (FcZirLS)	• The implant abutments exterior surfaces were airborne-particle abraded - 50 μm, 10 mm, 1 bar, 60 s and silanized • The crowns were etched with hydrofluoric acid or sandblasted and silanized • The adhesion surface of the abutment and inner crown surfaces were also conditioned with silane	n = 10 14 mm block size	• Fracture strength	• LiDS, PSZirLS, PolyFSP and ResNC showed significantly higher fracture strength compared with FSP, FcZirLS, and LrGC • PSZirLS showed the most increased fracture strength

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
		• The specimens were exposed to 5,000 thermal cycles			
Sevmez et al., 2021	• Celtra Duo (CD) • Vita Suprinity (VS) • Vita Enamic (VE) • Nacera Hybrid (NH)	• K: Control H: 5% HF acid, 20s • HS: 5% HF acid, 20s + silane 60s • A: Air-abrasion, 50-micron Al2O3, 2.5 bar AS: Air-abrasion, 50-micron Al2O3, 2.5 b pressure + silane 60s C: Air-abrasion 30-micron silica-coated alumina 2.5 bar • CS: Air-abrasion with 30-micron silica-coated alumina 2.5 bar + silane 60 s	n = 10 10 x 10 x 1 mm	• Shear bond strength (SBS)	• CD, VS and NH showed the highest SBS for H and HS groups • VE had the highest SBS for CS group • C and CS groups had the highest SBS for VE, and A and AS for VE and VS • CD showed the lowest SBS for K group

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
		• S: Silane 60 s			
Secilmis et al., 2016	• IPS e.max CAD (LDG) • Vita Suprinity (ZLDC) • Lava Ultimate (RNC) • Vita Enamic (HC)	• RNC - 50µm aluminum oxide, 2 bar, 10 s, 10 mm) • LDG and ZLDC - 9% HF, 20 s • HC - HF, 60 s • Multilink N (M) • Panavia F 2.0 (P)	n = 12 2.0 mm blocs	• Shear bond strength (SBS)	• RNC-P showed the highest SBS • LDG-M and ZLDC-M showed the highest bond strength • ZLDC-P, HC-P, and LDG-P showed no significant differences • RNC-M and HC-M showed no significant differences

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
Traini et al., 2016	• Vita Suprinity (ZLS)	• The crystallization was done at 840°C for 8 min in a ceramic furnace • Etching with 4,9% hydrofluoric acid (HF) for 20 s and 40 s • Etching with 9,5% hydrofluoric acid (HF) for 20 s and 40 s	n = 8 3.5×3.0×1.0 mm	• Vickers hardness (Hv) • Fracture toughness (Ft)	• Ft and HV values significantly increase after crystallization treatment of ZLS • Etching with 4,9%HF for 20 s provided the best surface treatment
Donmez et al., 2020	• Vita Enamic • IPS Empress CAD • IPS e.max CAD • Vita Suprinity	• Control • Etching with MEP for 60 s • Etching with MEP for 120 s • Etching with 5% HF for 60s and 120s • Etching with 9.5% HF for 60s and 120s • The specimens were exposed to 5,000 thermocycling cycles	n = 10	• Shear bond strength (SBS)	• Hybrid ceramic showed a lower SBS than lithium disilicate glass-ceramic • 9.5% HF showed higher BSB, regardless the exposure time • Zirconia-reinforced lithium silicate showed no difference between the specimens treated with MEP60, HF-5%60s and HF-5%120s

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
Al-Thagafi et al., 2016	• IPS e.max CAD • Vita Suprinity	• Group C: control • Group HF: 5%HF, 60s • Group HF+H: 5%HF,60s and Heliobond • Group CO: CoJet (tribochemical silica coating) 10 mm, 2.8 bar, 15s + Silane • the specimens were thermocycled for 5,000 cycles	4 x 6 x 3 mm	• Microtensile Bond Strength (μTBS)	• IPS e.max CAD - group CO showed the highest and HF the lowest μTBS. • Vita Suprinity - group CO exhibit the highest μTBS, and the lowest in HF and HF-H groups
Pucci et al., 2022	• Vita Enamic (PICN) • Celtra Duo (ZLS)	Group 1: 5% HF + silanisation (SI) Group 2: air-abrasion (AB) with 50 μm Al2O3 + 5% HF + SI Group 3: 5% HF + universal adhesive (UA) Group 4: air-abrasion (AB) with 50 μm Al2O3 + 5% HF + SI + UA * HF- etching time - 30 s (ZLS) or 60 s (PICN)	n = 10 10 × 5 × 1.5 mm	• Shear bond strength (SBS)	• PICN treated with HF+UA presented the lowest SBS reduction and no differences at one year evaluation • PICN and ZLS showed no differences at 24h, regardless the surface treatment • PICN treated with HF+UA and ZLS treated with AB+HF+SI+UA showed higher SBS at one year

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
Okutan et al., 2022	• IPS Empress CAD (EC) • Vita Suprinity (VS) • Vita Enamic (VE)	• Single-step self-etching system Monobond Etch & Prime (MEP) for 60 s	n = 10 1.0, 2.0 and 3.0 mm	• Shear bond strength (SBS)	• VS and VE had significantly lower SBS values than EC • 2 mm EC and VS had higher SBS values than their 3 mm groups • 2 mm and 3 mm specimens had significantly lower SBS values than 1 mm-thick
Preis et al., 2015	• Celtra Duo (ZLS) • IPS e.max CAD (LDS)	• Etching with 5% hydrofluoric acid (HF) for 20 s LDS and 30 s ZLS • Glass-ionomer cements (GIC) • Resin and resin-modified self-adhesive cements • TCML: 3000×5◦C/3000×55◦C; 1.2 × 106 cycles, 50 N	n = 8 Crown: • 1.5 mm circular and occlusal • 1.0 mm circular shoulder	• Fracture resistance • Marginal adaptation	• No significant differences were found between the cementation methods • Marginal quality adaptation was found before and after TCML for ZLS and LDS • Adhesive bonded ZLS showed a high fracture resistance, but their marginal quality decreased by TCML

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
Falachai et al., 2020	• Vita Suprinity (ZLS)	• Etching with 5% hydrofluoric acid for 20 s • Dual-cure resin cement (Panavia F2.0) • 50-μm cement space	n = 10 Overlay preparation: O, OS, OG and OSG	• Marginal adaptation	• group O showed significantly higher marginal adaptation than the group OSG • No significant difference was noted in marginal adaptation of groups O, OS, and OG
Amini et al., 2021	• Celtra Duo (ZLS) • DD Bio ZX2 (Zr)	• ZLS - hydrofluoric cis and silane • Zr - sandblasting with 50 μm Al2O3 • Panavia F2.0 cement • The specimens were exposed to 5000 thermomechanical cycles • Cement space - 0 for the margins and 50 μm for other areas	n = 14 -2 mm occlusal -3-5 mm pulp chamber deep -6 degree divergence of the walls -90 degree butt margin	• Marginal and internal adaptation	• ZLS showed significantly higher internal adaptation compared to the Zr • For ZLS and Zr, cementation process and thermomechanical aging increased the marginal gap

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
Vasiliu et al., 2020	• Vita Suprinity (ZLSM) • Vita Mark II (FM) • Vita PM9 (FP) • Centra Press (ZLSP)	• Self-etch self-adhesive resin cement (Maxcem Elite, Self Etch, Kerr) • The specimens were exposed to 10,000 thermal cycles	n = 8 -1.5 -2 mm occlusal -1 mm rounded chamfer -6 degree divergence of the walls -lingual cusp beveled	• Marginal and internal adaptation	• ZLSP and ZLSM showed significant differences in the axial and occlusal areas • FM showed the best marginal and internal fit • After cementation and aging, FM showed decreased marginal fit compared to ZLS ceramics • As, differences in the axial and occlusal areas were found between ZLSMP and ZLSP
Taha et al., 2018	• IPS e.max CAD (EX) • Vita Enamic (VE) • Celtra Duo (CD) • Cerasmart (CS)		n = 10 Endocrown: - 90 butt margin design - 2 mm occlusal - 6 mm extending into the pulp chamber	• Fracture resistance • Marginal adaptation	• CS showed the highest mean fracture load with statistically significant difference than VE and CD • CS and EX showed statistically insignificant differences • Cementation and thermomechanic

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
			- 8 degree divergence of the walls.		al aging increased statistically significant the marginal gap, for all the materials
Alves et al., 2020	IPS e.max CAD (LD) Vita Suprinity (ZLS) Prettau Anterior (Trans YZ)	LD and ZLS - 5% Hydrofluoric acid applied for 20s and silane Trans YZ - Airborne-particle abrasion with 45 μm aluminum oxide particles, 15 s and silane	n = 15 Crown design: flat occlusal surface 1.5 mm for all regions	Fatigue	Trans YZ material showed the highest fatigue performance, and survival rate followed by ZLS and LD ZLS showed superior fatigue resistance to LD
Sahebi et al., 2022	Celtra Duo (ZLS) DD BIO ZX2 (ZR)	Zr - air-abrasion with 50 μm alumina particles ZLS - 9% hydrofluoric acid (HF), 30 s + silane Specimens were subjected to 5000 thermomechanical cycles	n = 14 -2 mm occlusal -4 mm pulp chamber deep -6 degree divergence of the walls	Fracture load Retention test	ZR endocrowns showed higher fracture loads than ZLS endocrowns ZLS had higher retention compared to ZR endocrowns

Study	Study Groups	Surface treatments	Sample Size and Thickness	Parameters Assessed	Results
			-90 degree butt margin		