

FINE GRAIN HIGH-STRENGTH STEELGRADES

These steelgrades are codified by manufacturers' specifications that foresee such a complex chemical composition and heat treatment that grant a "fine" grain structure, very high yield and tensile strength values, together with high impact properties at low temperatures.

These steelgrades have been conceived for the construction of buildings, cranes and lifting equipments, for which it is vital to reduce the weight of the structure without giving up to its resistance, even if subject to extreme loads.

Seamless hollow sections in this kind of steelgrades can be supplied upon request.

CHEMICAL ANALYSIS

Steelgrade	Chemical elements (% on mass)																						
	C		Si		Mn		P	S	Cr		Mo		Ni		W		V		Al		N	Ti	Nb
	min.	max.	min.	max.	min.	max.	max.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	max.	max.	max.
FineXcell® 690*	-	0.20	0.15	0.50	-	1.70	0.025	0.015	-	1.00	0.30	0.45	0.30	0.70	-	-	-	0.12	-	-	0.015	0.05	0.05
FineXcell® 690 ImpactFIT 40	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.35	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 690 ImpactFIT 50 ¹	-	0.20	-	0.60	-	1.70	0.025	0.015	-	1.50	-	0.70	-	1.50	-	1.50	-	0.14	-	0.060	0.020	0.05	0.05
FineXcell® 700*	-	0.15	0.10	0.50	-	1.40	0.020	0.010	0.40	0.60	0.20	0.60	1.00	1.50	-	-	-	0.10	-	-	0.015	0.05	0.05
FineXcell® 700 ImpactFIT40	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.70	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 700 ImpactFIT 60	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.70	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 700 TempFIT300	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.70	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 700 TempFIT400*	-	0.15	0.10	0.50	-	1.40	0.020	0.010	0.40	0.60	0.20	0.60	1.00	1.50	-	-	-	0.10	-	-	0.015	0.05	0.05
FineXcell® 770*	-	0.20	0.20	0.50	1.20	1.70	0.025	0.015	-	0.50	0.20	0.50	0.50	1.20	-	-	-	0.12	-	-	0.020	-	0.05
FineXcell® 780 ImpactFIT 40	0.14	0.18	0.20	0.50	1.20	1.70	0.025	0.015	-	0.80	0.20	0.40	-	0.40	0.10	0.70	0.05	0.12	0.015	0.050	0.020	0.05	0.05
FineXcell® 790*	-	0.18	0.20	0.50	1.20	1.70	0.020	0.010	0.40	1.00	0.20	0.50	0.50	1.70	-	-	-	0.10	-	-	0.020	-	0.05
FineXcell® 800 ImpactFIT 40 ²	0.10	0.18	0.20	0.50	1.20	1.70	0.025	0.015	0.40	0.90	0.20	0.50	-	0.40	0.10	0.80	0.03	0.12	0.015	0.050	0.020	0.05	0.06
FineXcell 890 *	-	0.18	0.20	0.50	-	1.60	0.020	0.010	0.50	0.80	0.20	0.70	1.00	1.70	-	-	-	0.10	-	-	0.020	-	0.05
FineXcell® 890 ImpactFIT 50 ³	-	0.18	-	0.50	-	1.50	0.020	0.010	-	0.90	-	0.50	-	0.40	-	1.50	-	0.08	-	0.050	0.020	0.05	0.06
FineXcell® 900 ImpactFIT 40 ²	0.14	0.18	0.20	0.50	1.20	1.70	0.020	0.010	0.40	0.90	0.30	0.70	-	0.40	0.40	0.80	0.03	0.12	0.015	0.050	0.020	0.05	0.06
FineXcell® 960 ImpactFIT 40	-	0.20	-	0.50	1.20	1.70	0.020	0.010	0.40	1.00	0.30	1.00	-	0.40	0.40	1.50	-	0.02	-	-	0.025	0.03	0.05

* Cu ≤ 0.25%; B ≤ 0.005%.

¹ Cu ≤ 0.50%; B ≤ 0.0008%; Zr ≤ 0.15%; if Cu > 0.30% the Ni content must be at least half the content of Cu.

² Cu ≤ 0.30%.

³ Cu ≤ 0.35%; B ≤ 0.0008%; Zr ≤ 0.15%.



MECHANICAL PROPERTIES

Steelgrade	Delivery condition	Yield strength min. (ReH) (N/mm ² =Mpa)	Tensile strength (Rm) (N/mm ² =Mpa)		Longitudinal elongation min. %	Longitudinal impact value (J min.)					Equivalent steelgrades ¹
			min.	max.		Temperature °C					
						-20	-30	-40	-50	-60	
FineXcell® 690	Quenched and tempered	690	770	960	16	-	-	40	-	-	FGS70V S690QL
FineXcell® 690 ImpactFIT 40	Quenched and tempered	690	770	960	16	-	-	45	-	-	SG69Q
FineXcell® 690 ImpactFIT 50	Quenched and tempered	690 (650 if 16<T≤20)	700	960	14	-	-	-	27	-	S690G5QL
FineXcell® 700	Quenched and tempered	700 (690 if 12<T≤20)	770	960	16	-	-	-	-	40	FGS70CV FGP70CVT S690QL1
FineXcell® 700 ImpactFIT40	Quenched and tempered	700 (690 if 12<T≤20)	770	960	16	-	-	45	-	-	FGS70WV S690G5QL
FineXcell® 700 ImpactFIT 60	Quenched and tempered	700 (690 if 12<T≤20)	770	960	16	-	-	-	-	40	FGS70CWV S690G2QL1
FineXcell® 700 TempFIT300	Quenched and tempered	700 (690 if 12<T≤20) 510 at +300°C	770 620 at +300°C	960	16	-	-	-	-	40	FGP70CWV P690G1QL1
FineXcell® 700 TempFIT400	Quenched and tempered	700 (690 if 12<T≤20) 490 at +400°C	770 630 at +400°C	960	16	-	-	-	-	40	FGP70CVW P690QH
FineXcell® 770	Quenched and tempered	770 (750 if 12<T≤20)	820	1000	15	-	-	40	-	-	FGS78V S770QL
FineXcell® 780 ImpactFIT 40	Quenched and tempered	780 (770 if 12<T≤20)	820	1000	15	-	-	45	-	-	FGS78WV S770G1QL
FineXcell® 790	Quenched and tempered	790	850	1030	15	-	-	-	-	40	FGS80V S790QL1
FineXcell® 800 ImpactFIT 40	Quenched and tempered	800 (790 if 12<T≤20)	850	1030	15	-	-	40	-	-	FGS80WV S790QL
FineXcell® 890	Quenched and tempered	890	960	1110	14	-	-	-	-	30	FGS90CV S890QL1
FineXcell® 890 ImpactFIT 50	Quenched and tempered	890 (850 if 16<T≤20)	960	1110	14	-	-	-	27	-	SG89Q
FineXcell® 900 ImpactFIT 40	Quenched and tempered	900 (890 if 12<T≤20)	960	1110	14	-	-	45	-	-	FGS90WV S890G1QL
FineXcell® 960 ImpactFIT 40	Quenched and tempered	960	980	1150	10	-	-	27	-	-	FGS100WV S90G1QL

¹ This comparison has been effected with manufacturers' specifications no longer in use or with current codifications according to the European regulations. T nominal tube wall thickness in mm.